Vol XXVIII No. 4 JUNE, 1974

The Medical Journal of Malaysia

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Editorial

Presidential Address

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IT IS not often given to a General Practitioner to preside over the affairs of the Malaysian Medical Association and, as a General Practitioner myself, I deem it a signal honour to have been called upon to serve at the fore-front among the eminent and worthy colleagues of my profession.

Definition of a General Practitioner

"The General Practitioner is a doctor who provides personal, primary and continuing medical care to individuals and families..... He accepts the responsibility for making an initial decision on every problem his patient may present to him, consulting with specialists when he thinks it appropriate to do so..... His diagnosis will be composed in physical, psychological and social terms. He will intervene educationally, preventively and therapeutically to promote his patient's health."[1] This briefly outlines the modern concept of the General Practitioner or the Family Physician.

Not long ago it was thought by some that, with increasing specialisation in medicine, the General Practitioner would disappear from the medical scene altogether. But events have proved these pundits wrong. Indeed, as John Hunt[2] says, there has been a renaissance of General Practice during the recent years.

The Need for the General Practitioner

It is because of, rather than in spite of, the ever-narrowing specialisms based on discrete organ systems in which the integrity (meaning the wholeness) of the individual tends to get lost that the need for a *personal* doctor has been felt. The patient needs the General Practitioner as his trusted guide in a maze of specialities and new forms of specialist treatment, many of them frightening and some of them dangerous.

In our country, about 40% of the doctors are in private practice which is predominantly General Practice. The Government-run out-patient clinics treat about ten million patients in a year. It may not be an exaggeration to say that the General Practitioners of Malaysia treat an equal number, if not more. Therefore, although primary medical care has not achieved that degree of refinement here as obtains in a country like the United Kingdom, the importance of the role of the General Practitioner in our present and future health services cannot be ignored or minimised. Any health scheme that fails to take into account the role of the General Practitioner services must, perforce, have a lacuna within it.

The Changing (Medical) Canvas and the Role of the General Practitioner.

What is the role of the General Practitioner in our country? The kind of primary medical care service must be tailored as closely as possible to the health care needs of the community it is intended to serve. Our country is relatively a prosperous one and, thanks to the far-sighted policies of the Government, we are increasingly becoming so; and Malaysia is on the threshold of industrialisation. Therefore, there may be similarities to draw from the experience in the more industrialised

*Delivered at MMA Annual General Dinner at Penang on 13/4/74.

Western communities. There the pattern of illness, and hence the pattern of demand for medical care, has altered significantly in the past half century. Essentially, the change has been that the major life-threatening infections are no longer a problem. Instead, the main hazard to health includes the survival of children with congenital or traumatic handicap; the chronic degenerative diseases such as coronary heart disease, chronic bronchitis and arthritic conditions in the middle years; and a prolongation of life so that chronic degenerative diseases in the elderly become multiple infirmities. All these conditions share one important characteristic, namely, that they cannot be cured but rather that their effects have to be lived with. One may treat a man who has had coronary thrombosis by admitting him to a coronary care unit and electrically starting his arrested heart; but, when he is discharged from hospital, he *still* has coronary heart disease which may substantially alter his life-style. If the pattern of illness alters in the way illustrated, then, it is the Primary Care Physician, that is the General Practitioner, who will have to increasingly make his assessments in physical, behavioural and social terms. Such a pattern of illness postulates a medical care system in which the specialists and Primary Care Physicians must work along-side each other rather than in competition, since each is doing a different job.

True enough, we should in our country develop secondary medical care – that is cardiology, surgery and the like – at the District Hospital level to deal with a specific problem. There is also a place for tertiary medical care, e.g. heart and kidney transplants, performed by super-specialists, perhaps at the national level. But, in developing these specialist fields, we cannot ignore the importance of Primary Medical Care – the concept of a "personal doctor" – for the first approach in episodes of illness of all kinds and for the continuity of care. And, while trying to raise the standard of hospital specialist care, we cannot afford *not* to raise the standard of Primary Medical Care pari passu.

Education needs of the General Practitioner.

The General Practitioner needs education, with the recognition that the Primary Care Physician of the future will need to be vocationally trained for the job, like the specialist in the other branches of medicine, rather than simply rely on his undergraduate teaching; and that education is a continuing process throughout one's professional career. What our General Practitioner could obtain so far, in the form of refresher courses, has been hospital-oriented medicine that may not be directly applicable to General Practice. The College of General Practitioners of Malaysia, I hope, will fill the gap by providing an educational programme that is relevant to General Practice.

Professional Standard and Medical Audit

The idea that doctors – not only General Practitioners, but also those in other specialties – should have their competence to practise regularly tested (the so-called Medical Audit) is the burning issue in world medical circles. A satisfactory standard will only flow from a satisfactory educational framework, both at the undergraduate and postgraduate level.

The Handicap of the Malaysian General Practitioner

One of the handicaps with which our GP functions is that he does not have full and easy access to the diagnostic tools of modern medicine which are largely available at the government laboratories. Most of our patients can ill afford the investigations that may be necessary for the correct diagnosis of disease and its treatment. To be trained in the methods of modern medicine and then not to be able to use the simple tools of the trade is a severe disadvantage. It is a moot point whether in the interests of the sick, the government should not allow free and direct access to its laboratory and radiological facilities.

There are other problems that vex our GP. I wish to refer to the restriction by the Government of the General Practitioner's privilege to medical certification to two days. To compel the General Practitioner to submit his patient to a Government medical officer, who may be many years junior in knowledge and experience, for endorsement of the GP's certificate is to question the honesty or the clinical competence of the General Practitioner; it is nothing short of down-right humiliation; guilty until declared innocent – and who is the judge?

It is perhaps a reflection of the stage of our development and moral standards that, while in the more developed countries the GP would prefer to delegate the function of medical certification to his nurses, social workers and even lay person of appropriate standing, we in this country should be striving against bureaucracy to retain this function. It is a fact that in the United Kingdom even self-certification is allowed in many cases for a period of up to three days; it is also a fact that the midwife there certifies pregnancy for welfare benefits whereas, with us here, some of the over-zealous Directors of Education will not accept the certificate issued by the GP.

Absenteeism is a problem common to many societies. The doctor may find himself pressed

to accommodate his professional values, his concept of health, disease and sick-role, and his criteria of what constitutes illness, to the demands of his patients and their employers.

The Malaysian Medical Association believes that all doctors should be placed on a panel with freedom to unrestricted, but justifiable, certification. When abuse of this privilege on the part of a doctor is proved, then he, and he alone, should be penalised by exclusion from the panel altogether.

The Needs of the Society

In our society, like in any other developing society, an expectant public is emerging – "expectant of a fuller life with all the benefits and comforts associated with modern living, and particularly high amongst these greater expectations is the desire to achieve and maintain health during a long and useful life".[3]

"The Charter of the World Health Organisation states that health – a state of physical, mental and social well-being – should be regarded as a human and civic right".[3]

But good medical care can be expensive and out of reach of the ordinary pocket. With the majority of our people being "have-nots", it is our duty to find ways and means of relieving the poor of the financial barrier to good medical care of their choice. For this reason, and because it is necessary to make the best use of available resources through planning, there must be increasing government involvement in the provision of medical services for our community. If a national organisation of medical care, against the background of a national health service, would appear to solve our problem then we should not hesitate to explore the possibilities; and, if it is found to be suitable and related to our national characteristics and background, we should implement such a scheme. The Social Security Organisation (SOCSO) would appear to be a logical fore-runner to a nationally organised health service. I concede that this is an issue fraught with far-reaching implications and requires a careful study.

A few years ago the Malaysian Medical Association called upon the Government to appoint a Commission of Health to study and plan the future needs of our health services. This proposal did not then receive the serious consideration that it deserved. The Garlick-Webb Assignment that was later appointed fell short of one's expectations because its terms of reference did not include General Practice which, as I pointed out earlier, forty per cent of our doctors practise.

Now that we have a sympathetic Minister for Health in the person of Tan Sri Lee Siok Yew, who is alive to the problems of both the public and the medical profession, I call upon the Hon'ble Minister and his Ministry to invite an expert in General Practice to study the present state and the future needs of General Practice in Malaysia and to suggest ways and means as to how best our General Practice services may be improved and, if found necessary, integrated in a national scheme and utilised to the best interests of the nation. The Royal College of General Practitioners, the world's leading institution of its kind, is prepared to offer its services and expertise if so requested.

The GP's Attitude

The successful General Practitioner may be wary of a national health service and may not be keen to associate himself lock, stock and barrel with a government service. He has no cause for concern. It may be possible to devise such a framework within which he could retain his independence, only contracting his services to a national health organisation under terms and conditions that would have to be mutually satisfactory.

What the GP should do?

The development of an efficient medical care service will involve the proper housing and equipping of the doctor's clinic, supported by what is an appropriate clerical and para-medical nursing team, and organised in such a way that this functional unit performs smoothly. The future General Practitioner may not work in isolation but in groups so that skills may be shared and there could be continuity of service to the population. He may also have to function as a member of a health team comprising of the General Practitioner himself, the District Nurse, the District Midwife and the Health Education Nurse or their equivalents. For this he will have to closely associate himself with the over-all health services of the nation.

The Third Medical School

Given the shortage of doctors in the country, and the present necessity to recruit foreign doctors, the Malaysian Medical Association welcomes the proposal of the Hon'ble Minister for Health, Tan Sri Lee Siok Yew, to establish a third medical school as timely and far-sighted. With its growing importance as the metropolis of North Malaysia, with the Universiti Sains Malaysia and its School of biological Sciences and School of Pharmaceutical Sciences as the nucleus – where the teaching already exists of many of the basic medical disciplines such a Physiology and Biophysics, Microbiology, Biochemistry, Parasitology, Histology, Pharmacology,

Pharmaceutical Chemistry and Pharmacy – and with its well established hospital, Pulau Pinang would appear to be the logical choice as the site of the Third Medical School. This medical school could set a lead in this part of the world by establishing, among others, a Department of General Practice.

Doctors and Dispensing

Frequently, there is controversy in the press relating to medical matters. The latest issue was on who should dispense medicine – the doctor or the pharmacist? To claim that *prescribing* medicine to the sick by the doctor is a colonial trait is too frivolous to deserve comment.

With modern technique of factory-produced packed medicine, dispensing is no longer the complicated process that once it was and does not now call for expertise.

In changing the present system I cannot see the advantage to the sick; in fact, any change will result in considerable inconvenience to the patient, having to seek a pharmacist after consulting a doctor. And, certainly he will have to foot a higher medical bill, having to pay for two separate services.

With all our goodwill towards the pharmacists, we doctors, surely, cannot relegate our responsibility for our patients or surrender our right to dispense.

References

1. "The Future General Practitioner" (1972) The Royal College of General Practitioners.
2. Hunt, John H. "The Renaissance of General Practice" Supplement Number 4 Volume 22, 1972, The Journal of the Royal College of General Practitioners.
3. Fry, John (1966); "Medicine in Three Societies".

Modern Aspects of Psychiatric Day Care*

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Introduction

THE BRITISH TERM, social psychiatry is synonymous with the American term community psychiatry. These terms emerge with the socio-cultural theory of mental illness. This theory, while recognizing aspects of somatic and hereditary theories of mental illness, emphasizes the influences of environments, culture and education rather than bodily trait alone. (Caplan and Caplan, 1967). Theory influences the development of new programmes. Jones (1962) and Clark (1965) described the therapeutic community or milieu therapy. Here interpersonal relationship and opportunities for increased freedom and responsibility for the psychiatric patients, form important parts of the treatment regime. The psychiatrist and his therapeutic team of trained nurses, occupational therapists, psychologists and social workers, participate in therapeutic interaction with the patients.

Introduction of chemotherapy facilitates the setting up of Day Hospitals or Day Care Centres for the management of patients in therapeutic milieu. These multiplied in Britain and United States (Farndale, 1961, Zwerling, 1966 and Bierer, 1969). In late 1960's Hospital Bahagia, with the Lutheran Church, Ipoh, and subsequently the Perak Society for Promotion of Mental Health, with the financial grant from the Social Welfare Department, initiated the first Day Care centre for psychiatric patients in Malaysia. The Psychological Medicine Unit, University Hospital, Kuala Lumpur opened a Psychiatric Day Care Centre in December, 1971. Day Care Centres are envisioned in the Second Malaysia Plan for Mental Health (Haq).

*Based on a speech delivered on 20th May, 1973 at a Seminar on Community and Mental Health, organized by the Perak Society for the Promotion of Mental Health.

Objective of this paper

This paper describes the functions, principles, methods and techniques involved in the management of selected patients in Psychiatric Day Care. Hopefully, interest will be stimulated in better understanding and utilization of this modality of treatment.

Functions of a Psychiatric Day Centre

Morrice (1973) mentioned the following functions: (1) Treatment of patients on day basis who would otherwise require hospital admission or very frequent out-patients visits. (2) Family involvement was recognized as important. (3) A number of patients, mainly in the older age range require support and rehabilitation rather than active treatment. Some respond to simple encouragement and social interaction.

General Principles of Psychiatric Day Care

A day centre alters the environment of a patient during a significant portion of his daily life and yet enables him to return home at night and during weekends so that he can continue interacting with his family. The process involves presenting them with relevant life situations, and in knowingly and systematically applying whatever psychological techniques are available to modify whatever maladjusted behaviour they display. (Meltzoff and Blumenthal, 1966).

The setting must offer a wide variety of psychosocial stimulus and situations to increase the chances of eliciting relevant behaviour from different individuals. This will require activities with a spread of psychological characteristics, and prototypes of real life situations.

The types of characteristics fit into examples of such dichotomies as solitary – social, self-initiated – assigned, active, – passive, verbal – non-verbal, intellectual – non-intellectual, gross-motoric – fine motoric and people-orientated – project-orientated.

Day patients are on their own and must plan for themselves and regulate their own affairs. In the capsule community represented by the treatment unit every opportunity should be given for self-determination. Patients should be given this responsibility in increasing doses when they can handle it.

The programmes and activities should adhere to a principle of realism if we are to facilitate learning and foster generalization.

A unit should be small enough in physical size and case load so that no individual is lost from view and all are well known to each other and to the staff. An atmosphere of intimacy and cohesiveness is desirable to facilitate programming, promote a feeling of unity and belongingness, and permit the carrying out of treatment plans for each individual.

Treatment Methods

They include individual, family and group psychotherapy, occupational therapy, recreational therapy, art therapy, music therapy, psychodrama, educational therapy, social case work, work therapy, chemotherapy and vocational counselling.

Underlying most of the therapeutic methods that have been cited are a number of very specific techniques of modifying human behaviour. Most of these techniques can be applied by any of a variety of trained staff, whether they be psychiatrists, psychologists, social workers, occupational therapists, nurses or others.

Any technique as well as any activity can be beneficial, inconsequential or damaging, depending upon how and when it is used.

Treatment Techniques

Differences in arrangements, timing and emphasis give distinctive characteristics to the various treatment techniques. None of these techniques are specific recipies for any particular behaviour. Use of the appropriate technique at the appropriate time for appropriate behaviour constitutes the expert skill in therapeutic intervention. The following techniques, with examples, are not mutually exclusive and more than one can be applied around the same activity.

1. *Support :* e.g. a patient felt that she couldn't make a beautiful paper flower. An occupational therapist assured her that she could and encouraged her to proceed.
2. *Direction & Guidance :* e.g. a patient was told that he would look brighter if he shaved more frequently. A few female patients were instructed on beauty care of their facial appearance. They were told directly what were the expected behaviour and outcome.
3. *Environmental manipulation :* e.g. an adolescent who quarrelled frequently with her equally nagging mother was encouraged to spend some time in Day Care as well as staying temporarily with her married sister. Her father too was relieved that there would be peace at home.
4. *Selective positive reinforcement :* e.g. staff and patients complimented a patient whenever he dressed appropriately and came neatly groomed to the Day care.
5. *Desensitization and relearning :* e.g. a patient became very anxious whenever she disagreed openly with her husband. In a joint-session with the patient and her husband, the husband assured her that no harm would occur to him nor would he assault her when she expressed her disagreement appropriately. She became less anxious when she expressed her views. She had also learned that her somatic discomfort decreased when she had a chance to clarify what her husband said and expressed her feelings.
6. *Extinction :* e.g. Undesirable behaviour may be ignored and finally stopped.
7. *Redirection and Channelling :* e.g. a delinquent was noticed to kick at a junior staff after having been reprimanded by a doctor for being uncooperative and keeping mum during a group session. The casual relationship was pointed out to him. As a means to channel his anger constructively, he was encouraged to draw the feature of the doctor on a punch-bag so that he could hit it. When this was threatening to him, he may pound some clay.

8. *Role Playing:* e.g. Interpersonal relationship, the role-relating behaviour of staff and patient, father and son, employer and employee, etc. became clearer to staff and patients when they participate actively or passively in role playing. For example, an indecisive and helpless wife, as portrayed by a patient, might be very revealing to a particular patient who 'couldn't understand' why her husband was so angry and frustrated with her.

9. *Catharsis:* e.g. A filial, soft-spoken girl from a conservative family with a dominant mother cried her heart out when an empathetic staff allowed her to narrate a particular episode. She felt relieved.

10. Interpretation is used minimally. The staff is aware that he may project the wrong motive behind a patient's action. At appropriate times, a patient who wanted to go to the toilet whenever problems of sex were discussed in a group was told of his possible discomfort about sex.

Problems and limitations

Day care management has brought hope and produced some results. But it is not the magic wand for dealing with all psychiatric problems. Selection of patients is important for its success. The acute psychotic and suicidal patients need a secured in-patient milieu. The aggressive, acting out patients tax the good-will and energy of staff and patients. (Teoh, et al, 1973) The therapeutic milieu needs external reinforcement and support, in the forms of sheltered work-shop, work therapy where the patients will be financially rewarded. This will involve people beyond the therapeutic community.

Summary

Emergence of the sociocultural theory of mental illness and introduction of chemotherapy enable the setting up of a special type of therapeutic milieu, namely day care centre or day hospital. This paper reviews the functions, principles, methods and techniques involved. Via the different types of activities and the therapeutic interaction of staff and patients, selected psychiatric patients learn new behaviour patterns in a day centre while maintaining family and community contact.

Acknowledgement:

My sincere thanks to the following: Professor E. S. Tan and Associate Professor J. I. Teoh for their enlightened leadership, the staff of the Centre for their co-operation and Dr. Eric Anders for his valuable weekly meeting with me in connection with the Centre, February 1972-February, 1973.

References

1. Bierer, Joshua (1969) Innovations in Social Psychiatry. London: The Avenue Publishing Company.
2. Caplan, G. and Caplan, R. B. (1967) Development of Community Psychiatry Concepts in Comprehensive Textbook of Psychiatry, Freedman, A. M. and Kaplan H. I. (Ed.) Baltimore, Williams & Wilkins Co.
3. Clark D. H. (1965) The Therapeutic Community – Concept, Practice and Future Brit. J. Psychiat. III: 947-954.
4. Farndale, J. (1961) "The Day Hospital Movement in Great Britain", Oxford, Pergamon Press Ltd.
5. Haq, S. M., Personal Communication.
6. Jones, Maxwell (1962) Social Psychiatry. Springfield, Illinois: Charles C. Thomas.
7. Meltzoff, J. and Blumenthal, R. L. (1965) The Day Treatment Centre. Principles, Application and Evaluation. Springfield, Illinois: Charles C. Thomas
8. Morrice, J. K. W. (1973) A Day Hospital's Function in a Mental Health Service. Brit. J. Psychiat. 122: 307-314.
9. Teoh, C. L, Woon, T. H., and Sim, S. (In 1973) Some clinical Problems of a Psychiatric Day Care Centre. Med. J. Malaysia, 28:80-83.
10. Zwerling, 1. (1966) The Psychiatric Day Hospital in American Handbook of Psychiatry. New York Basic Books, Inc. Vol. III, Pg. 563-576.

Some Psychosocial Characteristics of Sexual Reassignment Requestors in Singapore – A Report on 23 Cases

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Synopsis

A PSYCHOSOCIAL STUDY OF 23 unmarried patients (21 males, 2 females) requesting sexual reassignment surgery shows that 82.6% were Chinese, 8.7% Indians, and 8.7% Eurasians. The mode age was 22 years. Most were engaged in occupations deemed appropriate for the opposite gender. Except 2 cases all the males have had homosexual relationship in the receptor role. One female was lesbian. All denied any heterosexual experience. Most had cross-dressed either fully, partially or occasionally. 13 males have developed feminine breasts. The majority have at least secondary education. Birth complication, certain birth orders, parental separation/death, adoption, etc. were noted but the patterns were still unclear for drawing definite conclusions. As a group, psychological testing suggested they were of "bright-normal" intelligence. Compared with Singapore Medical Students they were significantly unstable in emotionality and needed to project a socially desirable image. Depression was generally noted. The male patients displayed strong feminine interests and adherence to female stereotype.

Introduction

Sexual reassignment surgery was first performed in Singapore on 29th February, 1971. During 1971 and 1972, there were 23 known cases requesting for sex change or "gender transmutation" (Kubie & Mackie, 1968). Six of these have since completed surgery.

The purpose of this report is to present some psychosocial data obtained during the course of psychiatric and psychological evaluation of these requestors. Where possible, some attempts will be made to compare them with data obtained from other studies.

The psychiatric and psychological examinations were meant to determine that any degree of cross-gender identification (or trans-sexualism) is relatively irreversible and not due to psychosis; and whether the requestor's physical appearance, personality traits, interests, behaviour, etc. are sufficiently feminine/masculine so that he can in fact function as a member of the opposite sex. The requestor must also be motivated, sufficiently educated and intelligent to understand the nature and purpose of the operation and any possible subsequent socio-cultural crisis. (Pauly, 1968; Knorr, Wolf & Meyer, 1968).

Method

The 23 patients represented all the known registered cases who seek sexual reassignment and were on file at Woodbridge Hospital between 1971 and 1972. The psychosocial data for this report were abstracted from the files and represented only a fraction of the total amount of information gathered.

All patients were given a medical and psychiatric examination. With the exception of 7 patients, all the others were interviewed and administered a battery of standard psychological tests (viz. Raven Progressive Matrices, Eysenck Personality Inventory Forms A & B, Minnesota Multiphasic Personality Inventory, and Thematic Apperception Test) by the writers. Also included were 60 selected items from the Masculinity-Femininity Scale of the Strong

Vocational Interest Blank. The 60 items were organised into a modified Masculinity-Femininity Scale which allowed for separate sub-scores on Masculinity and Femininity.

It must be pointed out that no valid psychological tests are available to afford any direct measurement of the individual's psychosexual status or gender identity. (Money & Primrose, 1968).

Results and Discussion

Sex

Of the 23 requestors only 2 were female thus giving a ratio of about 10 or 11 males to 1 female. This is two to three times the ratio reported by Hoopes, Knoor & Wolf (1968) who found a ratio of 3 or 4 males to 1 female at the Gender Identity Clinic of the Johns Hopkins Hospital. In view of the preponderance of males to females, Kubie & Mackie (1968) have raised the implications for psychoanalytic theory with regard to penis envy and castration anxiety etc.

Age

The ages ranged from 18 to 33 with a mean of 23.04 years (S.D. = 4.01). The mode of 22 years appears to be very similar with the findings of Hoopes, Knoor & Wolf (1968) who found the peak incidence between 22 years (male) and 23 years (female). However, in their study, the age range was from 14 to 66 years (male) and 16 to 57 years (female).

Ethnic Group

There were 19 Chinese (82.6%), 2 Indians (8.7%) and 2 Eurasians (8.7%). No Malay requestors were registered. For the purpose of simple comparison, the Woodbridge Hospital psychiatric patient population as on December 1972 is as follows: 87.6% Chinese, 5.2% Indians, 5.7% Malays and 1.5% Eurasians/Europeans. It may also be of interest to note that multiracial Singapore has 74.5% Chinese, 14.5% Malays, 8% Indians and 3% Eurasians/Europeans.

Although no Malay requestors were registered in this series, the authors are aware of quite a number of Malay transsexuals who function as impersonated male prostitutes in the Singapore Bugis Street area, a place well-known for such activities. Nevertheless, the Malays as a group are both under-represented in this study as well as in the psychiatric patient population while the Chinese appear to be over-represented in both areas.

It is realised that in such a small series these findings might not be of any statistical significance. The authors are not able at this stage to delineate any known cultural factors relating to gender role to account for these findings.

Occupation

Table I gives the last known occupations of the 23 requestors.

Table I
Occupations of the Requestors

Male		Female	
Occupation	No.	Occupation	No.
Impersonated Male Prostitute	6	Waitress	1
Library Assistant	1	Car Salesman	1
Dispensing Assistant	1		
Dressmaker	1		
Student	2		
Denture Maker	1		
Telephone Operator	1		
Sales Supervisor	1		
Office Boy	1		
Dancer (Female)	1		
Female Model	1		
National Serviceman (Discharged)	1		
Domestic Servant	1		
Artist	2		
TOTAL	21		2 = 23

It is noted that most of the males and one of the females were engaged in occupations that might be considered as either feminine or masculine respectively. Unlike Hoopes, Knorr & Wolf's (1968) findings of an impressive number of professionals (e.g. college professor, physician, attorney, priest, etc.) none of our cases hold professional positions.

Marital Status & Sexual Behaviour

All the requestors in this series were single. Hoopes, Knorr & Wolf (1968) found 49% (male) and 54% (female) were single in their series.

All the patients in this study denied heterosexual relationship. With the exception of 2 cases, all the male patients have had homosexual relationship and choosing the receptor role. One of the females was lesbian. The reported age of first homosexual

intercourse ranged from 10 to 27 years (mode = 17 yrs, mean = 16.09 yrs). Most reported pre-adolescent and adolescent masturbatory activities.

Except for 6 male cases, all the others have steady lovers who were prepared to marry them (patients) following gender reassignment. Most of them expressed a desire to adopt children after their marriage.

Public Dressing & Appearance

At the time of the interview, 13 were fully cross-dressed, 3 partially, 4 occasionally and 3 denied ever having done so. When cross-dressing, cosmetics and wigs were often used. 12 of the males have developed feminine breasts via estrogen, and 1 by silicone. They also grew long feminine hair. The 2 females attempted to conceal their breasts by means of T-Shirt and kept their hair short.

The reported age of first experience at cross-dressing ranged from 6 to 28 years (mode = 14 yrs., mean = 12.15 yrs.) and was mainly self-initiated. Most of them of course claimed that their desire to be of the opposite gender was from earliest recollection.

Educational Level

12 patients have obtained their General Certificate of Education (GCE), 2 have completed Higher School Certificate (HSC), and 1 reached up to tertiary level. (See Table II).

Table II
Educational Level

Level	No.
Primary	3
Secondary	5
G.C.E.	12
H.S.C.	2
Tertiary	1
TOTAL =	23

16 were from the English medium schools and 7 from Chinese schools.

Birth Complication, Birth Order & Siblings

Of the 23 cases, 17 reported no birth complication. 4 were born premature, 1 by forcep delivery, and the mother of 1 case was ill during delivery and subsequently died within one month.

In this series, 8 patients were the youngest while 7 (including 1 only child) were the eldest. There were 5 who occupied 3rd ordinal position. The remaining 3 were 5th, 8th and 11th.

The number of children from each family ranged from 1 to 16 (mean = 5.3). With the exception of 2 instances, there was a fair balance of male and female siblings in the respective families. As a total, there were 60 male and 62 female siblings.

Parental Separation, Death & Adoption

10 patients experienced separation (e.g. divorce, desertion, adoption) or death of one or both parents prior to requesting sexual reassignment. 4 lost their father (3 through death), 2 lost their mother (death) and 4 lost both parents (combination of death/separation). The patients' age at the time of parental separation or death ranged from 1 month to 25 years.

4 were brought up by adoptive parents following death or separation from their natural parent/s. 3 were brought up by grandparents. All patients expressed preference for mother or mother surrogate with the exception of 2 who stated preference for both parents. This strong identification with mother figure is consistent with the findings of other studies (Pauly, 1968).

However, the patterns of birth and family structure etc. of these patients are still too unclear to lend any firm conclusion as to whether these constitute significant determinants to their requesting sex change.

Psychological Testing

In the absence of any relevant published psychological test data in Singapore on appropriate psychiatric groups, the writers have to resort to Medical Students as a control group.

Intellectually, the requestors' Raven Progressive Matrices raw scores ranged from 41 to 56 (i.e. average to superior range). The mean score for the group (N = 16) was 48.00 (S.D. = 5.40) which is at the "bright normal" level. The comparable IQ range "bright normal" level. The comparable IQ range is about 108 – 119. As a point of comparison, the mean score of Singapore Medical Students1 (N = 91) on the same test is 55.61 (S.D. = 2.62), IQ range = 125 to 135+. (Long, 1973).

Table III presents the Eysenck Personality Inventory scores of 15 male and 1 female requestors (mean age = 23.56 yrs.) and an attempt at comparison with the scores obtained by Singapore Medical Students2 (mean age = 22.84 yrs.) (Long, 1973), and a normal British population (Eysenck & Eysenck, 1964).

Table III
E.P.I. Scores of Requestors, S'pore Medical Students and Normal British Population

	n		Form A E	Form A N	Form A L	Form B E	Form B N	Form B L	Forms A & B E	Forms A & B N	Forms A & B L
Requestors	16	$\bar{X}$ =	9.706	13.412	3.765	11.750	10.125	3.063	20.938	23.688	6.875
		SD. =	4.058	4.017	1.480	1.949	4.924	1.340	4.892	8.754	2.446
Medical Students	91	$\bar{X}$ =	10.318	8.670	2.565	12.695	9.428	1.274	23.252	18.044	3.593
		SD. =	3.851	5.051	1.637	3.236	5.256	1.334	6.760	9.638	2.362
British Normal Population	2,000	$\bar{X}$ =	12.070	9.065	—	14.148	10.523	—	26.218	19.588	—
		SD. =	4.370	4.783	—	3.920	4.708	—	7.771	9.031	—

Table IV
M.M.P.I. Standard Scores of Requestors and University Students (Men)

	Univ. of S'pore Men Students (N = 200)		Sex Change Requestors (N = 15)			
	X	S.D.	$\bar{X}$	(f)	S.D.	t
L	53.92	8.22	55.00	(46)	5.06	1.71
F	57.34	8.68	67.27	(62)	10.17	4.22***
K	55.46	8.73	51.33	(44)	9.67	1.75
Hs*	52.54	9.18	39.67	(56)	12.08	5.12***
D	59.98	12.41	77.60	(69)	14.32	5.25***
Hy	57.26	8.92	57.00	(64)	12.82	0.11
Pd*	55.07	12.04	59.27	(66)	11.74	1.30
Mf	59.54	8.86	84.00	(51)	6.75	10.46***
Pa	54.31	9.66	64.73	(62)	12.41	3.95***
Pt*	53.15	10.37	45.40	(61)	15.68	2.68**
Sc*	55.10	10.75	57.13	(61)	17.78	0.67
Ma*	57.75	10.29	57.27	(60)	10.09	0.18
Si	53.15	8.70	60.47	(73)	6.33	3.19**

*Without K corrections
**$p < 0.01$
***$p < 0.001$

Compared with Medical Students, the requestors are significantly ($t = 2.188$, $p < 0.05$) unstable in emotionality and have a stronger need ($t = 5.099$, $p < 0.001$) to project a socially desirable image.

Table IV sets out the M.M.P.I. scores of 15 male requestors and a comparison with the scores registered by University of Singapore (men) Students[3] (Kadri, 1971). The lone female patient's scores are given in parentheses alongside that of the 15 males.

Compared with University of Singapore students, the requestors show significantly higher scores on the F, D, Mf, Pa and Si scales, and significantly lower Hs and Pt scores. It is of interest to note that an exceptionally high - value was obtained on the Mf (i.e. Masculinity – Femininity) scale.

On the M.M.I.P., any score of 70 or above is generally taken as the cutoff point for the identification of pathological deviations. (Anastasi, 1968, 0. 443). It is observed that the requestors' outstanding deviant scores lie in the Mf and D scales, thus revealing an abnormally high degree of "femininity" and emotional disturbance of a depressive nature.

Interpretation of projective materials obtained through the Thematic Apperception Test shows that 8 patients had considerable underlying depression and in three instances themes of suicide were present. There were also indications of conflict in sexual identification in 4 patients, but generally female identifications were not significantly shown up on the projective test.

On the whole, unsatisfactory resolutions of psychological conflict situations were noted. Only 1 patient provided adequate adjustment response with regard to outcome. The others had themes of unfulfilled dependency needs and the solutions projected were unrealistic. One patient showed anxiety about personal loss, particularly loss of his own body parts, whereas another was concerned with loss of loved objects. Two other patients were pre-occupied with their "physical deformity" and hence had very poor self-concepts.

On the modified Masculinity-Femininity Scale of the Strong Vocational Interest Balnk, the 15 male requestors obtained significantly high ($t = 23.090$, $p < 0.001$) Femininity score ($X = 47.33$, S.D. $= 4.59$) than Masculinity score ($X = 8.00$, S.D. $= 4.74$) thus showing a high degree of feminine interests and adherence to female stereotype.

As for the lone female requestor, her Masculinity score was 26 while her Femininity score was 16.

Acknowledgements

We record our special thanks to Dr. Lee Siew Boon and Dr. Tsoi Wing Foo for their pscyhiatric examination of the patients in this study. The latter is also thanked as Medical Superintendent, Woodbridge Hospital, for his permission to publish this article. The assistance of Prof. S. S. Ratnam, Mr. C. Y. Tye, Miss S. K. Tan, Mr. D. Oon and Dr. H. L. Ng is also duly acknowledged.

References

Anastasi, A (1968) *Psychological Testing* 3rd ed London: The Macmillan Company.

Eysenck, H. J. and Eysenck, S. B. G. (1964) *Manual of the Eysenck Personality Inventory*. London: University of London Press.

Hoopes, J. E., Knorr, N. J., and Wolf, S. R. (1968) 'Transexualism: Considerations Regarding Sexual Reassignment.' *Journal of Nervous and Mental Diseasr*, 147, 510-516.

Kadri, Z. N. (1971) 'The Use of the MMPI for Personality Study of Singapore Students'. *British Journal of Social and Clinical Psychology*, 10, 90-91.

Knorr, N. J., Wolf, S. R. and Meyer, E. (1968). 'The Transsexual's Request for Surgery.' *Journal of Nervous and Mental Disease*, 147, 517-524.

Kubie, L. S. and Mackie, J. B. (1968) 'Critical Issues Raised by Operations for Gender Transmutation.' *Journal of Nervous and Mental Disease*, 147, 431-442.

Long, F. Y. (1973) 'Some Intelligence and Personality Data of Singapore Medical Students.' *Singapore Medical Journal*, 14, 34-36.

Money, J. and Primrose, C. (1968). 'Sexual Dimorphism and Dissociation in the Psychology of Male Transsexuals.' *Journal of Nervous and Mental Disease*, 147, 472-486.

Pauly, I. B. (1968). 'The Current Status of the Change of Sex Operation' *Journal of Nervous and Mental Disease*. 147, 460-471.

Ratnam, S. S. Personal Communication.

Biochemical Assessment of the Nutritional Status of Pre-School Children in Kuala Trengganu

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Background and Purpose

WEST MALAYSIA launched its first applied nutrition programme on a pilot scale in August 1969, at Telok Datok, a rural district about 60 road miles south-west of the capital city of Kuala Lumpur.

This followed a baseline nutrition survey conducted some months earlier which covered clinical, anthropometric, biochemical and dietary assessments and the determination of the prevalence of stool and malaria parasites (Chong, 1970 & 1972; Jackson, 1970).

Action programmes aimed at raising the levels of community food production and its nutritional status have since been undertaken by various Government ministries including health, agriculture and education with the Ministry of National and Rural Development which receives support of the project from UNICEF, acting as the co-ordinating body.

The obvious and visible benefits of the above types of programmes to community health have prompted the authorities to consider extending similar activities to other rural parts of the country.

Subsequently, the district of Bukit Payong near the east coast town of Kuala Trengganu was selected for implementation of another applied nutrition programme. It must be pointed out here that its choice overruled that of a neighbouring inland district in Ulu Trengganu about 40-50 road miles south (nearest town, Kuala Berang), where moderately severe nutritional and health problems have been detected (McKay et al., 1971; Chong et al., 1972). On this basis, it would have seemed logical to make this district the next target area for an applied nutrition programme. However due to its poor accessibility including cut-off by floods during the annual north east monsoons and the lack of organised infra-structures deemed necessary for the successful implementation of applied nutritional activities, a neighbouring district, the site of the present survey was favoured instead.

The purpose of this paper is to report the results of a nutrition survey carried out on 399 Malay pre-school children from 26 villages in the proposed applied project area of Bukit Payong near the town of Kuala Trengganu during 1st-17th Sept. 1972, (see Fig. 1).

Population and Sampling

The area consisted of 26 kampongs (villages) with a population of 13,373 who were predominantly Malay in origin and living in 3,363 houses. Padi planting and rubber tapping were the principal means of livelihood. The number of pre-school children under 7 years was 2323 or 17.4% of the total population. The sample under survey included 399 children of both sexes below school age from 365 families comprising 17% of the total pre-school population. Their mean age was 3 years, with a range from 2 months to 6 years and 11 months.

Scope of Present Report

This report deals specifically with the biochemical aspect of the survey together with the prevalence of malaria and stool parasites. However, cognizant of the fact that a balanced account of

Fig. 1
Map of West Malaysia showing locality of survey.

the survey cannot be made entirely on these grounds, the text also makes reference to results of anthropometric measurements and abbreviated clinical examinations (the details of which are to be reported separately by Miss I. Coenigracht WHO consultant nutritionist) conducted simultaneously.

Methods

Specimens: Blood was obtained by finger prick. Usually it was possible to collect 5 heparinized capillary tubes from every child. (Clay Adams micro-capillary heparinized tubes; for haemoglobin determinations, one 0.02 ml "breakoff" heparinized tubes was used, Harshaw Chemicals Ltd., England.)

A thick blood film was also prepared on a microscopic slide for examination of malarial parasites.

Urine was collected into 30 ml capacity screw-capped bottles containing toluene and a few drops of concentracted hydrochloric acid as preservatives.

Stool specimens were collected similarly into screw-capped bottles containing polyvinyl alcohol. Specimens were available only from 50 children. The small number was due to discontinuation of collection owing to an isolated case of diarrhoea that was thought to be cholera.

Plasma was obtained by centrifuging blood specimens soon after collection. The former and the urine samples were stored in iced-containers for between 4-6 days and thereafter despatched to the laboratory where they were stored at 4°C and –15°C respectively until analysed.

All biochemical determinations were made as soon as the samples reached the base laboratory, beginning with plasma vitamin A determinations and followed by the other plasma parameters. Urine determinations were done soon afterwards. Despite these precautions and sense of priority, the last batch of urine analyses could only be completed after 4 months of storage at –15°C.

Laboratory and Biochemical techniques: Microhaematocrit was determined on an "International" microhaematocrit centrifuge while haemoglobin was estimated by the Cyanmethaemoglobin procedure on a Coleman Jr. II spectrophotometer. The foregoing two determinations were conducted in the field and where electricity was not available, power was supplied by a Honda generator.

Plasma amino acids ratio (the ratio of non-essential amino acids to essential amino acids) was done by the paper chromatographic method of Whitehead (1964) as modified by Prasana et al. (1971).

Plasma albumin was determined by the bromcresol green dye method (Doumas et al,. 1971) using reconstituted commercial lyophilized sera (Monitrol, Dade) of known albumin content as standards instead of the recommended human albumin (Sigma) which gave unrealistically elevated plasma albumin values in our hands.

Urinary urea was determined by the diacetylmonoxime method (Wootton, 1964) and sulphate by the colorimetric procedure of Wainer and Koch (1962) which is based on the formation of colour between chloranilate and sulphate ions. The latter method employed 1 ml of urine and was found to correlate very closely (Ann. Report, IMR, 1971) with the macro-gravimetric procedure of Harding et al. (1967) requiring 50 ml urine.

Urinary hydroxyproline was estimated by the procedure of Kivirikko et al. (1967) and urinary creatinine by the picrate method as described in the ICNND Nutrition Manual (1963).

Plasma vitamin A was determined by the ultra micro-procedure of Neeld and Pearson (1963) using 50 ul of plasma. Readings were taken on a Coleman 44 spectrophotometer with an ultra-micro assembly and a flow-through cell. The use of the latter resulted in the loss of samples after taking readings; it was thus not possible to include a prior determination for carotene and allowance for its correction. The "vitamin A" values presented are therefore at best a crude indicator of the blood levels of this nutrient.

Parasite Studies: Malarial parasites were examined on a thick blood film (Giemsa stain). Helminth ova and protozoa in the stool were examined by the technique of direct smear on single specimens. (We wish to record here our grateful thanks to the Division of Medical Entomology and the Division of Parasitology of this Institute for conducting these examinations.)

Results

Detailed biochemical characteristics, their inter-relationships, association with anthropometric parameters and the parasite prevalence study are tabulated as follows:–

Table 1 portrays the percentage of children who were deemed to possess "unsatisfactory biochemical indices". Pronouncement of the latter was based on any one of the following criteria:–

Table 1
Number and percentage of pre-school children with unsatisfactory biochemical indices

	No. of children	% of total
Haematocrit < 33%	36/399	9
Haemoglobin < 11 g%	93/399	23
Plasma albumin < 3.5 g%	14/363	4
Plasma amino acid ratio > 2.5	27/101	27
Plasma vitamin A < 25 μg %	46/244	20
Urinary urea N/creatinine < 5.0	59/338	17
Urinary sulphate S/creatinine < 0.55	80/325	25
Urinary hydroxyproline index < 1.5	67/309	22

Anaemia was considered to exist when the haematocrit was less than 33% or when the haemoglobin was less than 11 g% (World Health Organisation, 1972).

Plasma albumin of less than 3.5 g% was regarded as low (Interdepartmental Committee on Nutrition for National Defence, 1963).

Plasma amino acid ratio of greater than 2.5 was regarded to reflect the potential development of kwashiorkor (Prasana et al., 1971).

Urinary urea N/creatinine of less than 5.0 was taken to indicate a recent history of unsatisfactory intake of dietary proteins (Dugdale, 1964 & Arroyave, 1966) and similarly a ratio of less than 0.55 for urinary sulphate S/creatinine. The latter criterion was adopted arbitrarily from the regression equation $y = 11.1x - 0.85$; $r = 0.70$ obtained between urinary urea N/creatinine and urinary sulphate sulphate S/creatinine where y (urinary urea) was taken as 5.0 (see Fig. 2).

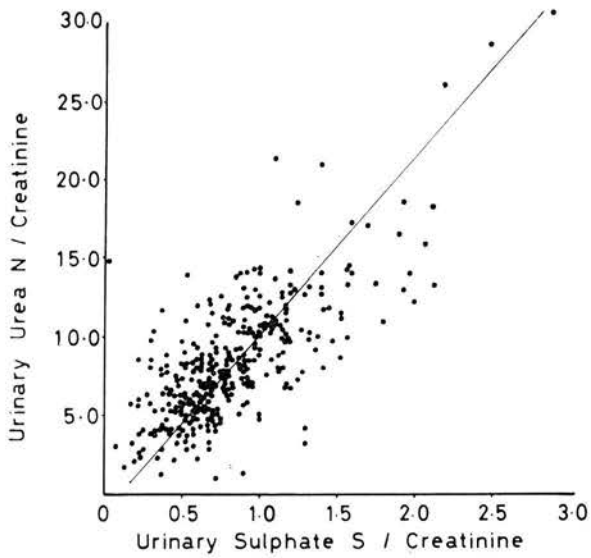

Fig. 2
The intercorrelation between urinary urea N/creatinine and urinary sulphate S/creatinine (random urine samples)
$y = 11.x + 0.85$; $r = 0.70$; $p < 0.001$

A hydroxyproline index of less than 1.5 was regarded as indicative of poor physical growth (Whitehead, 1965)

With particular reference to the present study, a plasma vitamin A of less than 25 ug % is regarded as low. The adoption of this slightly higher cut-off point is necessary as the vitamin A determination did not exclude the colour contribution due to carotene. In arriving at the foregoing guide for vitamin A, it was assumed that plasma carotene contributed

no more than the equivalent of 5 ug vitamin A, i.e. a plasma carotene level of no greater than 50 ug %. Such a correction appeared justifiable based on the known low carotene and vitamin A intakes of children in the neighbouring district of Ulu Trengganu (McKay, 1971; Chen, 1971).

Table 2 depicts the valid statistical correlations between biochemical and anthropometric measurements.

Table 3 shows the biochemical characteristics of children below and above 75% ideal weight. Ideal weight was computed from a nomogram on the basis of height, weight and age and 75% ideal weight has been suggested by McLaren (1972) as the cut-off point below which severe protein-calorie malnutrition is supposed to exist.

Table 4 shows the correlations between hydroxyproline index and % Ideal weight achievements.

Table 5 shows the intercorrelations of some biochemical parameters.

Table 4
The correlation of urinary hydroxyproline index with % ideal weight achievements (up to 5 years old only)

% Ideal weight	Mean hydroxyproline index
65 – 74% ideal weight	1.6 *(22)
75 – 84% ideal weight	1.8 (100)
85 – 94% ideal weight	2.2 (75)
> 95% ideal weight	2.4 (32)

*Figures in parentheses refer to the number of individuals

Table 6 shows differential detection of protein and calorie deficiencies – children with poor hydroxyproline indices possessing concurrent high (unsatisfactory) or low (satisfactory) plasma amino acid ratios.

Tables 7 shows the prevalence of malarial and stool parasites.

Table 8 shows the means and standard deviations of the various biochemical parameters according to age group. Overall means and standard deviations are also included.

Table 2
Some statistically valid correlations between anthropometric measurements and biochemical indicators

% Ideal weight	vs.	packed cell volume	$r = 0.35 : p < 0.001$
% Ideal weight	vs.	haemoglobin	$r = 0.25 : p < 0.001$
% Ideal weight	vs.	urine hydroxyproline index	$r = 0.40 : p < 0.001$
Mid-arm circumference	vs.	packed cell volume	$r = 0.19 : p < 0.05$
Mid-arm circumference	vs.	haemoglobin	$r = 0.27 : p < 0.001$
Mid-arm circumference	vs.	plasma albumin	$r = 0.23 : p < 0.001$
Triceps skinfold	vs.	plasma albumin	$r = 0.15 : p < 0.05$

Table 3
Biochemical characteristics of children below or above 75% ideal weight (up to 5 years old only)

	No. of Children	PCV %	HB g%	Plasma Albumin g%	Urine -OH proline index	Urine Urea N/ creatinine	Urine SO_4 S/ creatinine
Children *75% ideal weight or below	39	36.8	11.36	3.95	1.57	8.7	0.89
Children above 75% ideal wight	265	37.0	11.84	4.01	2.10	8.5	0.84
probability		n.s.	$p < 0.05$	n.s.	$p < 0.01$	n.s.	n.s.

*% Ideal weight is computed from a nomogram on the basis of height, weight and age of the child (17). Severe protein-calorie malnutrition is deemed to exist when ideal weight is below 75%.

Table 5
Intercorrelation of some biochemical characteristics

Hb	vs.	pcv	$r = 0.39 : p < 0.001$
Urine -OH proline index	vs.	plasma albumin	$r = 0.29 : p < 0.001$
Urine -OH proline index	vs.	urine urea N/creatinine	$r = 0.47 : p < 0.001$
Urine -OH proline index	vs.	urine SO_4 S/creatinine	$r = 0.46 : 0 < 0.001$
Urine urea *N* creatinine	vs.	urine SO_4 S/creatinine	$r = 0.70 : p < 0.001$

Table 6
Differential detection of protein or calorie deficiency on the basis of hydroxyproline index, plasma amino acid ratio and plasma albumin

Children with Hydroxyproline index of < 1.5	Plasma amino acid ratio < 2.5	> 2.5
1.2	—	2.8 (4.1)*
0.5	—	3.0 (4.0)
1.0	—	2.7 (4.0)
0.6	—	2.7 (4.3)
1.1	—	2.5 (3.8)
1.4	—	2.6 (3.8)
1.4	—	2.8 (4.4)
1.3	2.1 (4.1)	—
0.3	1.6 (3.2)	—
1.3	2.4 (4.0)	—
0.8	2.0 (4.0)	—
1.2	1.0 (4.1)	—
0.7	1.7 (3.6)	—
1.3	2.0 (4.0)	—
1.0	2.1 (3.8)	—
1.2	2.4 (4.0)	—
1.3	1.9 (3.9)	—
1.1	2.1 (3,7)	—
1.2	2.1 (4.0)	—
1.4	2.1 (4.2)	—
1.0	1.9 (3·7)	—
1.2	2.1 (3.7)	—
0.7	2.1 (3.9)	—
Mean	2.0 (3.9)	2.7 (4.1)

*Figures in parentheses refer to plasma albumin in g per 100 ml.

Table 7
***Prevalence of parasites**

	No. of children infected	Percent of children infected
Malaria parasites	5/399	1%
Ascaris only	10/56	20%
Trichuris only	6/56	9%
Hookworm only	Nil	Nil
Ascaris and trichuris	23/56	41%
Hookworm, ascaris and trichuris	1/56	1%
Stools negative for helminth ova	17/56	30%

*(All specimens were negative for protozoa)

Discussion

Recent years have witnessed the development of numerous biochemical tests aimed at assessing the nutritional status of communities (Interdepartmental Committee on Nutrition for National Defence, 1963; Committee Report, 1970).

Many of these tests have been designed to detect early or sub-clinical protein-calorie malnutrition, the severe forms of which still contribute largely to the high mortality of children between 1 to 4 years old of technologically backward countries.

Table 8
Biochemical characteristics according to age groups (mean values and standard deviations)

Age in years	PCV	Hb g%	Plasma albumin g%	Plasma amino acid ratio	Urine sulphate *S* creatinine	Urine urea *N* creatinine	Urine -OH proline index	Palsma vitamin A ug %
0 – 0.99	33.3 ± 2.0	10.7 ± 1.0	3.9 ± 0.3	2.1 ± 0.4	0.82 ± 0.5	7.7 ± 3.4	2.5 ± 0.9	41 ± 17
1 – 1.99	36.5 ± 2.8	11.2 ± 1.3	4.0 ± 0.3	2.3 ± 0.4	0.82 ± 0.4	8.2 ± 2.3	1.9 ± 0.6	37 ± 12
2 – 2.99	38.4 ± 3.0	12.1 ± 1.1	4.0 ± 0.3	2.3 ± 0.5	0.99 ± 0.4	10.0 ± 4.7	2.0 ± 0.9	39 ± 16
3 – 3.99	37.7 ± 2.8	12.1 ± 1.3	4.1 ± 0.3	2.2 ± 0.3	0.83 ± 0.3	8.0 ± 2.8	1.8 ± 0.5	35 ± 16
4 – 4.99	37.3 ± 2.7	12.0 ± 1.1	4.0 ± 0.3	2.3 ± 0.4	0.78 ± 0.3	8.3 ± 3.8	1.8 ± 0.8	36 ± 20
5 – 5.99	37.7 ± 2.7	12.1 ± 1.1	4.0 ± 0.3	2.4 ± 0.3	0.92 ± 0.5	9.7 ± 6.2	2.3 ± 1.2	38 ± 11
6 – 6.99	37.9 ± 3.1	12.2 ± 1.5	3.9 ± 0.2	2.1 ± 0.2	0.76 ± 0.3	7.2 ± 2.5	2. 0± 0.6	37 ± 18
All age groups	36.9 ± 3.2 *(399)	11.8 ± 1.3 (399)	4.0 ± 0.3 (363)	2.3 ± 0.4 (101)	0.84 ± 0.4 (325)	8.5 ± 4.0 (388)	2.1 ± 0.9 (309)	38 ± 16 (244)

*Figure in parentheses refer to the number of specimens determined

Amongst such tests are the ratio of the non-essential to essential amino acids in plasma, the urinary excretion of hydroxyproline peptides, the ratio of urinary urea N to creatinine, the creatinine/height index and the ratio of urinary inorganic sulphate S to creatinine (Committee Report, 1970) Added to these is the recent innovation for the measurement of plasma albumin by dye binding which obviates the need for a separate total protein determination (Doumas et al., 1971).

Newer biochemical procedures designed to detect nutritional deficiencies other than that of proteins have also made their appearance. They include erythrocyte transketolase and glutathione reductase assays for thiamine and riboflavin nutriture respecitvely and the micro-spectrofluorometric assay of serum vitamin A. (Schouten et al, 1964; Sauberlich et al, 1972 & Selvaraj, 1970).

Used in conjunction with simple haematology, (haematocrit and haemoglobin determinations), the above battery of biochemical tests should yield invaluable and specific information on the nutritional status of a population particularly when considered in relation to data obtained by clinical examination and anthropometry.

The reasons why these tests have not found wider usage are that many of them are recent in origin and their usefulness remain to be evaluated. Besides, performance of these tests require a moderately specialized nutrition laboratory, the availability of trained personnel, equipment, resources and last, but not the least in importance, the accessibility of samples – blood and urine.

Although this laboratory has the potential to perform all the aforementioned tests, we were hampered mainly by the impracticability of obtaining venous blood specimens which would have allowed the complete range of the above tests to be attempted. This difficulty of obtaining venous blood samples necessitated blood collection by finger prick which narrowed down the range of tests that could be performed and restricted them only to those based on ultra-microprocedures. Similar difficulties however did not apply to urine collection.

Despite these limitations, the tests selected in this study were those known to be able to throw light on nutritional problems related to protein-calorie malnutrition, nutritional anaemia and xerophthalmia which are believed to be the major deficiency diseases amongst rural Malaysian children and children of city dwellers from the lower socio-economic strata.

On the present survey, the evidence presented in Table 1 indicates that 23% of the children may be regarded as anaemic on the basis of their low haemoglobin levels, 22% were retarded in physical growth judging from their poor hydroxyproline index and between 17 and 25% of the children were probably not eating a diet that met their daily protein requirements, as judged by their unsatisfactory urinary excretion of urea and sulphate, 27% of the children had poor plasma amino acid ratios and 4% had a plasma albumin value of below 3.5 g%.

The following statistically significant associations were found between some of the laboratory parameters and indices of physical growth (Table 2):–

% ideal weight with haematocrit, haemoglobin and urinary hydroxyproline index,

mid-arm circumference with haematocrit, haemoglobin and plasma albumin and

triceps skinfold with plasma albumin.

Similar associations were however not observed between urinary urea and sulphate with the indices of physical growth or between the latter and plasma amino acids.

The association of some of the laboratory parameters with physical growth is also evident from Table 3 which shows that children with ideal weights of 75% and below had significantly lower levels of haemoglobin and hydroxyproline indices than those whose % ideal weights exceeded 75%. Further evidence for such an association is again apparent in Table 4 which shows a direct relationship between the urinary hydroxyproline indices with the ideal weight achievements of the children.

It must be pointed out that although 39 out of 304 children up to 5 years old i.e. 9% had ideal weight of 75% and below (Table 3), only one case of clinical marasmus was observed. This child's ideal weight was 68% and his expected mid-arm circumference and triceps skinfold were 70% and 60% respectively according to the standards cited by Jelliffe (1966); his palsma albumin was 2.6 g %, haematocrit 39% and haemoglobin 11.1 g%. Other biochemical parameters were unfortunately not available.

None of the remaining children, who numbered 398 examined physically showed any evidence of clinical kwashiorkor or its accompanying cardinal sign of oedema. We wish to emphasise this in view of McLaren's proposal that children with an ideal weight of 75% and less should be classified as sufferring from severe protein-calorie malnutrition (McLaren, 1972).

It is noteworthy that the biochemical index of physical growth i.e. the hydroxyproline index correlated with other protein parameters like plasma albumin, urinary urea and inorganic sulphates (but not plasma amino acids) and that significant intercorrelations were also observed between the ratios of urinary urea N/creatinine and urinary sulphate S/creatinine. (Table 5).

The latter observation seems particularly pertinent in view of the fact that the determination of urinary sulphate has rarely been recorded in field nutrition surveys and that this index is known to have the possible advantage of reflecting the recent dietary intake of proteins of high biological quality (Committee Report, 1970).

Whitehead proposed that the hydroxyproline index and the plasma amino acid ratio could be used to differentiate physical retardation due to a primary protein or calorie deficiency; where protein deficiency was prevalent a high incidence of both abnormal hydroxyproline indices and amino acid ratios was found. Whereas in areas of food shortage (calorie deficiency), the amino acid ratios were relatively normal with the hydroxyproline indices remaining low (Whitehead, 1967).

Amongst the 67 children in the present survey who were found to have hydroxyproline indices of less than 1.5, 23 also had determinations made on their plasma amino acid ratios. Of these 23 children, 16 possessed satisfactory plasma amino acid ratios whereas 7 had unsatisfactory ratios of above 2.5 (Table 6). This seems to suggest the possibility of a calorie deficiency existing with a protein deficiency and appears to be strengthened by the finding of the triceps skinfold data (I. coenigracht, unpublished) which showed that 20% of the children measured in this survey had triceps skinfold below 70% of the expected standard of Jelliffe.

The biochemical assessment of vitamin A status, crude though it was, suggests that 20% of the children had low levels of this nutrient in their plasma (Table 1). But a slightly higher percentage of children (35%) was found clinically to have dryness of the conjunctiva (I. Coenigracht, unpublished); this clinical sign however was uncommon amongst the younger children.

The present finding of the existence of a vitamin A deficiency problem agrees well with two recent studies conducted on pre-school Malay children in the neighbouring districts of Kuala Berang (Chen, 1972) and inland villages of Ulu Trengganu (Chong et al, 1972; McKay, 1971). The former reported conjunctival xerosis in 10 out of 27 pre-school children whose diets were also found to contain negligible amounts of carotenes and vitamin A, while the latter studies reported a 10% prevalence for xerophthalmia and mean serum vitamin A levels in the "deficient" range.

There was no clear cut trend in the biochemical characteristics with age except for the slightly lower haematocrit, haemoglobin and higher hydroxyproline indices of children below 1 year old (Table 7).

Both ascaris and trichuris infestations were common either singly or in combination and no protozoa were found in the stool specimens examined. Malaria was not a major health problem. Only 5 of the 399 children (1%) were found to have parasites in their blood films. Only one child was found to have hookworm infestation (Table 8).

Although a malaria eradication programme was already launched in the survey area at the time of the study, it is known that houses in this district had not received more than a single cycle of indoor spraying with DDT. The Ministry of Health reported a parasite prevalence rate of 1% for malaria in school children of the same district prior to the launching of the malaria eradication project (unpublished). This is similar to the parasite rate found presently. The low prevalence for malaria therefore should not be associated with the existence of a malaria eradication programme.

Conclusions and Summary

A baseline nutrition survey involving biochemical assessment, nutritional anthropometry and abbreviated clinical examination was conducted on 399 pre-school children of Malay origin in Bukit Payong, a rural district near the east coast town of Kuala Trengganu during September 1972.

The evidence derived from the biochemical evaluation considered in conjunction with nutritional anthropometry suggests that between 20-25% of the children examined were suffering from some moderate to severe degree of malnutrition which were related to deficiencies in protein, calories and vitamin A and to anaemia. The latter is presumed to be dietary in origin since the prevalence of both malaria and hookworm was minimal.

Acknowledgement

Many people too numerous to mention individually, have contributed in one way or another towards the successful completion of the above nutrition survey. I am particularly indebted to my own staff; they are Ruth K. H. Lim, L. C. Foo, E. S. Tee, T. K. W. Ng, C. C. Soh, K. M. Goon, P. R. Nonis, G. Thomas, R. Kuladevan, Mohd Noor

and A. Kanapan. C. C. Soh, P. R. Nonis and R. Kuladevan also performed the various biochemical assays. The latter and Kamaliah Abdul Wahab assisted in the mathematical handling of the data. Finally I wish to thank Miss I. Coenigracht, WHO nutritionist for making available the anthropometric and other data which lent support to the biochemical aspects of the nutritional assessment.

Addendum

The above report was completed in June 1973. Since then, a WHO Assignment Report by Miss I. Coenigracht dated 21st December, 1973 has become available. The results of abbreviated clinical examination and nutritional anthropometry of the children surveyed are found in this WHO Assignment Report.

References

1. *Annual Report, Institute for Medical Research, Kuala Lumpur, Malaysia* 1971, 110.
2. Arroyave, G. – (1966) Biochemical characteristics of malnourished children. *Proc. West Hemisphere Nutr. Congr.* Am. Med. Assn. Chicago, U.S.A. p. 30.
3. Chen, P. C. Y. – (1972) Sociocultural influences on vitamin A deficiency in a rural Malay community. *J. Trop. Med. and Hyg.* 75: 231.
4. Chong, Y. H. – (1970) A report on the biochemical assessment of nutritional status of pre-school children in an applied nutrition programme pilot area – Telok Datok, Kuala Langat. *Nutrition Division Report of the Institute for Medical Research, Kuala Lumpur.*
5. Chong, Y. H., and McKay, D. A. – (1971) Urinary urea and hydroxyproline as indicators of marginal protein deficiency. *Proc. of the 6th SEAMEO – TROPMED Seminar: the 1st S.E. Asian Regional Seminar on Nutrition, Djakarta, Oct.*, 1969. Central Co-ordinating Board, SEMEO Regional Tropical Medicine and Public Health Project, 420/6 Rajvith. Road, Bangkok 4, Thailand. p. 53.
6. Chong, Y. H., D. A. McKay and Ruth, K. H. Lim – (1972) Some results of recent nutrition surveys in West Malaysia. *Bull. Pub. Hlth. Soc. (Malaysia)* 6: 55.
7 *Committee Report* – (1970) Assessment of protein nutritional status. *Am. J. Clin. Nutr.* 23: 807.
8. Doumas, B. T., W. A. Watson and H. G. Biggs – (1971) Albumin standards and the measurement of serum albumin with bromcresol green. *Clin. Chim. Acta.* 31: 87.
9. Dugdale, A. E. and E. Edkins – (1964) Urinary urea/creatinine ratio in healthy and malnourished children. *Lancet.* 1: 1062.
10. Harding, R. A., G. A. Leville, E. M. Baker III, Z. Z. Ziporin and H. E. Sauberlich – (1967) Gravimetric determination of inorganic sulphates in urine. *Biochemical Procedures* U.S. Army Medical Research and Nutrition Laboratory, Fitzsimons General Hospital, Denver, Colorado 1: 67.
11. Interdepartmental Committee on Nutrition for National Defence Manual for Nutrition Surveys – (1963) Washington, D.C. U.S. Govt. Printing Office, 2nd Ed.
12. Jackson, J. – (1970) Applied Nutrition in Malaysia. *Assignment report of WHO (Western Pacific Regional Office).* WPR/393/70 – (Mimeographed).
13. Jelliffe, D. B. – (1966) The Assessment of the nutritional status of the community *WHO Monogr. Ser. No.* 53.
14. Kivirikko, K. I., O. Laitinen and D. J. Prockop – (1967) Modifications of a specific assay for hydroxyproline in urine. *Anal. Biochem.* 19: 249.
15. McKay, D. A. – (1971) Food, illness and folk medicine: Insights from Ulu Trengganu, West Malaysia. *Ecol. of Food and Nutrition.* 1: 67.
16. McKay, D. A., R. K. H. Lim K. H. Notarney and A. E. Dugdale – (1971) Nutritional assessment by comparative growth achievement in Malay children below school age. *Bull. Wld Hlth Org* 45: 233.
17. McLaren, D. A., and W. W. C. Read – (1972) Classification of nutritional status in early childhood. *Lancet* 2: 146.
18. Neeld, J. B., and Pearson, W. H. – (1963) Macro- and micromethods for the determination of serum vitamin A using trifluoroacetic acid. *J. Nutrition* 79: 454.
19. Prasana, H. A., B. L. M. Desai and M. Narayana Rao – (1971) Detection of early protein-calorie amlnutrition in population groups. *Br. J. Nutr.* 26: 71.
20. Sauberlich, H. E., J. H. Judd, G. E. Nichoalds, H. P. Browuist and W. J. Darby – (1972) Application of the erythrocyte glutathione reductase assay in a high school population. *Am. J. Clin. Nutr.* 25: 756.
21. Schouten, H., L. W. Status Van Eps and A. M. Struyker Boudiet (1964) Transketolase in blood. *Clin. Chim. Acta.* 10: 474.
22. Selvaraj, R. J., and T. P. Susheela – (1970) Estimation of serum vitamin A by a microfluorometric procedure. *Clin. Chim. Acta.* 27: 165.
23. Wainer, A. and A. L. Koch – (1962) Inorgranic sulphates in urine. *Anal. Biochem.* 3: 457.
24. Whitehead, R. G. – (1964) Rapid determination of some plasma amino acids in subclinical kwashiorkor. *Lancet,* 1: 250.
25. Whitehead, R. G. – (1965) Hydroxyproline creatinine ratio as an index of nutritional status of growth. *Lancet.* 2: 567.
26. Whitehead, R. G. – (1967) Biochemical test in differential diagnosis of protein and calorie dificiencies. *Arch. Dis. Childh.* 42: 479.
27. Wootton, I. D. P. – (1964) *Mirco-Analysis in Medical Biochemistry* 4th Edition, J. and A. Churchill, London.
28. World Health Organisation – (1972) *Tech. Rep. Ser. No.* 503.

A Survey of Geriatric Cases in the Psychiatric Wards – University Hospital Admitted in July 1967 to December 1969

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Introduction

IN MALAYSIA the problems of old age are not as serious as in the more developed countries. These are probably due to their small numbers – 2.59% aged 65 and above in 1947 and 3.66% in 1967 (Lee 1969) and the fact that the aged are often taken care of by their children, though Sandosham (1969) had noted that traditional attitudes towards the care of the aged are changing, such that more and more of the aged are becoming dependent upon themselves.

Buse (1967) has described the plight of the aged in a Western setting. It will not be long before we too are faced with similar problems. For the moment, the problems of old age are without much data. Because of this lack of data a survey of psychiatric cases of patients aged 50 and above was done.

Method

In this study it was decided to examine the basic variables such as, ethnic groups, religion, marital status, number of children, age and occupation, and see how they influence admissions.

Earlier reports from Malaysia (Subramaniam 1964; Tan 1964 and Simons 1971) did not tabulate diagnostic classification against age groups. Thus in this study an attempt is made to tabulate the broad diagnostic variables in this age group.

In choosing the cases for this study the following criteria were followed.

1. Patients must be admitted between July 1967 to December 1969.
2. Must be of age 50 and above
3. Must be admitted to any of the wards other than the Obstetrics wards.

A control group was chosen at random from this group of patients who were admitted to all other wards except psychiatric wards.

Findings

The total number of psychiatric patient in this series was 64 of which 47 (73.5%) were Chinese, 12 (18.7%) Indians, 2 (3.18%) Malays and 3 (4.7%) others.

This distribution was compared with the distribution by ethnic group of:

1. all patients of all ages admitted to the hospital (other than to the Obstetric wards)
2. all patients aged 50+ admitted to all the wards (except the Obstetric wards)

The differences, as shown in the table below were statistically significant, a chi square value of 188.93 and a p value of less than 0.01 were obtained.

In Figure I the ethnic group distribution in West Malaysia, Selangor, University Hospital and the psychiatric wards show some interesting features.

Table
Cases Admitted and Discharged between July 1967 to December 1969

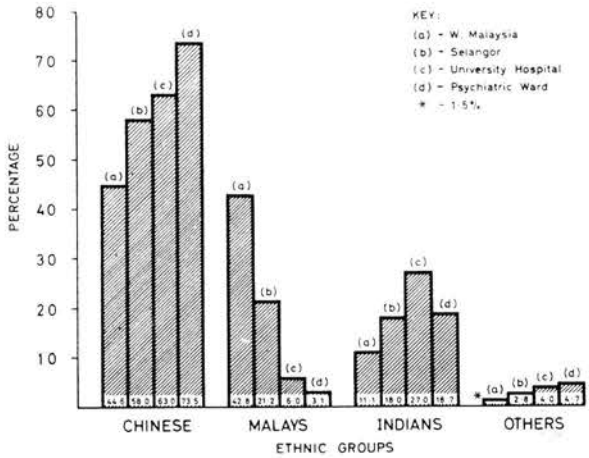
Types of Patients Admitted	Chinese		Indians		Malays		Others		Total Nos. of Cases
	No. of Cases	%	No. of Cases	%	No. of Cases	%	No. of Cases	%	
Total Admission – all ages, all wards, except obstetrics	10,416	56.6	4,713	25.6	2,218	12.1	1,040	5.7	18,387
Total Admission – Patients aged 50* All wards except Obstetrics	3,123	63.3	1,318	26.7	313	6.3	177	3.6	4,931
Psychiatric Cases Aged 50*	47	73.5	12	18.7	2	3.1	3	4.7	64

*Total admission – all ages, all wards, except obstetrics include all cases admitted in January – June, 1967 because the hospital records available are not in individual months.

$X^2 = 188.93$
$p = \geqslant 0.01$

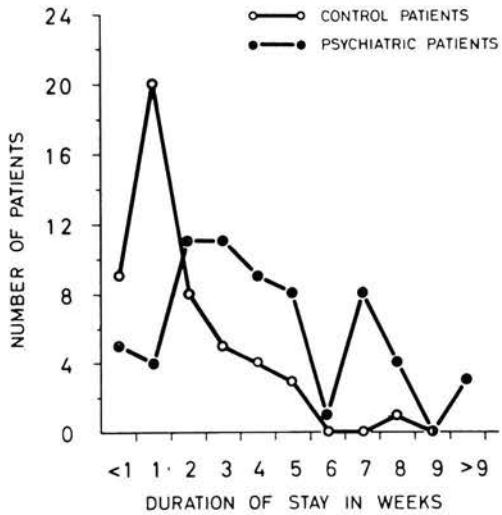
The percentage of Chinese seems to increase as we go from one column to the next; the percentage of Malays seems to decrease and the percentage of Indians show a "bell-type" distribution. (See Figure I below).

FIGURE I
PERCENTAGE DISTRIBUTION OF THE DIFFERENT ETHNIC GROUPS WITHIN THE DIFFERENT PLACES (AGE 50+)



In Figure II the duration of stay of the psychiatric patients was compared with the duration of stay of the control group. The average duration of stay among the psychiatric patients was 4.1 weeks with 2 peaks, one at second-third week and the other at 7th week. Among the control group the average duration of stay was 2.2 weeks with the mode at 1 week. (In calculating the average duration of stay those who stayed more than 9 weeks or less than 1 week were excluded from the computations. Hence 8 patients from the psychiatric group and 9 patients from the control group were excluded).

FIGURE II
DURATION OF STAY OF PSYCHIATRIC PATIENTS COMPARED WITH CONTROL



At admission the patients were diagnosed by the various people who saw these patients at that time. However, all the diagnosis were processed and classified as given in the International Classification of Diseases (1969). For each diagnosis the patients were again divided into their ethnic groups and finally by their sexes.

The results were tabulated as given in the table below:

Table II
Psychiatric Patients Age 50*
Diagnosis at Admission

	Organic Brain yndrome	Functional Psychoses	Neuroses	Personality Disorders	Pscyhophy-siologic Disorders	All Disorders
Chinese	10	30	5	1	1	47
Malays	2	7	1	1	1	12
Indians	—	2	—	—	—	2
Others	—	2	1	—	—	3
TOTAL	12 (18.8%)	41 (64.1%)	7 (10.9%)	2 (3.1%)	2 (31.%)	64 (100%)

18.8% of the patients had organic brain syndrome, 64.1% had functional psychoses, 10.9% had neuroses, 3.1% had personality disorders, 3.1% had psychophysiologic disorders. The ratio of the functional psychoses to organic brain syndrome was 3.4 : 1.

(No tests of significance were done for this distribution because the number in the cells were too small to make the operations meaningful).

Discussions

1. In this study the figure 50 was chosen as the lower limit because:

(a) The lower limit for the geriatric group is arbitrary as mentioned by Baron and McMillan (1965).

(b) The life expectancy in Malaysia for the year 1967 was estimated to be 63.14 years for males and 66.10 for females (Lee 1969).

(c) If the figure 65 were chosen, which is the more common lower limit used, the samples would be too small to make any study meaningful.

2. In classifying the patients into their ethnic groups the group "Indians" was taken to include Pakistanis and Ceylonese; the group "Malays" was taken to include Indonesians domiciled in Malaysia and the Orang Aslis; and the group "others" was taken to mean all others not included under Chinese, Indians or Malays.

In this series (Figure I and Table I) there seems to be an over-representation of Chinese in the Psychiatric Unit, compared to the other ethnic groups though an earlier study by Simons (1967) found no significant differences. If the different ethnic groups were to show equal chances of being admitted to the psychiatric wards, then the distribution should reflect the distribution of age 50+ for the State of Selangor since most of the patients come from Selangor.

That this was not so indicates that other factors were operating, such as urbanization, education and life expectancy.

Education particularly the Western type of education would increase the tendency for acceptance of western orientated medicine. Most hospitals in Malaysia are situated in the towns. The Chinese often predominates in these areas, hence it would be easier for the Chinese to seek hospitalisation since transportation will not be a major problem.

Lee (1969) showed that the life expectancy of the different ethnic groups at age 50+ as – Chinese 23.4 years for males and 27.9 years for females, Malays 22.9 years for males and 24 years for females and Indians 22.6 for males and 22.5 years for females. This would indicate that for the geriatric age group there would be more Chinese than the other ethnic groups which is infact true for the population of Selangor and West Malaysia.

Teoh (1971) reported that behavioural aberrations within family members are not so well tolerated among the Chinese of Chinatown as among the Chinese in the suburban areas. This area probably due to the overcrowding in the dwellings in Chinatown. It would be reasonable to assume the same to operate in the cramped dwellings in downtown Kuala Lumpur, which would also contribute to raise the percentage of Chinese psychiatric patients in the wards.

The percentage of aged Indians in the psychiatric ward seemed to correspond to the percentage of

aged Indians in Selangor. This could be confidential. The percentage of Indians in the hospital as a whole was more than the percentage of Indians for the State of Selangor. E. S. Tan (1964) and Simons (1969) found an over-representation of Indians in their surveys compared to the Indian population from which the patients came. However, when the differences in the percentages of Indians in the hospital and the psychiatric ward were tested for significance, we found that the difference could be due to chance. At this juncture we cannot offer any explanations as to why the percentages were as they were.

Among the Malays the percentage show a reverse order (see Table I) Health standards among the Malays are poorer than among the Chinese as evident by several studies (Biseru 1970; L. E. Lie-Injo and H. K. Virik 1966). The poorer health standards should increase the percentage of Malay patients if the utilization of hospital facilities were similar. Factors such as physical distance between hospitals and rural areas, lower life expectancy, lower income, poorer education and the reliance in village medicine for all forms of illness especially psychiatric disorders could all contribute to the low percentages.

In the Malay culture there is a concept which states that as a person gets older some behavioural abnormalities and forgetfullness would be expected of him as his mental faculties also age. Such persons who show these behavioural deviations are termed to be *nyayok*. Since there is this expectation among the Malays it would be reasonable to assume that they would tolerate small changes in behavioural patterns better than the other races. Hence many of the less severe psychiatric patients would be nursed at home.

This under-representations of the Malays in the mental hospitals was also found by E. S. Tan (1964) and M. Subramaniam (1964).

Simon found an average length of stay in the psychiatric ward of 3 weeks in his survey. The hospital average for other wards was 2 weeks. In this survey the control group showed a similar average of 2.2 weeks. This could indicate that age does not influence length of stay in the hospital. The aged psychiatric patients with an average duration of stay of 4.1 weeks probably differ in this respect. They probably present a bigger problem in so far as psychiatric illness were concerned when compared with the younger psychiatric patients. The presence of 2 peaks indicate that while many of them were discharged by 6 weeks with the average staying between 2-3 weeks, a number of them needed further management. This group probably represent the senile dementias and the chronic cases that need prolonged management which this hospital is not geared to provide on an in-patient basis. It appears that this group of psychiatric patients would present the bigger problem especially when the number of old age increases in the future. Knowing who these patients are and what special problems they present would definitely put one in an advantageous position to plan for their care.

The number of patients who needed more than 6 weeks of hospitalization was 15 which was rather small to make any meaningful analysis possible.

Factors like marital status, number of children, occupations, age and religion do not seem to influence the admissions.

The marital status and number of children were used as parameters of family size to see if there was any heavier loading in the smaller family size groups. Anderson et al (1968) found that among the geriatric patients with psychiatric problems, only 37% of the men and 18% of the women had living spouses which was half of what was expected of the general geriatric population. We do not have figures of what to expect of our Malaysian geriatric population, however our figures did not suggest a higher loading among the smaller family size groups or among patients without spouses. (A very important point must be taken note of here, is that in our survey we did not differentiate those who never married and those who married but were either separated or widowed.)

In our study we found that the greater majority of our patients 41/64 or 64% suffered from Functional Disorders and only 18.7% or 12/64 had Organic Brain Syndromes giving a ratio of 3.4 : 1. In their survey, Kay and Beamish (1964) found 30.7% of their geriatric population had Functional Psychoses and 10.3% had some form of Organic Brain Syndromes. The ratio of Functional Psychoses to Organic Brain Syndromes worked out as 3 : 1 which compares favourably with the ratio from this survey. This would mean that the distribution of mental illnesses in different cultures and ethnic group would more or less be similar, a conclusion which Lin had found earlier, (Lin 1953). Lambo (1966) found that 45.5% of his cases were of the Organic Brain Syndrome type. 61.5% of which were females (81/132) and 38.5% were males. The overall percentage of females in his 288 cases of geriatro-psychiatric cases was 61.5% (177/288). This study tend to indicate a similar trend, there were 56% females (36/64) and 44% males (28/64). The 1957 census gave the percentages of the sexes of ages

50+ as 56% males and 44% females. The population estimate of 1969 (Lee) show the percentages as 54.5% males and 45.5% females. This reversed situation in the percentages of geriatric males and females in the psychiatric ward compared to the rest of West Malaysia cannot be accounted for.

Summary

A survey of the case records of 64 geriatric in-patients admitted to the psychiatric unit of the University of Malaya Hospital for the period June 1967 to December 1969 was done and the data compared with a control group.

The results show that such factors as marital status, number of children, occupation and age did not influence admission rates. The ethnic group distribution show some significant differences but these could be accounted for by factors such as urbanization, education, traditional beliefs and distance from the hospital, which probably influence this distribution.

The duration of stay of the psychiatric patients was interesting in that it showed that there were two groups of patients who were admitted, those that were discharged by six weeks and those that remained longer than six weeks.

The overall distribution of the different categories of diagnosis seemed to be similar to what other workers have found elsewhere.

Acknowledgements

I like to thank Professor Tan Eng Seong of the Department of Psychological Medicine, Faculty of Medicine, University of Malaya for his encouragement and interest in this project.

I like to thank all those whose names have not been mentioned but whose help has made this project from a dream into a reality.

(N.B.: This study was done during the author's elective posting as a medical student with the Department of Psychological Medicine of the Faculty of Medicine, University of Malaya)

References

1. Anderson, C. J.; Porrata, E.; Lore, J.; Alexander, S.; Mercer, M.; (1968) "A Multidisciplinary Study of Psychogeriatric Patients", *Geriatrics,* **23: 2.**
2. Brown, D. W.; McMillan, T. M.; (1965) "Office Evaluation of the Geriatric Patient", *G.P.,* **32: 3,** 106-115.
3. Bisseru, B.; Ahmad, A. A.; (1970) "Intestinal Parasites, Eosinophilia, Haemoglobia and Gamaglobulin of Malay, Chinese and Indian School Children", *Med. J. Malaya,* **25: 1,** 29-33.
4. Busse, E. W., (1967) "Geriatrics Today – An Overview", *Amer. J. Psychiat.,* **123: 10,** 1226-1233.
5. Federation of Malaya and Colony of Singapore (1949), *"A Report on the* 1947 *Census of Population"*, prepared by Tufo, M.V.D. London, The Crown Agents for the Colonies.
6. Federation of Malaya, Department of Statistics (1960), *"Report No.* 14 1957 *Population Census of the Federation of Malaya"*, Prepared by Fell, H., Kuala Lumpur, Department of Statistics.
7. Kay, D. W.; Beamish, P; Roth, M; (1964), "Old Age mental disorders in Newcastle Upon Type (Part I) A Study of prevalence" *Brit. J. Psychiat.,* **110:** 146-158.
8. Lambo, T. A.; (1969), "Psychiatric Disorders in the Aged: Epidemiology and Preventive Measures", *W. Africa Med. J.* **15:** 121-124.
9. Lee Jay Cho et al., Government of Malaysia, Department of Statistics (1966), *"Research Paper* 2*: Life Tables for West Malaysia"*, Kuala Lumpur, Department of Statistics.
10. Lee Jay Cho et al., Government of Malaysia, Department of Statistics (1969) *"Research Paper* 4*: Population projections by age, race and sex for West Malaysia:* 1967-1997".
11. Lie-Injo Luan Eng, Virik, H. K. (1966) "Anaemias in Children in Malaya", *Trans Roy. Soc. Trop. Med. Hyg.,* **60: 1,** 00 53-63.
12. Lin, T. (1953) "Study of Incidence of Mental Disorders in Chinese and Other Cultures", *Psychiatry,* **16:** 313-336.
13. Sandosham, (1969) "Increasing Life Span of Malaysian" Editorial – *Med. J. Malaya,* **25: 1,** 1-2.
14. Simons, R. C. (1971) "A Survey of the University of Malaya Medical Center Psychiatric Inpatients – The First 20 Months", "Psychological Problems and Treatment in Malaysia", Ed., Wagner, N. N. and Tan, E. S., Kuala Lumpur, University of Malaya Press, pp 115-127.
15. Subramaniam, M. (1964) "Migration and Schizophrenia – A Review and case Report" *Med. J. Malaya,* **19: 2,** 134-139.
16. Tan, E. S. (1964) "Characteristics of Patients and Illnesses seen at Tampoi Mental Hospital", *Med. J. Malaya,* **19: 1,** 3-7.
17. Teoh, J. I. (1971), "Personal Communications"
18. United Nations (1960) Statistics Office of the U.N., Department of Economic and Social Affairs, "Dermographic Year Book", 12th issue, New York, U.S.A. Publishing Service of the United Nations.
19. Wolf, K. (1963) "Geriatric Psychiatry", 1st ed. Springfield III., U.S.A. Charles C. Thomas, pp 3-12.

Maternal Mortality in University Hospital Kuala Lumpur, Malaysia

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Summary

MATERNAL DEATHS which occurred since the beginning of the Obstetrical and Gynaecological Unit of the University Hospital from March 1968 until September 1973 are reviewed. Avoidable factors are indicated and suggestions for reduction of maternal mortality made.

Definition

The difinition of maternal mortality varies with different authors. The committee on maternal mortality of the International Federation of Gynaecology and Obstetrics defines it as death of any woman dying of any cause while pregnant or within 42 days of termination of pregnancy[1], irrespective of the duration and the site of pregnancy, whereas deaths within one year of childbirth or abortion are included in the W.H.O. Health Statistics Report[2]. However the committee on maternal and child care of the council on medical sciences of the American Medical Association recommended in 1957 that maternal mortality should include any woman dying of any cause whatsoever while pregnant or within 90 days of the termination of pregnancy[3]. In the following study the definition recommended by F.I.G.O. in 1971 will be followed and it therefore encompasses deaths which occur in the Obstetrical and Gynaecological Unit and those in other Units of the hospital after transfer there. Patients who died outside the hospital are excluded as detailed clinical notes are not available for analysis.

During the period under review there were 13 maternal deaths and 13,200 deliveries (stillbirths and livebirths). Hence the maternal mortality rate is 0.9 per 1000 births.

Case Reports

Case **1**: A 26-year-old gravida 2 unbooked patient was admitted on 26.12.69 at 37 weeks pregnancy with fits, B.P. 270/150, severe oedema and gross proteinuria. Despite apresoline drip and lytic cocktail her condition deteriorated and she died of cardiac arrest, cerebral haemorrhage and eclampsia.

Case **2**: A 16-year-old Orang Asli primigravida patient was admitted on 7.3.69 in a state of shock and with a history that vaginal bleeding and bloody diarrhoea persisted since delivery at home one month ago. In spite of vigorous resuscitation she died soon after admission. Cause of death was puerperal sepsis leading to peritonitis and septicaemia, with associated amoebic colitis.

Case **3**: A 34-year-old multigravida unbooked patient was admitted with septicaemic shock. She failed to respond to intensive care and antibiotics. Cause of death was septicaemic shock and cardiac arrest.

Case **4**: A 21-year-old primigravida was admitted on 5.5.69 with septicaemic shock from a septic abortion. Her condition improved initially but on the following day she went downhill and had pulmonary oedema, renal failure and repeated cardiac arrests. Cause of death was septic abortion leading to septicaemic shock, renal failure and cardiac arrest.

Case **5**: A 34-year-old gravida 7 unbooked case was admitted on 12.7.70 in labour. She had a past history of pulmonary tuberculosis and thora-

coplasty. Soon after delivery she developed severe respiratory distress and was transferred to the Intensive Care Unit, where she died after two cardiac arrests. Cause of death was advanced pulmonary tuberculosis leading to severe pulmonary insufficiency and cardiac arrest and associated hyperthyroidism.

Case **6**: A 44-year-old gravida 12 unbooked patient with a past history of hypertension was admitted unconscious and with a B.P. of 250/140. She remained unconscious and died on the following day. Cause of death was eclampsia and hypertensive encephalopathy.

Case **7**: A 45-year-old gravida 6 para 6 was admitted on 20.5.72 having delivered two weeks ago in a private maternity home. She was febrile, comatose and had fits. Cause of death was septicaemia and cerebral abscess.

Case **8**: A 28-year-old Orang Asli, gravida 7 unbooked patient admitted with septic abortion and hyperpyrexia. After aborting the foetus she went into spticaemic shock and died.

Case **9**: A 25-year-old primigravida who had a congenital cyanotic heart disease. She had a low forceps delivery on 2.2.72 and was well in the postnatal ward until 10.2.72 when she died suddenly of pulmonary embolism.

Case **10**: A 24-year-old gravida 4 patient who had no antenatal care. It was only when she developed eclamptic fits that she sought medical advice. Her condition failed to respond to treatment and she died from eclampsia on the next day.

Case **11**: A 30-year-old gravida 5 who had eclampsia and a stillbirth on 25.11.72 and puerperal sepsis and was managed in a district hospital. She was only referred to our hospital on 18.12.72 when she was found to have septicaemia and acute renal failure. Despite intensive therapy and dialysis she died. Cause of death was eclampsia, septicaemia and renal failure.

Case **12**: A 32-year-old gravida 3 who had a normal pregnancy and labour. She had a postpartum tubal ligation but died suddenly 4 days later of pulmonary embolism.

Case **13**: A 20-year-old gravida 3 who was admitted on 5.6.73 with a septic abortion. Her condition deteriorated and she died of septicaemic shock.

Discussion

It will be interesting to compare the maternal mortality of a few countries. In England and Wales the maternal mortality (excluding abortions) in 1969 was 0.15 per 1000 births[4]. In the Borough of Bronx, New York it was 0.95 per 1000 live births during the period 1958 to 1967[5]. Grech et al[6] reported the overall maternal mortality in institutional deliveries in Uganda as 3.97 per 1000. The incidence in government hospitals in West Malaysia in 1969 was 2.2 per 1000[7], while in this series it was 0.9 per 1000. The higher incidence in teaching hospitals and general hospitals is because of the large number of abnormal cases referred from rural clinics and general practitioners.

It will be interesting to determine in which cases maternal death could be avoided. It would be tempting to say that the deaths in the 11 unbooked cases were avoidable, but one should remember that an avoidable factor refers to some departure from the accepted standards of satisfactory care which may have played a part in causing death[4]. Failure to seek medical care early and failure to follow the doctor's advice contributed to the high number of preventable deaths where the responsibility was due to default by the patient[5]. This is well illustrated in Case 1. There was an interval of 4 weeks between her last clinic attendance and her hospital admission. Case 10 illustrates another example of an avoidable factor because the patient did not seek medical treatment until she had eclampsia.

Socio-economic status[5] and poverty[8] had been shown to play a significant role in maternal mortality. Poverty is associated with poor education and ignorance of the value of medical care. In Cases 2 and 8 it is quite clear that avoidable factors rest with the improvement of health education and health services so that these patients will and can have treatment early. In Cases 5 and 6 pregnancy was contra-indicated and should have been prevented.

Cases 4, 8 and 13 being deaths from septic abortions may be considered avoidable deaths. A lot has been said about legalising abortions in order that they may be done asceptically in hospitals so that deaths due to complications of criminal abortion such as septicaemia, haemorrhage and shock may be prevented.

Cases 7 and 11 shows the importance of early referral of complicated cases to specialist centres for management. Both patients were very ill when they were admitted for treatment.

The main causes of death in this series were septicaemic shock and eclampsia. Although haemorrhage was the major cause of maternal death in government hospitals in West Malaysia, accounting for 43.1 per cent of the deaths[7], none of our 13

patients died from haemorrhage. This is probably because of the early treatment of haemorrhage, the ready availability of blood, and the active management of the third stage of labour[9].

Conclusion

To reduce maternal deaths to a minimum steps should be taken to identify causative factors and apply corrective measures. Reduction of maternal mortality by special attention to "high-risk" mothers prior to conception and during pregnancy is essential. The maternal deaths in this series represent a good cross-section of maternal deaths in a large hospital, with the exception of deaths from haemorrhage. In some of the cases avoidable factors were present, such as failure of health education, family planning advice, and insufficient medical centres where women can be cared for during pregnancy, delivery and puerperium.

Thus for prevention of maternal deaths, health education, advice on family planning and setting up of rural health centres are of utmost importance. With the implementation of the Second Malaysia Plan which is aimed at eradicating poverty and raising the standard of living of the rural people, it is hoped that maternal mortality in Malaysia will be reduced.

References

1. Report of Committee on Maternal Mortality, F.I.G.O. Classifications on maternal mortality. Int. J. Gynaec. & Obstet. 9: 122-124, 1971.
2. W.H.O. Health Statistics Report. 22: 6: 335-368, 1969.
3. Committee on Maternal and Child Care of the Council on Medical Sciences: A Guide for Medical Death Studies. 1957, American Medical Association, Chicago.
4. Report on Confidential Enquiries in Maternal Deaths in England and Wales, 1967-1969. London, Her Majesty's Stationery Office, 1972.
5. Klein, M. D. and Karten, I. Am. J. Obstet. Gynaecol. 111: 298-303, 1971.
6. Grech, E. S., Galea, J., and Trussell, R. R. Int. J. Gynaec. & Obstet. 7: 263-278, 1969.
7. Marzuki, A. and Thambu, J. A. Med J. Malaya. 27: 203-206, 1973.
8. Webster, A. Am. J. Obstet. Gynaecol. 101: 244-253, 1968.
9. Sinnathuray, T. A. Med J. Malaya. 27: 57-62, 1972.

Mild Homozygous High A2-Type Beta Thalassaemia

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THE HETEROGENEITY OF beta-thalassaemia has been pointed out by several investigators.[1-5] The classic high A2 type of β-thalassaemia is far more common than others and when unspecified this type of thalassaemia is usually referred to. The homozygous form of this disease usually gives the classical clinical picture of thalassaemia major (Cooley's anaemia), described by Cooley & Lee in 1955, which is usually characterised by severe anaemia which is insidious in onset and usually obvious within the first two years of life and often from about the third month of life. This is associated with hepato-splenomegaly and bone changes; the latter is due to marrow hypercellularity and results in a mongoloid facies with X-ray changes best seen in the skull and in the tubular bones of the extremities; and there is usually general retardation of growth. Other clinical features which may be present include jaundice, periodic attacks of fever, cardiac symptoms secondary to the anaemia and occasionally leg ulcers and hypogonadism in those who survive up to puberty. The haemoglobin is usually between 3 and 9 g/100 ml. The red cells show marked anisopoikilocytosis and hypochromia with often many cell fragments and target cells. Variable numbers of reticulocytes and nucleated red cells are present. The mean corpuscular volume and the mean corpuscular haemoglobin are significantly reduced. The osmotic fragility test characteristically reveals an increased resistance to haemolysis and the serum bilirubin is usually slightly raised.

Homozygous β-thalassaemia is usually fatal in childhood although a few patients with this disorder have been reported to survive beyond the fourth decade of life.[6-9] The present report describes a patient in Kuala Lumpur, with homozygous high A2 type of β-thalassaemia who started having clinical symptoms for the first time only in the third decade of life and who clinically had only very mild manifestations of the disease.

Methods

Haematological examinations were carried out according to standard methods.[10] Haemolystaes were prepared from washed packed red cells by the addition of 1 volume of water and 0.5 volume of toluene. Haemoglobin F levels were measured by the method of Singer *et al.*[11] The distribution of haemoglobin F in the red cells was examined by the acid elution technique of Kleihauer.[12] Electrophoresis of haemoglobin was done on starch gel using tris – EDTA boric acid buffer at pH 8.6 and discontinuous tris boric acid buffer at pH 9.5. Agar gel electrophoresis was done in citric acid buffer at pH 6.9 (Robinson *et al.* 1957).[13] Cellulose acetate electrophoresis was done in tris – EDTA boric acid buffer at pH 8.9. Haemoglobin A2 was quantitated by the cellulose acetate electrophoretic method of Marengo-Rowe.[14]

Case Report

The *propositus* was a 22-year old male Chinese who was admitted to the Assunta Hospital on 1.6.73 complaining of yellowness of his eyes for the last three months. The day before admission he began to have fever and felt weak. On questioning he admitted to his urine being yellow throughout. On examination he was found to be of average height. But he was pale and slightly jaundiced. His spleen was felt 6 cm. below the costal margin and his liver

1 cm. below the costal margin and both were firm and non-tender. He did not have any ascites or oedema and there were no other stigmata of liver disease. At the time of admission the patient had a temperature of 100°F and the temperature came down to normal five days after admission.

Laboratory findings: The haematological findings for the patient and his family are shown in Table I. The peripheral blood film (Fig. 1) showed mild hypochromia and moderate anisopoikilocytosis with some microcytes, target cells and schistocytes. Haemoglobin analysis showed 40.3% Hb F and 9.1% Hb A2. Haemoglobin electrophoresis was done on cellulose acetate, starch gel at pH 8.6 and 9.5 and on agar gel and the patient was seen to have haemoglobin A together with haemoglobin F and increased amounts of Hb A2. Starch gel electrophoresis at pH 8.6 is shown in Fig. 2 and agar gel electrophoresis in Fig. 3. The distribution of Hb F in the red cells was heterogeneous. The white cell count was 9,350 with 28% neutrophils, 18% stab cells, 45% lymphocytes, 6% monocytes, 2% eosinophils and 1% basophils. The platelet count was 310,000/cu. mm. The total serum bilirubin was 3.5 mg/100 ml. with 0.6 mg.% direct reacting and 2.9 mg.% indirect reacting. Urobilinogen was increased in the urine and there was a trace of bilirubin. The total serum protein was 6.0 mg.% with 2.1 gm.% of globulin. The alkaline phosphatase was 5.4 K. A. units. No haptoglobin was visible on starch gel electrophoresis. The Coomb's test was direct and indirect negative. Motulsky's test for G6PD deficiency was normal.

X-ray skull showed no abnormal bone changes.

Pedigree of family

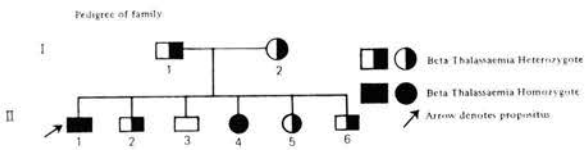

Table I
Haematologic values in predigree

	Age (yr)	Hb (g/100 ml)	RBC mill/cu. mm.	PCV %	MCV	MCH	MCHC	Reticulocytes %	Red cell morphology	Osmotic fragility	Hb. F %	Hb. A2%	Serum iron (ug/100 ml)
Father (I-1)	45	15.2	5.8	50	86.2	26.2	30.4	0.8	±	normal	2.3	6.4	—
Mother (I-2)	45	10.0	4.4	35.5	80.7	22.7	28.2	1.8	+	normal	2.4	6.0	—
Propositus (II-1)	23	10.3	5.4	35	64.8	19.1	29.4	2.5	++	decreased	40.3	9.1	150
Brother (II-2)	20	13.0	4.9	41	83.7	26.5	31.7	1.8	±	normal	2.6	6.0	150
Brother (II-3)	17	13.1	4.3	41.5	96.5	30.5	31.5	0.8	0	normal	1.8	2.9	—
Sister (II-4)	14	7.6	3.3	23.5	71.2	23	32.3	10.2	+++	decreased	55.5	4.2	229
Sister (II-5)	9	12.0	4.5	38	84.4	26.7	31.6	1.6	±	normal	2.4	6.1	135
Brother (II-6)	7	12.0	4.3	38	88.4	28	31.6	0.4	±	normal	2.4	6.3	113

± = very mild abnormalities
\+ = mild abnormalities
++ = moderate abnormalities
+++ = severe abnormalities

Family studies: One sister (II-4) of the propositus aged 15 years gave a of having been unwell and of having had slight jaundice off and on frequently since 7 years of age. She has been attending the follow-up clinic at the General Hospital, Kuala Lumpur but has never had any blood transfusion. When seen by us on 3.7.73 ,her height was seen to be within normal limits for her age but she had mongoloid facies and was slightly jaundiced

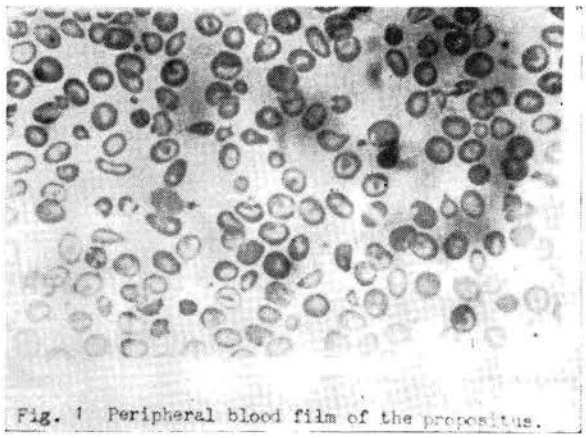

Fig. 1 Peripheral blood film of the propositus.

with sallow skin. The spleen was felt 7 cm. below the costal margin and the liver 3 cm. below the costal margin. The laboratory findings in this sister are also listed in Table I. Her peripheral blood film showed marked anisopoikilocytosis with many microcytes and macrocytes together with many schistocytes and irregularly contracted cells. Haemoglobin analysis showed 55.5% Hb. F and 4.2% Hb A_2. Haemoglobin electrophoresis was again done on cellulose acetate, starch gel at pH 8.6 and 9.5 and on agar gel and this sister (II-4) was also seen to have haemoglobin A together with haemoglobin F and increased amounts of A_2. The distribution of Hb F in the red cells was heterogeneous. The white cell count was 10,250 with 30 neutrophils, 23 stab cells, 2 myelocytes, 31 lymphocytes, 1 monocyte, 1 eosinophil and 12 nucleated red cells per 100 white cells. The platelet count was 250,000/cu.mm. The serum bilirubin was 3.9 mg/100 ml. No haptoglobin was visible on starch gel electrophiresis. Motulsky's test for G6PD deficiency was normal.

X-ray skull showed thinning of the tables especially the outer with bony trabeculae at right angles to the tables giving rise to the characteristic hair-on-end appearance.

The parents and the other members of the family gave no history of anemia, jaundice or of any illness of note and were quite well. They were all examined in the same manner as the propositus (II-1) and his sister (II-4) and both the parents of the propositus and two of his brothers (II-2 and II-6) and one sister (II-5) were seen to have elevated Hb A_2 values and slight morphological abnormalities on peripheral blood smear consistent with a diagnosis of β-thalassaemia trait, although the mean corpuscular volume was normal in all of them. One brother (II-2) was haematologically normal.

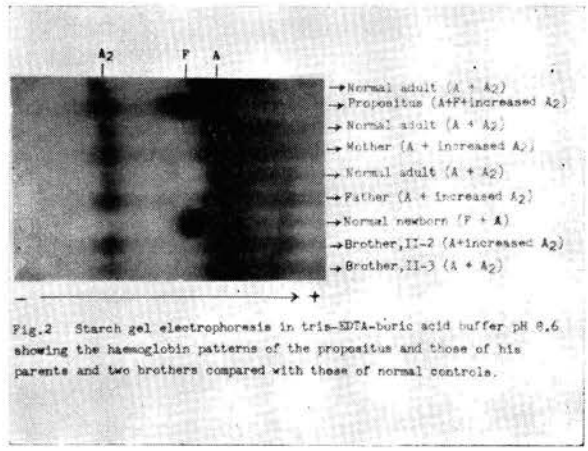

Fig.2 Starch gel electrophoresis in tris-EDTA-boric acid buffer pH 8.6 showing the haemoglobin patterns of the propositus and those of his parents and two brothers compared with these of normal controls.

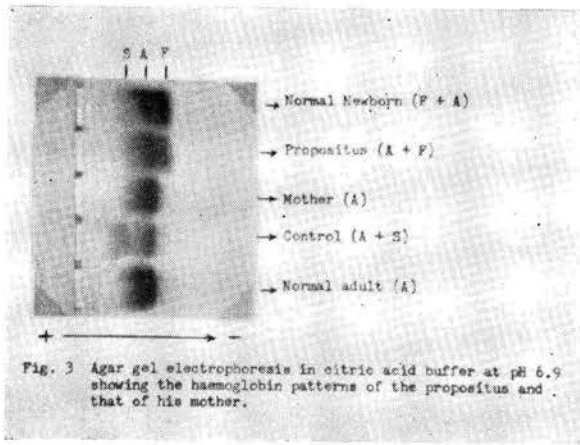

Fig. 3 Agar gel electrophoresis in citric acid buffer at pH 6.9 showing the haemoglobin patterns of the propositus and that of his mother.

Discussion

The patient in this study showed the symptoms of homozygous high A_2 type of β-thalassaemia but with unusually mild clinical features. Unlike the classical case of Cooley's anemia, our patient (II-1) started having symptoms only at 22 years of age and when examined his haemoglobin level was found to be relatively good (10.3 gm/100 ml.). In this family however, there is a significant difference in the severity of the clinical and haematological manifestations of the propositus (II-1) and his similarly affected sister (II-4). The latter appears to have had symptoms at least from 7 years of age.

But even the latter is still fairly well and attending school and has never had any necessity for blood transfusion. The clinical and haematological features in our patient are therefore consistent with the diagnosis of the so-called thalassaemia intermedia,[7] a clinical syndrome which is intermediate in severity between the mild abnormalities found in β-thalassaemia trait and those found in patients with homozygous β-thalassaemia or thalassaemia major. In most cases of thalassaemia intermedia, anaemia, hepatosplenomegaly, skeletal changes and elevated Hb F levels are present to varying degrees and many patients with this syndrome do not require significant transfusion therapy. In such patients the diagnostic possiblities that have to be considered include: (1) double heterozygosity for hereditary persistance of fetal haemoglobin (HPF) gene and a β-thalassaemia gene; (2) double heterozygosity for two different variants of β-thalassaemia, high A2 and high F β-thalassaemia (β ≷ thalassaemia); (3) β-thalassaemia trait alone; (4) combination of β-thalassaemia with α-thalassaemia; (5) true homozygosity for a mild type of high A2 β-thalassaemia. In family A, both the parents have the high A2 type of β-thalassaemia trait with no evidence for the HPF gene or high F β-thalassaemia gene. Therefore the first and second diagnostic possibilities of a double heterozygosity cannot occur in the propositus. The third possibility of whether the propositus (II-1) and his sister (II-4) are merely having β-thalassaemia trait alone has also to be considered. This however, appears to be unlikely when the clinical and haematological findings and the levels of Hb F and A2 in the propositus and his sister are compared with those of the other members of the family. One can however, only say this with certainty if the propositus or his sister marry a normal individual and have all their children showing β-thalassaemia trait. The possibility that the condition in our patient is the result of an interaction between α and β thalassaemia genes as was thought to be the case in the patients described by Fessas (1961[15], 1965[16]), by Pearson (1966)[17] and by Kan and Nathan (1970)[18] cannot be entirely ruled out. It is assumed that the presence of α-thalassaemia tends to ameliorate the condition of β-thalassaemia, the lack of α chains being more or less compensated by a lack of β chains resulting in less imbalance of available α and β chains. Kan and Nathan (1970) suggested from the results of chain synthesis studies that one of their cases of mild Cooley's anaemia was a combination of two β-thalassaemia genes each one received from one of the parents and an additional α-thalassaemia gene received from one of the parents (α and β thalassaemia genes are not allelic). This last mentioned parent was presumably doubly heterozygous for α-thalassaemia and β-thalassaemia, a condition not leading to clinical symptoms, but resulting in an increase of Hb A2 and hypochromia and microcytosis of the red blood cells; in such a case the β/α ratio of chain synthesis is near normal instead of the ratio of around 0.5 usually found in β-thalassaemia trait. The condition in their patient with mild Cooley's anaemia with clinical symptoms is therefore presumably the result of the presence of two β-thalassaemia genes and one α-thalassaemia gene and the β/α ratio was 0.45 instead of near zero usually found in the severe cases of homozygous β-thalassaemia. However, they admitted that the finding of the β/α ratio is not an absolute proof for this assumption and that the possibility of their patient being homozygous for a mild type of β-thalassaemia cannot be entirely ruled out. Contrary to their findings, in the parents of our patients and in other members of the family with β-thalassaemia trait, the changes were very slight, suggesting a milder type of β-thalassaemia. Probably, a homozygous condition of a milder variety of high A2 type of β-thalassaemia is the most plausible explanation of the condition in our patients.

The family reported here from Malaysia shows that mild forms of homozygous high A2 type of β-thalassaemia do occur here too as have been reported in other countries. The reason for the mild clinical course in these patients may be related to further heterogeneity of the underlying defect even in the high A2 type of β-thalassaemia. Perhaps at some future date structural studies of the haemoglobin of these patients combined with studies of haemoglobin synthesis may throw some light on the exact nature of this defect. A further point to note in family A is that even within the same family two similarly affected siblings, i.e. the propositus (II-1) and his sister (II-4) can manifest different degrees of severity in the clinical and haematological features. There must therefore be other factors, genetic or environmental, which alter the expression of the β-thalassaemia genes so that different degrees in the severity of the clinical and haematological findings occur in different families and to some degree even within the same family. A careful evaluation of patients like those reported here is necessary in the search for such factors which might alter the severity of the disease. The findings at present however, show that not all cases of homozygous high A2 type of β-thalassaemia necessarily manifest the classical clinical features of severe haemolytic anaemia of early onset and an early death. Hence one must keep an open mind in considering this diagnostic possibility even when an adult presents for the first time with anaemia and hepatosplenomegaly. Also, when the diagnosis of homozygous high A2 type of β-thalassaemia is made, prognosis is not necessarily as bleak as

that which is usually associated with classical thalassaemia major (Cooley's anaemia) even in the absence of a carefully controlled transfusion schedule.

Summary

Homozygous high A2 type of β-thalassaemia with mild clinical and haematological features is described in a Chinese family in Malaysia. The report points out that such cases occur here as have been reported in other parts of the world and that the diagnosis of homozygous high A2 type of β-thalassaemia does not always carry the very gloomy prognosis that is associated with classical cases of Cooley's anaemia.

Acknowledgement

The authors wish to thank Dr. R. Bhagwan Singh, Director, Institute for Medical Research, Kuala Lumpur, for permission to publish this paper.

References

1. Weatherall, D. J. (1967) 'The Thalassaemias'. Seminars in Haematology IV: 74 Grune & Stratton, New York, N.Y.
2. Weatherall, D. J. (1965) 'Thalassaemia Syndromes': 83,177. Blackwell Scientific Publications, Oxford, England, p. 51.
3. Went, L. N. & R. C. Shooker, (1965). 'The genetic variability of thalassaemia'. Proc. Tenth Congr. Europ. Soc. Haemat. Stasbourg. Part II: 273, Karger, Basel, Switzerland.
4. Shooker, R. C., L. N. Went & J. Bok. (1966). 'A new genetic variant of beta-thalassaemia'. Nature 209: 44.
5. Fessas, P. (1968) 'The heterogeneity of thalassaemia'. In Plenary Session Papers, XII Int. Congr. Haemat., New York, pp. 52-63.
6. Pearson, H. A. (1964). 'Thalassaemia intermedia, genetic and biochemical considerations'. Ann. N.Y. Acad. Sci. 119, 390-401.
7. Erlandson, M. E., Brilliant, R & Smith. C. H. (1964). "Comparison of sixty-six patients with thalassaemia major and thirteen patients with thalassaemia intermedia: Including evaluation of growth, development, maturation and prognosis.' Ann. N.Y. Acad. Sci. 119, 727-735.
8. Heller, P., Yakulis, V. J., Rosenzweig, A. I. Abildgaard, C. F. & Rucknagel, D. L. (1966) 'Mild homozygous beta thalassaemia. Further evidence for the heterozygosity of the beta-thalassaemia gene'. Ann. Int. Med. 64, 52-61.
9. Farhangi, M., Sass, M. D., and Bank, A. (1970). 'Prolonged survival in homozygous high A_2-type beta thalassaemia.' Scand. J. Haemat. 7: 465-70.
10. Dacie, J. V. and Lewis, S. M.: Practical Haematology, 4th ed. (Churchill), London 1968.
11. Singer, K., Chernoff, A. I. and Singer, L.: 'Studies on abnormal haemoglobins. Their demonstration in sickle cell anaemia and other haemolytic disorders by means of alkalie denaturation'. Blood 6: 413, 1951.
12. Kleihauer, E., Braun, H. and Betke, K. (1957): 'Demonstration von fetalem Hamaglobin in den Erythrocyten sires Blutausstrichs'. Klin. Wshcr., 35, 637.
13. Robinson, A. R., Robson, M., Harrison, A. P. & Zuelzer, W. W. (1957). 'A new technique for differentiation of haemoglobin'. J. Lab. and Clin. Med. 50, 745.
14. Marengo Rowe, A. J.: 'Rapid electrophoresis and quantitation of haemoglobins on cellulose acetate'. J. Clin. Path. 18: 790, 1965.
15. Fessas, P. H. (1961): 'The beta-chain thalassaemia' In Haemoglobin Coloquium. H. Lehmann & K. Betke Eds.: 90 Georg Thieme Verlag. Stuttgart, Germany.
16. Fessas, P. H. (1965): 'Forms of thalassaemia.' In 'Abnormal Haemoglobins in Africa'. J. H. P. Jonxis, Ed.: 90. Blackwell Scientific Publications. Oxford, England.
17. Pearson, H. A. (1966): 'Alpha-beta thalassaemia disease in a Negro family'. N. Engl. J. Med. 275: 176.
18. Kan, Y. W. & Nathan, D. G. (1970): 'Mild thalassaemia: The result of interactions of alpha and beta thalassaemia genes'. J. Clin. Invest. 49, 635.

A Method of Illustrating Health Statistics in Peninsular Malaysia*

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THE USE OF rates in which events are related to the size of the population exposed to the risk of their occurrence is accepted practice in epidemiology. This allows for a better interpretation of health indices than the use of absolute frequencies or counts would permit. In particular, the relative importance of health indices is better illustrated by the use of rates. This concept of relative importance has not, however, been extended into common usage in respect of another dimension, namely, geographic area.

In an attempt to depict health statistics more fairly on a geographic basis, Sutherland (1962) devised two methods of presentation both using a series of concentric circles divided into sectors and annuli, with some attempt at maintaining relative geographic positions. In the first method each health unit was allocated an equal area within the circle (concentric sectoral isoarchic representation), while in the second method the area of the circle, sector or annulus was made proportionate to the size of the population served (concentric sectoral isodemic representation). The first method does not take into account different sizes of population at risk, and though the second method does, interpretation of relative size of areas of circles, sectors and annuli is not easy. Levison and Haddon (1965) demonstrated the use of a map, a population-by-area cartogram, the areas of which corresponded to the size of the population of upstate New York. On this they plotted the distribution of cases of Wilms' tumour comparing the effect with that obtained by plotting on a conventional map: the marked clustering seen in the latter was a function of population density and disappeared when areas were related to population size. They suggested that the method could be used for other types of information, such as cases of disease or injury, administrative services, personnel and hospital beds. They further suggested that the map areas could be made proportionate to segments of the population, for example, specific age groups. However, the construction of a map such as the one they demonstrated requires judgment and skill because the shape, relative positions and common boundaries of the areas have to be taken into consideration. Forster (1966) developed a demographic base map for Scotland, weighted in area according to population size, for relating disease or death rates to various sex-age segments of the local population at risk and to geographic position. No attempt was made to retain the geographic shapes of the administrative units; instead, the areas were stylized into shapes, basically rectangular. Due to the combination of rectangles of various dimensions, the ultimate shapes were so varied as to make direct comparison difficult.

The object of this paper is to present a simple method of drawing a demographic base map that can be used for charting a variety of indices in the fields of epidemiology and health administration for Peninsular Malaysia.

Method of Construction

A suitable dimension is selected to represent the total population at risk, in this case, Peninsular Malaysia's population of 8.8 million. In order to facilitate visual comparison between the geographic and demographic maps presented in Figure 1, the

*The territory was formerly named West Malaysia.

estimated area of 7.9384 square inches of a conventional map of Peninsular Malaysia has been used as the basis for the stylized geographic and demographic maps. Populations at risk may consist of segments of the total population, for example, the segment of rural dwellers, women 15 to 44 years of age, children under 15 years of age, or a particular ethnic group. In some instances a registered event, such as live births, or an enumerated characteristic, such as the number of living quarters, may be used as the "population at risk". The total area required may be represented by any value deemed suitable: for example, a total area of 100 square centimetres would permit easier calculation.

Squares are used to depict the area proportional to the size of the population at risk in each state, being calculated by simple proportion from the total area selected. The length of the side of the respective squares is obtained by finding the square root (Table 1) of the area.

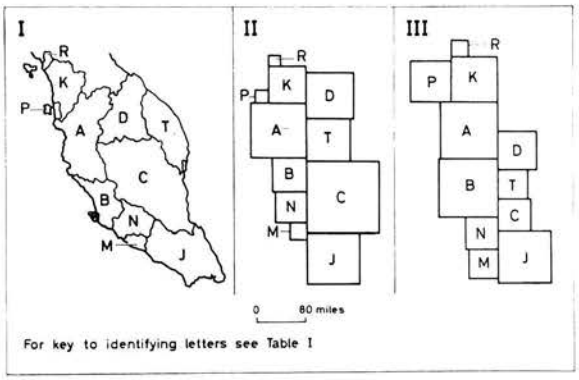

Figure 1.
Comparison of Geographic and Demographic Base Maps, Peninsular Malaysia.
I. Conventional geographic map
II. Stylized geographic base map
III. Stylized demographic base map (area by population).

The squares are assembled as shown in Figure 1 to provide the geographic base map and the corresponding demographic base map, roughly approximating the natural positions of the states and retaining the general shape of the country. Identification of each state in the figure is made easy by using the familiar first letters of the registration number plates of motor vehicles registered in the respective states.

Variation in the values of particular indices can be indicated by differential shading of the squares. This method is suitable for indices such as the one to four year old mortality rates, infant mortality rates, death rates by cause, annual case registration rates for tuberculosis, malaria prevalence in rural

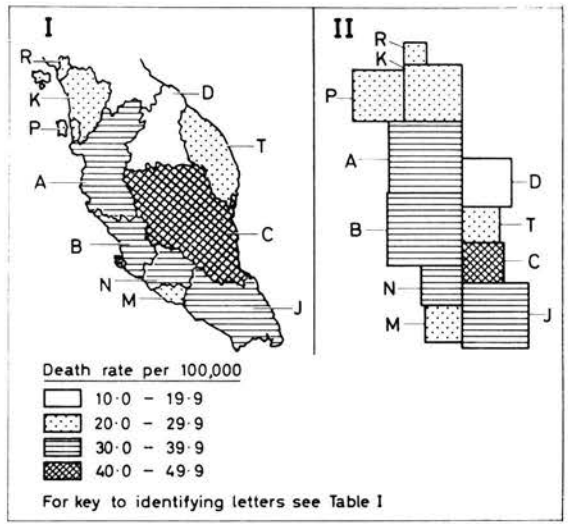

Figure 2.
Death Rates due to Accidents by State, Peninsular Malaysia, 1969-71.
I. Conventional map
II. Stylized demographic base map (area by population).

Malay children aged one to nine years, proportion of deliveries conducted by qualified personnel or proportion of living quarters with no toilet facilities.

Demographic base maps can also be used for smaller administrative areas, such as the districts within a state, or the mukims within a district or the operational areas of a rural health unit.

The technique of illustration described should always be presented with the relevant statistical tables for proper interpretation. It should not be used as a substitute for the statistical tables.

Examples of Application

Example 1

Death rates due to accidents for the states of Peninsular Malaysia averaged over the years 1969-71 are given in Table 2 and are charted in Figure 2 on conventional and demographic base maps for comparison.

Looking at the conventional map, the impression obtained is that the highest death rate due to accidents prevails in a large part of the country. While this is true in terms of geographic area, this part of the country, Pahang, is sparsely populated compared to the other states. The same information charted on a demographic base provides a better interpretation of the magnitude of the problem. The fairly high rates operating in the western states of

Table 1
Basic and Derived Data for the Preparation of Geographic and Demographic Base Maps

State	Identifying letter	Geographic area* (sq. mi)	Geographic Base		Population†	Demographic Base	
			Representative area (sq. in.)	Length of of side of square (in.)		Representative area (sq. in.)	Length of side of square (in.)
Johore	J	7,330	1.1453	1.07	1,276,969	1.1506	1.07
Kedah	K	3,639	0.5686	0.75	954,749	0.8603	0.93
Kelantan	D	5,765	0.9008	0.95	686,266	0.6183	0.79
Malacca	M	637	0.0995	0.32	404,135	0.3641	0.60
Negri Sembilan	N	2,565	0.4008	0.63	481,491	0.4338	0.66
Pahang	C	13,886	2.1697	1.47	504,900	0.4549	0.67
Penang	P	399	0.0623	0.25	775,440	0.6987	0.84
Perak	A	8,110	1.2672	1.13	1,569,161	1.4139	1.19
Perlis	R	307	0.0480	0.22	120,991	0.1090	0.33
Selangor	B	3,166	0.4947	0.70	1,630,707	1.4693	1.21
Trengganu	T	5,002	0.7816	0.88	405,539	0.3654	0.60
Peninsular Malaysia		50,806	7.9384[y]		8,810,348[x]	7.9384[y]	

*Annual Statistical Bulletin, Malaysia 1972, Table 12.5, p. 91.
†1970 Population and Housing Census of Malaysia; Community Groups, Table 1, p. 45.
[x]Excludes 9,580 wayfarers and persons afloat at the time of the Census enumeration.
[y]A difference of .0001 from the value obtained by adding the figures in the column is due to rounding off error.

Table 2
Data for Calculating Death Rates due to Accidents by State, Peninsular Malaysia, 1969-71

State	Population	Total deaths* due to accidents 1969-71	Average annual number of deaths	Death rate per 100,000 population
Johore	1,276,969	1,249	416	32.6
Kedah	954,749	711	237	24.8
Kelantan	686,266	368	123	17.9
Malacca	404,135	309	103	25.5
Negri Sembilan	481,491	548	183	38.0
Pahang	504,900	630	210	41.6
Penang	775,440	696	232	29.9
Perak	1,569,161	1,557	519	33.1
Perlis	120,991	96	32	26.4
Selangor	1,630,707	1,572	524	32.1
Trengganu	405,539	295	98	24.2
Peninsular Malaysia	8,810,348	8,031	2,677	30.4

*Includes medically certified and inspected deaths classified to BE 47 and BE 48, and uncertified deaths classified to "Accident" and to "Attack from venomous or other animal".
Vital Statistics, West Malaysia: 1969 – Table 50.01, 50.04, 1970 – Table 50.01, 50.04, 1971 – Table 48.01, 48.04.

Perak, Selangor, Negri Sembilan and Johore are given greater emphasis in relation to the whole country on the demographic base map. There is perhaps no doubt that a large proportion of the death rates in these states is contributed to by motor vehicle accidents within the larger towns and along the north-south trunk road which runs through these states. But given approximately similar magnitudes of death rates, for example, in Perak and Selangor, it can be appreciated that the problem in terms of the absolute numbers of deaths is approximately the same although in the conventional map, Selangor occupies less than half the area of Perak. However, in comparing Selangor and Negri Sembilan, the demographic map shows that Selangor has a much bigger problem although these two states are not too different in geographic area. It should also be noted that the four states involved are contiguous in the stylized map, thus retaining the geographic element of location to some extent.

Example 2

This example illustrates the use of live births as the "population at risk" in forming the base for charting infant mortality rates. The infant mortality rates shown in Table 3 are illustrated in Figure 3.

Table 3
Infant Deaths, Live Births and Infant Mortality Rates by State, Peninsular Malaysia, 1971

State	Live births	Infant deaths	Infant mortality rate per 1,000 live births
Johore	46,010	1,731	37.6
Kedah	33,215	1,399	42.1
Kelantan	27,768	1,329	47.9
Malacca	14,188	543	38.3
Negri Sembilan	16,940	603	35.6
Pahang	18,067	738	40.8
Penang	23,903	809	33.8
Perak	54,820	2,110	38.5
Perlis	3,486	149	42.7
Selangor	54,711	1,633	29.8
Trengganu	16,270	871	53.5
Peninsular Malaysia	309,378	11,915	38.5

Vital Statistics, West Malaysia, 1971, Table 9.01, 30.01, 30.02.

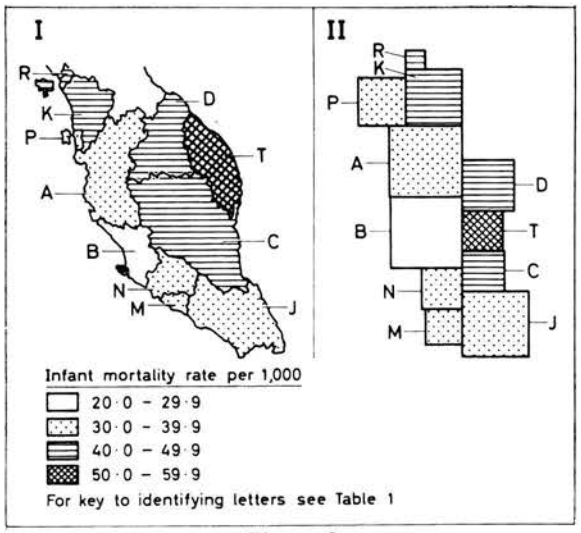

Figure 3.
Infant Mortality Rates by State, Peninsular Malaysia, 1971.
I. Conventional map
II. Stylized demographic base map (area by live births)

The conventional map gives the impression that high infant mortality rates prevail in a large part of the country especially in the states Trengganu, Kelantan, Perlis, Kedah and Pahang. While this is true in terms of geographic area, except for Perlis and Kedah, the corresponding much contracted areas in the stylized map show that these parts of the country have relatively fewer births that form the "population at risk" in the calculation of infant mortality rates. Thus the same information charted on a stylized map based on the number of live births gives the relative magnitude of the problem of high infant mortality rates a truer perspective.

Example 3

This example makes use of the technique for smaller administrative areas, in this case, the districts in Selangor. Table 4 gives data on the percentage of occupied private living quarters in non-gazetted rural areas that have no toilet facilities. This information is illustrated in both the conventional way and in a stylized map based on the number of occupied living quarters in the areas involved.

Looking at Figure 4 one is aware that there is a problem in Ulu Langat, making this district a good starting point for an environmental sanitation project. For districts with percentages in the same range, for example, Klang, Sabak Bernam and Ulu Selangor, the district with the largest number of living quarters, Klang, should perhaps receive

Table 4
Data for Calculating Proportion of Occupied Private Living Quarters with No Toilet Facilities in Non-gazetted Areas by District, Selangor, 1970

District	Occupied private living quarters	Quarters with no toilet facilities	Proportion with no toilet facilities (%)
Klang	15,089	1,009	6.7
Kuala Langat	12,999	1,592	12.2
Kuala Lumpur	38,029	1,659	4.4
Kuala Selangor	18,122	2,470	13.6
Sabak Bernam	11,074	670	6.1
Ulu Langat	8,703	1,552	17.8
Ulu Selangor	10,813	841	7.8
Selangor	114,829	9,793	8.5

1970 Population and Housing Census of Malaysia, Vo.l II, Part V, Table 14, pp. 51, 133, 260, 369, 451, 533.

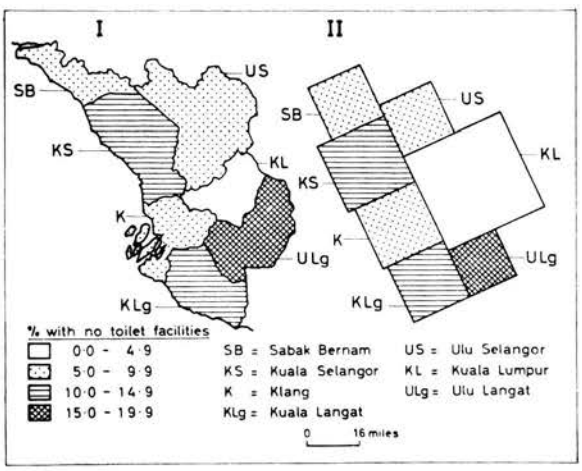

Figure 4.
Percentage of Occupied Private Living Quarters with No Toilet Facilities in Non-gazetted Areas by District, Selangor, 1970.
I. Conventional map
II. Stylized demographic base map (area by number of occupied private living quarters in non-gazetted areas).

priority of attention and the largest share of services available.

It should be noted that in an area with a larger number of living quarters, such as Kuala Lumpur, the absolute number of quarters without toilet facilities may considerably exceed another area with a higher rate, such as Ulu Selangor. In such an instance the absolute figures provided in Table 4 must be referred to and priority consideration may perhaps be given to Kuala Lumpur.

Summary

Area maps proportional to the "population at risk" are useful for the visual appreciation of the relative magnitude of a problem or the progress of a project. A simple method for constructing "base maps" using only squares is described. Three examples of its application using data on death rates due to accidents, infant mortality rates and percentages of living quarters with no toilet facilities, are provided.

References

Forster, F. (1966) Use of a demographic base map for the presentation of area data in epidemiology. British Journal of Preventive and Social Medicine *20*, 165-171.

Levison, M. E. and Haddon, W. (1965) The area adjusted map – an epidemiologic device. Public Health Reports *80*, 55-59.

Malaysia: Department of Statistics (1973) Annual Statistical Bulletin, 1972. Kuala Lumpur.

———(1971 – 1973) Vital Statistics, West Malaysia, 1969 – 1971. Kuala Lumpur.

———(1972) 1970 Population and Housing Census of Malaysia: Community Groups. Kuala Lumpur.

———(1972) 1970 Population and Housing Census of Malaysia: Vol. 2 General housing tables – towns, villages and local council areas, Part V Selangor. Kuala Lumpur.

Sutherland, I. N. (1962) Representations of national, regional, and local statistics. British Journal of Preventive and Social Medicine *16*, 30-39.

Battered Child Syndrome in a Malaysian Hospital

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THE HELPLESS, dependant child has been a scapegoat and target for displacement of anger for adults. Medical interest in this phenomenon has been of recent origin. Caffey (1946) described characteristic traumatic bone lesions in six infants who suffered from subdural hematoma without history of non-accidental injury. Clinical features of the battered child syndrome include superficial bruises, damage to the epiphyses of long bones presenting with swollen painful wrists, fractures of long bones with subperiosteal elevation and reaction, rib fractures and abdominal visceral injuries. (Kempe, et al, 1962; Fleming, 1967 and Touloukian, 1968, Bwibo, 1970). Head injuries are common; may be associated with chronic subdural haemorrhage, brain-injuries leading to mental retardation or neurological features simulating neurological disease. (Caffey, 1946; Gregg & Elma, 1969 and Baron, Bajar and Sheaff, 1970). Apart from beating, whiplash-shaking and jerking of abused infants were common causes of the skeletal as well as the cerebro-vascular lesions; the latter was the most serious complication and by far the most common cause of early death. (Weston, 1965 and Caffey 1972) The psycho-social aspects of the battered child, his family and the abuser(s) are important factors in the presentation and management of this syndrome (Steele, B. et al, 1968). No cases have so far been reported in Malaysia and Singapore.

Aim of this Study

To stimulate interest in the diagnosis and management of a syndrome which often indicates a much larger, but ill-defined problem of deprivation and disturbed maternal-child interaction.

Methods of Study

All the battered child syndrome known to the Pediatric and Medical Social Work Unit, University Hospital, Kuala Lumpur, since its establishment in 1967 till December, 1973 are included in this study. We reviewed both the social case notes and the medical records of the children. The data were collated – using the guide-lines in the California Pilot Project for the study of child abuse (Gil, 1968).

Findings

(a) *Incidence*

A total of seven cases were collected – the annual cases being: 1971 (2 cases), 1972 (2 cases), 1973 (3 cases).

The annual paediatric admissions at the University Hospital, Kuala Lumpur were 1968 (606 patients) 1964 (1336 patients), 1970 (1,653 pattents) 1971 (2,191 patients), 1972 (2,214 prtients) and 1973 (2,224). Outpatient attendances were 1968 (2,126 patients), 1969 (4,686 patients), 1970 (5,772 patients), 1971 (4,547), 1972 patients (4,608 patients) and 1973 (5,148 patients). All the inpatients were also included under outpatients when they were seen just prior to admission.

(b) *Presenting medical complaints and examination findings* (Table 1)

Initial source of information: The grandmother of case 1, complained that her daughter, an unwed mother, physically abused and poured hot water on the child. The father of case 3, during his weekly visit to a baby-sitter, found

that this son had bruises all over his body. The neighbours informed him that the baby-sitter and some of her children had beaten the toddler. A friend informed the biological parents of case 4 that the child was physically abused.

Team effort in diagnosis: Medical suspicion of abuses of cases 2, 5 and 6 were confirmed when family members were interviewed. A social worker first suspected and later confirmed that case 7, born prematurely (birth weight: 3 lbs.) during a flood, was physically abused by the mother. The child was referred initially for social management of malnutrition.

(c) Characteristics of the child's family and the abusers. (Table II).

(d) *Management* (Table III)
As management of the abused child is a complex socio-medical problem, all the patients were referred to the Medical Social Work Unit. But the Social workers never had a chance to meet the mother of case 1, the only outpatient in this series and case 2 who was referred to her when she was on leave. The mother of case 1 did not respond to a letter requesting her to come for an appointment. A letter to case 2 was returned because there was no such address.

Discussion

Legal situation and case detection

In our country, under the Young Persons and Children Ordinance, 1957, suspected cases of ill-treatment may be reported to a welfare officer or the police. Generally, the police refer the cases to the state Social Welfare Offices for investigation and management. None of our seven children had prior contact with the police or Social Welfare department.

In America, in spite of explicit legal protection for people who reported suspected cases of child abuse, some doctors have doubts about contracting the agencies concerned or referred the children to hospital Silver et al, (1969), through a retrospective review of 52 suspected instances of child abuse at Childrens' Hospital of the District of Columbia and with information obtained from consultative work with physicians confronted with such cases, attempted to explore the "gray areas" which made it difficult for the physician initially in evaluating a patient to establish or reject, the diagnosis of child abuse. He classified the types of cases or situations which confuse the physician as followed: (1) the subjective interference; some doctors admitted that they did not believe a parent could abuse his or her child. Others felt that it was not useful to report cases because the community agencies did not get involved or did anything useful. (2) The benefit of the doubt; some felt that the parents might be telling the truth in denying a history of injury. The history of trauma may be negative because the informant is unaware that the child had been injured, e.g. if the child was injured by someone else or out of the parents' presence. Concern about (3) the responsibility for the act and (4) parental privilege to punish and (5) allowance been given to the effect of alcohol may contribute to doctors not reporting the cases to the agency concerned. If doctors avoid having to decide about whether the parents are guilty or not, but concern with what best can be done for the child and family, the last three situations should not prevent him from reporting the cases.

Characteristics of the victims

Age: Four of the seven battered children were below 3 years old. Seventy-eight percent of the 132 children in the Children's Hospital, Winnipeg, Canada, 1957 to 1971 were below 3 years old. (McRae, et al, 1973).

Child's role which contributed to the attack: The mother of the child No. 5 was unable to cope with child's stealing, lying and truancy. Case 7 was a premature baby. Six of the 132 Canadian children had behaviour problems.

Medical Complaints and Findings

Six of the seven children had bruises. McRae et al (1973) noticed bruising in 54 of the 132 Canadian battered children. Although blood clotting studies were mostly negative, they recommended that these be done routinely to forestall any query in a medico-legal case. No blood clotting study was done in our patients.

Three of the seven children had skull fracture while a fourth child had a fractured humerus attributed to a fall.

Characteristics of the Abusers:

The abusers are frequently adults, but occasionally may be a child.

(a) *Adult:* Except forcase 5, all the families involved were from thelower social economic class. Smith, et al (1973) nia controlled investigation of 214 parents of battered babies showed that they were young and predominantly of lower social class. Among the mothers, 76% had an abnormal personality and 48% were neurotic. Nearly half were of borderline intelligence; 11% had a criminal record.

Table I
Medical Complaints & Injuries Sustained

Case No.	1	2	3	4	5	6	7
Sex	F	F	M	F	M	F	M
Age	6	4	2	1	5	11 months	1+
Ethnicity	M	C	I	C	C	I	I
Medical Complaints	Pain, R knee	Vomitting* Abdominal pain	Bruises	Bruises	Motor vehicle accident	Fell down 4 days ago	Sores all over body – 6 months
Injuries Sustained 1. Bruises	R thigh	face, chest & hip	chin, body & limbs	face & +	cane marks, body	Both cheeks	Nil
2. Haematoma	Nil	Nil	R parietal infected	frontal & left temporal	Nil	L parietal	Nil
3. Skull-fracture	Not X-rayed	Not X-rayed	R parietal	occipital	Not X-rayed	Both parietal	Not X-rayed
4. Abrasion	Nil	Nil	Yes	Nil	Nil	Nil	Nil

*Coffee Brown vomitus with blood clot
+ Left periorbital oedema

Table II
Some characteristics of abusers and family

Case No.	1	2	3	4	5	6	7
Relationship to child	Mother	Mother	Baby-sitter	Foster-brother	Father (separated)	Grand-mother*	Mother
Age of abuser (Yrs.)	19	30 +	30 +	7	30 +	40 +	23
No. of children in family (where child stayed)	Nil	5 sibilngs	7 (children of baby-sitter)	1 (the abuser)	3 siblings – beaten up by father too.	4 siblings	3 siblings
Occupation of biological father	Unknown	Unskilled worker	Tapper	Odd-job	Odd-job	Contract labourer	Odd-job

*The father was either out of town or not at home. Her mother was very submissive to the grandmother. Both the grandparents who stayed next door, were alcoholic.

Table III
Management of Six Abused Children

Case No.	1	2	3	4	5	6	7
Associated findings	Hb: 12.3 G	Hb: 10 G	Hb: 8.4 G	Hypothyroi-dism	Hb: 12.4 G	Hb: 12.1 G/ (Mal-nourished)	Hb: 8.6 G/ (Mal-nourished)
Skeletal survey	Not done	Normal	Normal	Not done	Not done	Normal	Not done
Specific Treatment	(Out-patient)	I.V. fluid aspiration	Syrup peni-cillin & Cloxacillin	Nil	Nil	Social stimulation syrup bacterium	Crystalline penicillin
Contact with parents by Social Worker	No	No	Yes	Yes	Yes	Yes	Yes
Follow-up/ Readmission	Not given	Defaulted	Defaulted again inspite of reminder	Defaulted	Defaulted	Follow-up 3 times*	Yes

*She had an earlier admission from 28.11.72 – 3.1.73 for failure to thrive and bronchopneumonia. Two readmissions after detection of physical abuse:
1. July 1973 URTI & gastro-enteretis
2. Sept. 1973 admitted again for 1 day, fit, haematoma of R parietal– occipital and behind left ear found "due to fall during fit".

Off the athers, 64% had an abnormal personality, more than half being psychopaths; 29% had a criminal record. Revidivism was an associated feature.

In a psychiatric study of 32 men and 7 women convicted of cruelty with violence, Gibbens and Walker (1956) concluded that it was rejection, indifference, and hostility rather than cruelty in their own childhood which made cruel parents. In two-thirds of these cases, the living conditions were reasonable and sometimes good. This and other studies suggest that there is some overlap in the social and psychological elements that produce neglect or cruelty.

Terr (1970) found that important factors leading to abuse were fantasies of the abuser about the child, exaggerated dominant-submissive patterns in the marriage, and contributions of the child to the battering.

(b) *Child:* Case 4, who had a skull fracture, was allegedly battered by a seven year old foster brother. Adelson (1972) reviewed five infants, all less than one year old, who were killed by children 8 years or younger. None of the victims showed any stigmata of adult "battering" in the form of multiple, non-lethal metasynchronous trauma. Adult involvement in the fatal terminal episode was excluded by thorough police investigation. A preschool child is capable of homicidal rage when he is provoked by what he considers to be a threat to his sense of social security in his family unit or immediate human environment.

Management and Follow-up

The medical management is fairly clear cut. The social management – including counselling to parent-figures and teaching of child-rearing proves difficult. In many cases they avoided any further contact with the hospital as shown by the high rate of defaulting of follow-up.

Case 6 had a re-admission when she fell down during a fit and sustained a fracture of the right parietal bone. Just prior to the re-admission of case 7, he fractured his humerus during a fall.

Placement of the child to prevent recurrence of another attack needs planning. The grandmother took child No. 3 to her home after the incident at the baby-sitter's home. The real parents took back child No. 4 from the foster-home after the incident. Case 6 was fostered after the child's parents repeatedly requested foster-care and the child's physical condition deteriorated.

Morse, et al (1970) followed up 25 children from twenty-three families for three years after hospitalization for injuries or illnesses judged to be sequellae of abuse or gross neglect. During this follow-up period, approximately one-third of the children had again been suspected of being the victims of physical abuse or neglect. An assessment of intellectual, emotional, social and motor development disclosed that 70% of the children were judged to be below normal range, though often mental retardation or motor hyperactivity was thought to have preceded the abuse.

An Appeal to Medical Practitioners and Others

Seven cases of battered child syndrome within a six year period, with all these cases clustering in the last three years, may indicate that we are missing some cases. These seven cases include six with bruises, three with skull fracture and one with abdominal injury show that we are diagnosing mainly the severe degree of non-accidental injury to children. Among the resolutions passed at a Conference of multi-disciplinary workers concerned with the non-accidental injury to children was an appeal to hospitalize a suspected child immediately (B.M.J., 1973). This will allow time for medical and social investigations and management and probably, avoid a repeat assault. Currently, a service cum research orientated project is being carried out in Hospital Besar and University Hospital, Kuala Lumpur. The Family Counselling Service in the Social Welfare Department had been launched. The authors hope that in Kuala Lumpur, suspected cases will be referred to Hospital Besar and University Hospital for admission while all over Malaysia, suspected cases may be referred to the District Hospitals and State Social Welfare Officer. The general practitioners' alertness to these problems will prevent the hidden morbidity and occasional death in this syndrome. We hope that families need not be proved guilty in order to receive help for their children.

Summary

Between 1968 and 1973, seven battered child syndromes were treated in the University Hospital, Kuala Lumpur. All the seven children were seen between 1971 and 1973. The clinical features include bruises, scalp haematoma, radiological evidence of fractures of skull and abdominal visceral injuries. The history of assault was available at admission in three cases while the suspicion was confirmed later in the other four. Three of them were under three years old. One of the abusers was a 7 year old boy. The families concerned frequently did not bring their children for medical and social follow-up. The importance of team work

between the doctors and social workers, and hospitalization of the suspected child at the initial stage, were stressed. An appeal to medical practitioners and others for co-operation in detection of cases was made.

Acknowledgement

We thank Miss P. C. Sushama, Chief, Medical Social Work Unit, University Hospital for giving us an initial list of battered child syndrome, Professor Tan Eng Seong, Head, Department of Psychological Medicine for his encouragement, the following attending doctors: Professor K. Somasundaram, Dr. Leela Raju, Dr. Tay Leng Kuan, Dr. V. Bhandari, Dr. K. R. Kamath and medical social workers, Mr. R. Vanian, Mrs. M. Bromfield and Miss K. Alves for their patients. Mrs. P. C. Phung, Medical Records Unit supplied us the statistics.

References

1. Adelson, L. (1972) The Battering Child. *JAMA 222*: 159-161.
2. Baron, M. A., Bejar, R. L., Sheaff, P. J. (1970) Neurologic Manifestations of the Battered Child Syndrome. *Pediatrics 45*: 1003-1007.
3. *Br. Med. J.* (1973) Contemporary Themes, Non-accidental Injury to Children, *4*: 96-97.
4. Bwibo, N. O. (1971) Battered Child Syndrome. *East Afr. Med. J., 48* : 56-61.
5. Caffey, J., (1946) Multiple fractures in the long bones of infants suffering from subdural hematoma. *Am. J. Roentgen, 56* : 163-173.
6. Caffey, J. (1972) On the theory and practice of shaking infants, *Am .J. Dis. Child, 124* : 161-170, 1972.
7. Fleming, G. M. (1967) Cruelty to Children; *Br. Med. J., 2* : 421-422.
8. Gibbens, T. C. N., and Walker, A., (1956) Cruel Parents. London: Institute for the Study and Treatment of Delinquency.
9. Gil, D. G. (1968) Incidences of Child Abuse and Demographic Characteristics of Persons Involved in The Battered Child. Helfer, R., Kempe, C. (Ed.) Chicago, Univ. of Chicago Press, 19-40.
10. Gregg, G. S. and Elmer, E. (1969) Infant Injuries: Accident or Abuse. *Pediatrics, 44* : 434-439.
11. Kempe, C. H., Silverman, F. N., Steele, B. F., Droegemyeller, W., Silver, H. K. (1962) The Battered-Child Syndrome *JAMA ; 181* : 17-24.
12. McRae, K. N., Ferguson, C. A., Lederman, R. S. (1973) The Battered-Child Syndrome, *Can. Med. Assoc. J., 108* : 859-866.
13. Morse, C. W., Sahler, O. J. Z., Friedman, S. B., (1970) A Three Year Follow-up Study of Abused and Neglected Children. *Am. J. Dis. Child; 120* : 439-446.
14. Silver, L. B., Dublin, C. C., Lourie, R. S. (1969) Child Abuse Syndrome: "The Gray Areas" in Establishing a Diagnosis. *Pediatrics, 44* : 594-600.
15. Smith, S. M., Hanson, R., Noble, S. (1973) Parents of Battered Babies: A Controlled Study, *Br. Med. J., 4* : 388-391.
16. Steele, B., Poiclock, C. (1968) A Psychiatric Study of Parents who Abuse infants and small children in The Battered Child. Helfer, R., Kempe, C. (Ed.) Chicago; Univ. of Chicago Press, 103-147.
17. Terr, L. C. (1970) A Family Study of Child Abuse, *Am. J. Psychiat., 127* : 665-761.
18. Touloukian, R. J. (1968) Abdominal Vosceral Injuries in Battered Children. *Pediatrics, 42* : 642-646.
19. Weston, J. T. (1965) The Pathology of Child Abuse Abuse in Helfer, R. E., Kempe, C. H. (Eds.): The Battered Child. Chicago, Univ. of Chicago Press, pp. 77-100.

Spontaneous Extravasation of Contrast Medium Associated with Acute Renal Colic

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EXTRAVASATION OF contrast medium during intravenous urography in patients with acute renal colic is rare as pointed out by Ford in 1967. In the past few years this phenomenon is becoming increasingly common (Edwards 1969) and it is the purpose of this paper to report three cases which demonstrated very typical appearances. Failure to recognise these changes may unnecessarily lead to further investigations.

Extravasation of contrast in or about the kidney is well recognised in renal trauma, retrograde pyelography in patients who has had previous surgery on the kidneys and in some with tight abdominal compression during urography. These conditions have been ruled out as the obstructing calculus was demonstrated in all our cases.

Case I

R. J., a 53-year-old man presented with acute pain in the left loin characteristic of renal colic for 16 hours. He had no previous history of such pain. On examination extreme tenderness in the left loin was elicited. The blood pressure was normal with no history of haematuria or dysuria. An intravenous pyelogram done soon after admission showed extravasation of opaque material from almost all the calyces of the left kidney (Figs. 1A & 1B). The kidney was enlarged and the calyces were moderately dilated. The opaque material in the renal sinus surrounded the collecting system and tracked down along the ureter. A delayed radiograph showed a dilated left ureter with obstruction at the vesicoureteric junction. The calculus was passed out on the next day of admission and a repeat pyelogram done showed normal calyceal pattern of left kidney (Fig. 1C).

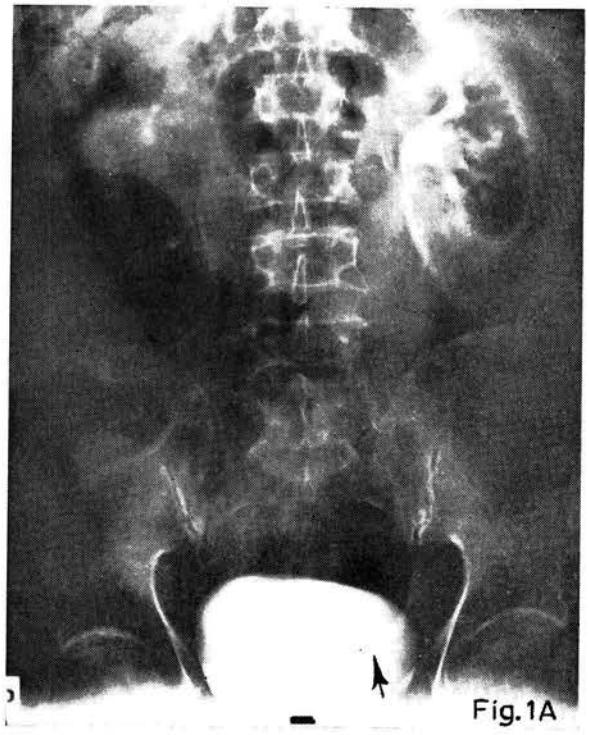

Figure 1A

Shows extravasation of opaque medium from almost all the calyces and the contrast is seen tracking down the pelvis and the ureter. Arrow shows the dilated ureter with obstruction at the vesico-ureteric junction.

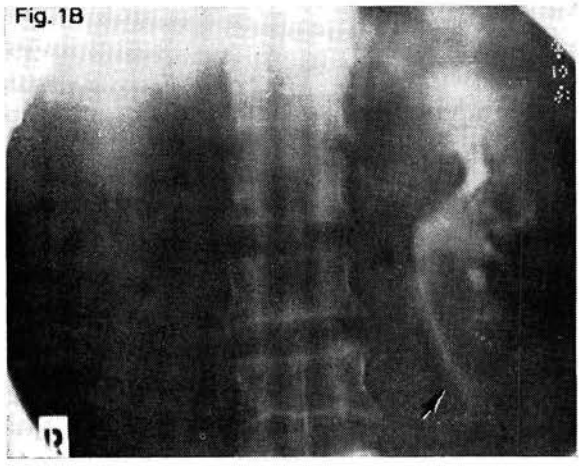

Figure 1B
Tomogram of the same patient shows very clearly the opaque material around the calyces and in the renal sinus. Arrow points to the contrast along the ureter. The pelvis of the left kidney is dilated as compared to the right.

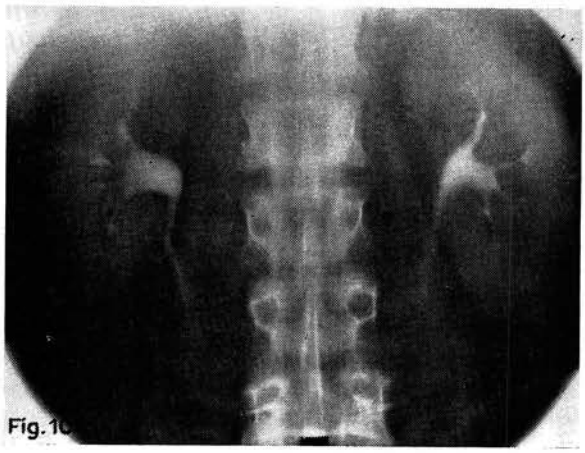

Figure 1C
Normal calyceal pattern after the stone was passed out.

Case II

E. C., a 48-year-old man, was admitted with a 18 hours history of pain in the left loin which was radiating to the front of the abdomen. There was nausea and vomiting together with frequency of micturition. No haematuria or dysuria was experienced. No past history of such pain was obtainable. An intravenous pyelogram was done on the same day and it showed slight hydronephrotic changes of the calyces with extravasation in the renal sinus from all the calyces of the left kidney (Fig. 2A). The opaque medium was diffusely distributed. A ureteric stone was demonstrated at the vesicoureteric junction. A repeat intravenous pyelogram after the stone was passed out showed a normal calyceal pattern. Tomograms of the left kidney (Fig. 2B) were done during the second examination and it showed an increase in translucency of the renal sinus suggesting the presence of excess fat.

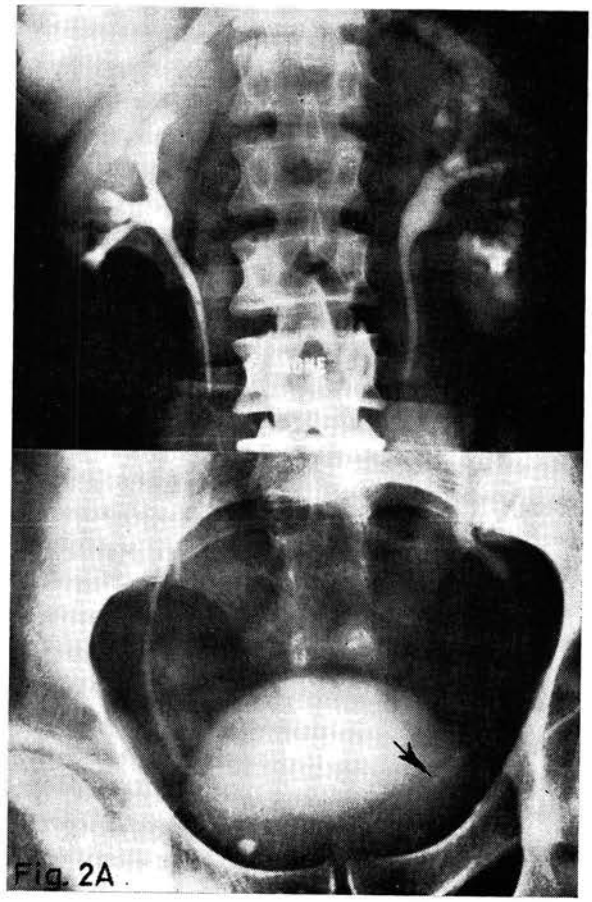

Figure 2A
Shows contrast medium along all the calyces and in the renal sinus. The ureter is dilated and the arrow points to the calculus at the vesicoureteric junction.

Case III

L. W., a 64-year-old male, was admitted as an emergency with severe left loin pain and vomiting. Three years prior to admission he had an operation of the right kidney for renal calculi. On examination his blood pressure was 180/110 mm. Hg., and had marked tenderness in the left loin. An intravenous pyelogram was done and this showed extravasation

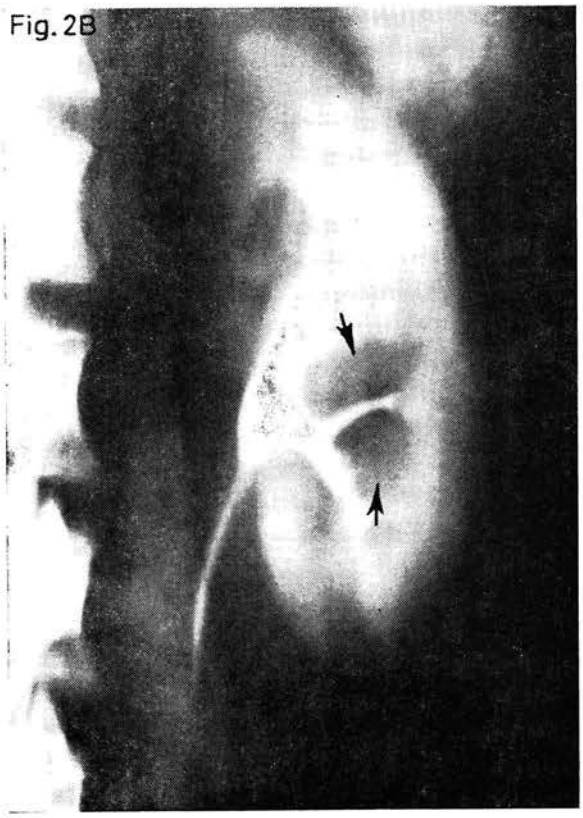

Figure 2B

Tomogram during intravenous pyelography of the same patient as in Fig. 2A after the stone was passed out. Normal calyceal pattern, but there is increase in translucency in the peripelvic area (arrow) suggesting excess fat.

of opaque medium into the left kidney substance and along the upper end of the left ureter (Fig. 3). The left ureter was dilated as compared to the right and a calculus was lodged at the vesicoureteric junction. A repeat pyelogram after the stone was passed showed normal appearances.

Discussion

The recognition of extravasation as a benign peripelvic phenomenon due to acute renal colic on urography is of great clinical significance. Failure to understand this may lead to unnecessary further investigations. The radiological features are both characteristic and diagnositic. However, radiographic appearances of medullary sponge kidney, cavitating tuberculosis and pyelonephritis should be considered in the differential diagnosis. In our series an obstructing calculus was always demonstrated in all three cases and excretory pyelograms done after the stone was passed showed normal renal appearances.

The mechanism of extravasation is not very clearly understood. Rabinotwitz (1966) relates it to the rapid rise in the intrapelvic pressure associated with ureteral obstruction. This appears to be the cause in our series as the calculus was always lodged at the vesicoureteric junction with proximal dilation of the ureter and pelvis and moderately dilated calyces. Olsson (1953) on his fourteen cases pointed out that the extravasation of opaque medium takes place through a tear at the junction of the fornix and the renal capsule. In all our three cases there was acute colicky pain and the calculus was demonstrated at the vesicoureteric junction. Due to the continuous back pressure distension of the ureter, pelvis and the calyces was seen. The kidneys were slightly enlarged and in one of our cases (Fig. 2B) tomograms revealed a translucency in the peripelvic area suggesting the presence of excess fat. We would like to postulate here, that the presence of excess fat may be a factor that allows more room for distension of the calyces. This in turn, due to increasing back pressure produce rupture of the fornices giving rise to extravasation.

Various types of extravasation of contrast medium are recognised. The one associated with

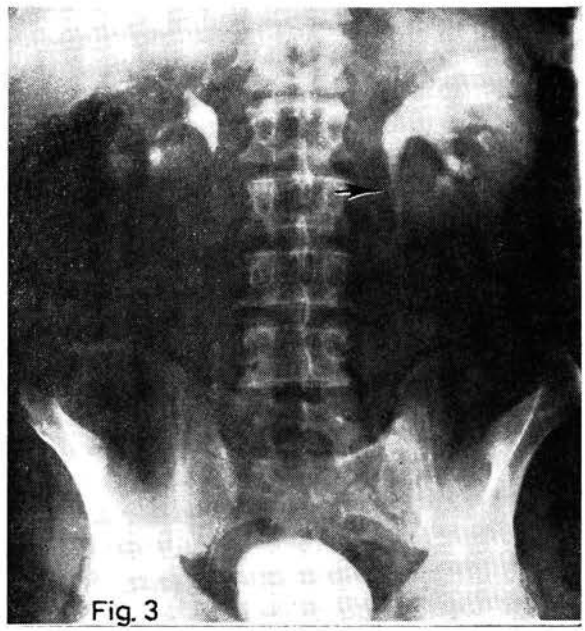

Figure 3

Shows extravasation in the renal sinus and along the left ureter (arrow). The ureter and pelvis are enlarged as compared to the right side.

renal colic is essentially a pyelosinous extravasation and the others like pyelo-lymphatic, pyelovenous and pyelo-interstitial are more extreme forms of pyelo-sinous extravasation (Edwards 1969). The pyelo-tubular extravasation is usually seen in retrograde pyelography and in some cases with tight abdominal compression during a routine intravenous pyelogram.

Summary

Three cases of acute renal colic giving rise to extravasation of radio-opaque medium during intravenous urography are discussed. The extravasation refers to the presence of opaque medium outside the pelvi-calyceal system in the renal sinus and may track down the peri-pelvic region on to the psoas muscle. This is essentially a benign complication and it is important to recognise it. Various explanations for the extravasation are reviewed and the one given by Rabinotwitz (1966) appears to be the most logical. He feels that ureteral obstruction gives rise to increase in pressure in the pelvis of the kidney and this in turn produces rupture of the fornices. The radio-opaque medium then escapes through this tear giving typical radiological appearances.

In one of our cases it is felt that the presence of excess fat could be a factor that allows more room for distention of the calyces due to back pressure and thence produce a tear in the fornices.

Acknowledgements

The authors are indebted to the Department of Medical Illustration, Faculty of Medicine, University of Malaya, for the photographs and to Miss Janet Low for her assistance in preparing this paper.

References

1. Braun, W. T., Peripelvic extravasation during intravenous urography. Am. J. Roentgenol., Rad. Therapy & Nuclear Med., 1966, 98, 41-46.
2. Edwards, D., Part V, The Urogenital Tracts, Text Book of Radiology, Edited by David Sutton & R. G. Grainger, E. & S. Livingstone Ltd., 1969, Great Britain.
3. Fine, M. G. and Vermooteen, V., Spontaneous extravasation associated with excretory urography. J. Urology, 1960, 84, 409-413.
4. Ford, W. H., Jr., Palubinskas, A. J., Renal extravasation during excretory urography using abdominal compression. J. Urol., 1967, 97, 983-986.
5. Harrow, B. R. and Sloane, J. A., Pyelorenal extravasation during excretory urography. J. of Urology, 1961, 85, 995-1005.
6. Hinman, F. JR., Peripelvic extravasation during intravenous urography, evidence for an additional route for blackflow after ureteral obstruction. J. Urology, 1961, 85, 385-395.
7. Narath, P. A., Renal pelvis and ureter. Grune & Stratton Inc., New York, 1951.
8. Olsson, O., Backflow in excretion urography during renal colic. In: Modern Trends in Diagnostic Radiology. Second Series, Edited by J. W. McLaren. Paul B. Hoeber Inc., New York, 1953, pg. 214-217.
9. Rabinowitz, J. F., Keller, R. J., Wolf, B. S., Benign peripelvic extravasation associated with renal colic. Radiology, 1966, 86, 220-226.
10. Serebro, H. A., Druskin, M. & Robbins, M. A., Spontaneous peripelvic urinary extravasation without idney rupture. New England J. Med., 1965, 273, 260-262.

Bell's Palsy – A Restrospective Study

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Introduction

BELL'S PALSY is a lower motor neurone paralysis of the facial nerve, characterized by its acute onset, its lone involvement, and its tendency towards spontaneous recovery. Though much is known about the illness, little is known about its aetiology. Cawthorne and Wilson (1963), and later Langworth and Taverner (1963), postulated that Bell's Palsy was due to compression of the facial nerve in the facial canal, especially at the stylo-mastoid foramen, as a result of swelling and oedema in the fibrous sheath of the facial nerve, caused by an inflammatory process. Ballance and Duel (1963, 1964) reported confirmation of this in their decompression operations. However, later workers did not find any swelling or oedema of the facial nerve, and Drachman (1969) considered that ischaemic facial palsy due to compression of the nerve only occurred in exceptional cases.

Whilst many conflicting views are held by various workers and researchers on the pathogenesis of Bell's Palsy, even more so are the views held by the medical profession on the treatment of the condition. Many advocate masterly inactivity as the best course of treatment as the majority of them (about 80-90%) will recover spontaneously, within 6 weeks to 6 months. The only measures needed are reassurance and attention to the affected eye. Some would include massage and electrical stimulation of the affected facial muscles. But these do not show to have any beneficial effects. In fact, they may even be harmful as they may aggravate the development of contractures. In the earlier days, the commando-type decompression operations were popular, but fortunately this drastic measure is now almost abandoned in the treatment of this benign and almost self-curing disease. Of late, more and more convincing reports are coming forward on the successes in the use of corticosteroids in the treatment of Bell's Palsy. Taverner and his colleagues (1966, 1967) showed that the adminstration of corticotrophin within the first 4 days of the development of Bell's Palsy could reduce the overall incidence of denervation by two-thirds in selected cases and that of severe denervation by 90%. In their later studies (Taverner et al, 1971), it was shown that prednisolone was even more superior than corticotrophin in the treatment of Bell's Palsy.

In this paper, the author made some valuable observations with regard to the aetiology and the role of prednisolone in the treatment of Bell's Palsy, in a retrospective study of a small endemic outbreak of Bell's Palsy in the District of Sitiawan in Perak.

Material and Methods

In the months between May and July 1973, 8 cases of Bell's Palsy presented to the author's clinic for consultation and treatment. Out of the 8 cases, 5 presented within 2 to 4 days of the onset of the illness, I presented on the 8th day, 1 on the 3rd week (about 21 days), and another came about 2 months after the onset of the illness. Diagnosis was made from history, clinical examination and the exclusion of other causes of facial palsy. When it was made certain that the patients were not having an underlying systemic disease, like diabetes mellitus or tuberculosis, all of them were put on a short 10-day course of oral prednisolone, starting with

an initial dose of 30 mg a day for the first 4 days, and then slowly tailing off the dose at the rate of 5 mg a day, Patients were followed up second – daily for one week, then weekly for one month, then monthly until complete recovery occurred. If recovery was slow and not in sight after 4 days, the original starting dose of 30 mg per day was continued for a further 4 days, and then tailed off. If fullness or tenseness in the ears, or heaviness of the head were complained of, the dose was immediately reduced to about 20 mg per day and maintained there until signs of recovery were noted and then the dose was slowly tailed off. Response was assessed clinically. During each follow-up each patient was weighed, his BP checked, and the functions of the affected facial nerve was tested.

Observations and Discussion

Though the study involves only 8 cases, some valuable observations are worth noting.

Out of the 8 cases, 2 are brothers living in the same house, 2 are an uncle and his neice living in close proximity in the same area. All are from two villages in the Sitiawan District about 5 miles apart, and all presented in the short three-month period between May and July 1973. Also, during this period there was an influenza-like epidemic in the region, and one of the patients had an influenza-like illness one week prior to the development of the Bell's Palsy. These observations strongly implicated an infective agent, possibly and probably a virus, as the causal agent in this small endemic outbreak of Bell's Palsy. However, it is regretable that a viralogical study was not done.

Table 1
Made of Presentation

Presenting Complaints	Number of Patients
Crooked mouth	8
Numbness or 'thickish' sensation of the affected side of the face	4
Hyperacusis	1
Loss of taste sensation of anterior 2/3 of tongue	1
Pain behind ear of the affected side	2
Dizziness and vertigo	1

The above summarizes the mode of presentation by the cases studied. All the 8 cases pointed to the crooked mouth as their main complaint. Out of these, two pointed to the non-paralysed side as the side involved because the functioning muscles pulled the angle of the mouth of this side upwards and towards it giving the impression of the mouth being 'crooked' upwards on this side. One case was particularly severely affected presenting with all the above complaints. His dizziness and vertigo persisted and became more severe even after the ceasation of prednisolone therapy and complete recovery of his facial nerve, and necessitated hospitalisation for one week.

Table 2
Age Sex incidence

	Age in years				Total
	15-20	20-30	30-40	40-50	
Number of Patients	1	5	1	1	8
Sex	F	M	M	M	

Prednisolone Therapy

The response to prednisolone therapy was remarkable. Those who presented within one week of the onset of the illness for treatment showed signs of improvement within one week of treatment, and complete recovery occurred within two to three weeks. One case who presented on the second day of the disease had complete recovery within a week. Another case who presented at the third week took about one month for complete recovery. And one case, an 18-year-old school girl, who presented at about two months, did not show any improvement one month after treatment; she subsequently absconded.

It is learned from here that the earlier prednisolone therapy is started the faster is full recovery. Also, prednisolone therapy does not only prevent denervation but it definitely hastens recovery. Taverner and his colleagues (1971) recommended a higher dose, starting at 20 mg tid for 4 days, then reducing by 20 mg per day for 4 days, and ending on the final day with 10 mg. The author used a much smaller dose. It is the author's belief that the sodium and water retention effect of prednisolone may aggravate the already swollen and oedematous facial nerve thus causing more compression especially in the first few days of the treatment. In this study, 2 patients complained of fullness or sensation of tension in the ears two days after the treatment, and five put on 2-3 lbs in the first week of treatment, and one even complained of worsening of the condition until the dose was reduced. This showed that the harmful sodium and water retention effect of prednisolone could offset and even surpass its beneficial anti-inflammatory effect. This is especially so when

the dose is large and in the first few days of the treatment. Observation in the study showed that the sodium and water retention effect of prednisolone usually lessens as the therapy is continued even if the dose is not reduced. In the initial treatment of Bell's Palsy, the sodium and water retention effect of prednisolone is most undesirable as it will cause more oedema and swelling and hence more compression. The main aim of the treatment is to prevent denervation as a result of ischaemia caused by the compression. Therefore, especially for our Asians, who on the whole tolerate smaller drug dose than our European counterparts, it is the author's opinion that the smaller dose should be used instead of that recommended by Taverner and his colleagues in order to prevent more oedema and hence more compression. Also adjustment should be made for individual cases when necessary.

Conclusion

An opportunity was taken to make a retrospective study of a small endemic outbreak of Bell's Palsy in the District of Sitiawan. Though the study involved only 8 cases, some valuable observations were made. A viral agent was strongly implicated as the causal agent in the endemic, and the study showed that prednisolone has difinitely a place in the treatment of Bell's Palsy. It hastens recovery and prevents denervation. Taverner and his colleagues used prednisolone only for selected cases and did not recommend the treatment for teenage patients as most would recover spontaneously. It would seem, however, that these young patients would be denied the benefit of the treatment, if they are not given at least a trial course of the treatment. It is the author's opinion that all patients with Bell's Palsy presenting within one month of the onset of the illness should be given a trial of the treatment.

References

Cawthorne, T., and Haynes, D. R. (1956) Facial Palsy, Brit. Med. J., II, 1197.

Matthews, W. B. (1961) Prognosis in Bell's palsy, Brit. Med. J., II, 215.

Morris, W. M. (1938) Surgical treatment of Bell's palsy, Lancet, I, 249.

Taverner, D. (1955) Bell's palsy, a clinical and electromyographic study, Brain, 78, 209.

Cawthorne, T., and Wilson, T. (1963): Arch. Otolaryng., 78, 429.

Drachman, D. (1969): Ibid., 89, 147.

Langworth, E. P., and Taverner, D. (1963): Brian, 86, 463.

Taverner, D., et al. (1966): Brit. Med. J., I, 391.

Taverner, Kemble, F., and Cohen, S. B. (1967): Ibid., II, 581.

Taverner, D., Cohen, S. B., and Hutchinson, B. C. (1971): Brit. Med. J., III, 20.

Vasectomy for Population Limitation

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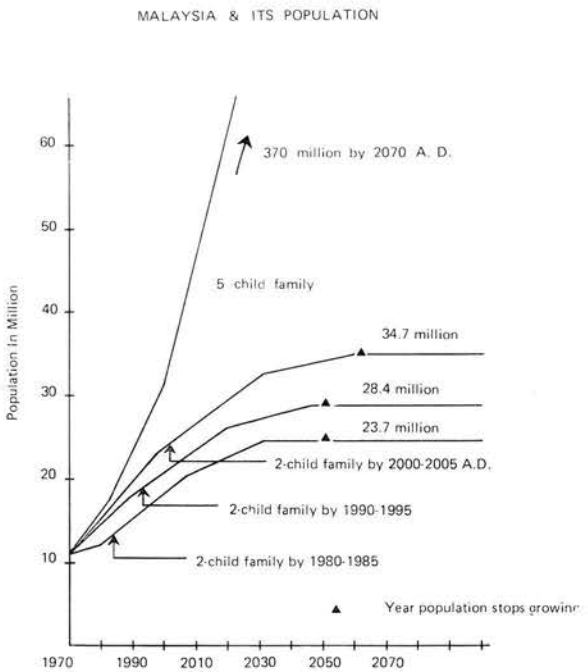
IN the last few months, it has become obvious that it is not standing room that we are going to be short of, very soon, but of essential commodities. World shortage of grain, spiralling prices of commodities and the widening gap between the developed and underdeveloped countries are frequent headlines in our daily newspapers. Hence if there is going to be any future for our grandchildren, all family planning programmes should push the idea of a two child family.

There are approximately three and one half billion people in the world today. Based on the current 2 percent growth rate in population there will be eight billion by 2005 and sixteen billion by 2025. Many authorities feel that the earth will not support more than ten billion lives which at current growth rates will be the population fifty years from now. Hence there is an urgent pressing need to control this benign situation which already has a tendency to become malignant.

In Malaysia the population now is just over ten million. If a two child family is attained, by the year 1980 to 1985, the population would reach a plateau of about 24 million in 2025. However if this two child family is only attained by the year 2000–2005 A.D., the population would be stabilised at about 35 million by 2060. If the present trend of five child family continues, the population would reach an unimaginable 370 million by 2070.

If one accepts the idea of a 2 child family, most women would have completed their childbearing by the age of 25 – 30 years. Probably a reversible method should be advised till the children are over



5 years of age because of the high infant mortality in many countries. During this 5 years there would probably be a few unplanned pregnancies due to contraceptive failures. Hence the importance of the need of legal abortions as a back up procedure for these cases. Once the children are grown up, a permanent method of contraception is advisable. For the women or man involved, it is a welcome release from further efforts to control fertility. They also have the advantage of a low failure rate.

Whether one should advise vasectomy or tubal ligation would depend on a number of factors. As things stand in most developing countries post-partum tubal ligation would be the first choice. However if one accepts the idea of a 2 child family, then probably vasectomy has obvious advantage over interval tubal ligation.

Some of these advantages are that it could be done as an out patient procedure, with simple instruments and the recovery period is shorter. Also the number of vasectomies that can be done in a crash programme are much more than the number of tubal ligations that can be done over a similar period. However there are other Social and Cultural factors which may favour either vasectomy or tubal ligation.

In countries which do not already have a large vasectomy programme, an organised plan would help the vasectomy campaign.

A. **Training of Surgeon:**

This is a very important aspect. Surgical qualifications are alone inadequate. At the Intra-Governmental Co-Ordinaitng Committee for Family Planning Activities last April in Malaysia, it was decided that the trainee Surgeon should assist in 5 vasectomies and be assisted in at least 5 vasectomies before he is accepted as a competant vasectomy surgeon.

Vasectomy is a very simple out-patient surgical procedure done under local anaesthesia. Fortunately mortality is very rare from it. However minor complications such as infection and haemotoma are not uncommon.

Rarely orchitis, epididymitis and spermatic granuloma are seen as long term complications.

It is with respect to these points that special surgical care is important.

To prevent spontaneous reanastomosis either the ends should be cauterised, turned back, or buried in different fascial planes, as done in our hospital. If a vasectomy is done on relatively young man, a shorter segment of the vas should be exercised. This helps re-anastomosis, if required later.

The Surgeons should also be taught, that cases with a varicocoele, scar tissue from previous operations or an inguinal hernia are better done under a general anaesthesia.

B. **Nurses Para Medical Staff:**

They form a very important part of the vasectomy team. All of them should be given a good grounding in Male reproductive physiology. This would enable them to explain the effects of the operation to the patients and their wives. As in other family planning services these staff can take the role of education and motivation. In the vasectomy team, they would:

1. Interview and book patients for vasectomy. In this connection, the exclusion of patients with sexual problems should be studied.

2. Give pre and post-operative instructions.

3. Arrange for semen analysis to be done after a given interval.

During the initial period of a vasectomy campaign, it is important to aim at perfection. With satisfied individuals, the news spreads round by word of mouth, and the campaign would have started out on a sound footing. Most vasectomy reports have mentioned over 90% of satisfied patients.

In conclusion we would say that with the rising medical costs and the urgent need to control population growth, vasectomy would play an increasingly important role in the future.

References

1. Hackett R. E., Waterhouse K. – Am. J. Obst. & Gynae., Volume 116 No. 3.
2. Paul Gillepsie – Vasectomy Information Manual.
3. I.P.P.F. Medical Bulletin 4(1): 4, April 1970.

Portal Cirrhosis and Idiopathic Pulmonary Fibrosis with Generalised Moderate Haemosiderosis

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Introduction

A CASE is described with an unusual association of portal cirrhosis, multiple nodular fibrotic lesions in both lungs and widespread but moderate haemosiderosis.

Case Report

A Chinese Male of 38 years was admitted to the University Hospital with intermittent haemoptysis for 10 years, yellowish discolouration of the body for 6 months, polyuria and polydypsia for 3 months. There was no previous serious illness. He lived in Klang, Selangor, and worked as an odd-job labourer. He had donated blood several times previously, and drank about two pints (1200 ml) of "toddy" (an alcoholic beverage from palm) per week. There was no family history of any serious illness, including diabetes, tuberculosis or liver disease. On examination he was well-built, jaundiced, with minimal ankle oedema and many spider naevi. Apart from moderate hepato-splenomegaly there were no abnormal physical findings. The urine contained no protein or bilirubin but there was glycosuria and increased urobilinogen; porphyrins were normal. A glucose tolerance test showed a moderately severe diabetic curve. Serum bilirubin was 2.6 mg/100 ml, S.G.O.T. 57 I.U./1, alkaline phophatase 20 King-Armstrong units, plasma protein 7 g/100 ml (albumin, 3.17 g, α 1-globulin, 0.06 g, α 2-globulin, 0.26 g, β-globulin, 1.08 g, α -globulin, 2.43 g per 100 ml). Radiological examination of the chest showed multiple irregular nodular lesions with interstitial infiltrates throughout both lungs. Haemoglobin was 16.7 g/100 ml with slight variability of the red cells, WBC 4700/μl, platelets 60000/l μ. Sternal bone marrow appeared structurally normal but with moderate excess of haemosiderin in the storage reticulum cells and normal fine iron granules in the erythroblast cytoplasm. Serum iron was 187 μg/100 ml, unsaturated iron binding capacity 17 μg/100 ml and total iron binding capacity 204 μg/100 ml; folate 16 ng/ml and vitamin B12 620 pg/ml.

After a 500 mg dose of desferrioxamine urinary iron rose from 25 μg in the 6-hour control period to 3700 μg in the first 6-hour test period, falling again to 19 μg 4 days later. A repeat test after 2 months showed 288 μg of iron in the 24 hour control period, rising to 2300 μg in the first 6 hour test period and another 2300 μg in the following 18 hours.

Liver biopsy showed portal cirrhosis with granules of haemosiderin by Perl's stain in many parenchymal and Kupffer cells and in fibrous tissue. Lung biopsy showed pleura and local areas of alveoli thickened by fibrosis and collections of haemosiderin-laden macrophages. Hepatic cirrhosis with haemosiderosis, idiopathic pulmonary haemosiderosis and diabetes mellitus were considered to be present.

The patient remained well for 9 months, then contracted macular leprosy of tuberculoid type for which he received dapsone therapy. Four weeks later he was readmitted with severe epigastric pain, breathlessness and cyanosis. He died shortly after admission in circulatory failure. Haemoglobin during the second period was 18.7 g/100 ml, 15% of this being present as methaemoglobin; reticulocytes 0.2%. The red cell G6PD activity was normal. The white cell count was 1600/μl (poly-

morphs 20%, lymphocytes 76%, monocytes 4%). His blood urea was 40 mg/100 ml, serum amylase 222 Somogyi units/100 ml and bilirubin 2.2 mg/100 ml (1.4 mg unconjugated); there was no plasma methaemalbumin.

Autopsy findings: At autopsy 4 hours after death, the right lung weighed 870 g and left lung 990 g. There was brown induration in both, consolidation in the left lower lobe and chronic, mottled brown and white nodular lesions in both, located especially beneath the pleura and around arteries; similar lesions were present in the peri-bronchial and hilar lymph nodes. Microscopically these consisted of dense, relatively acellular collagen, partly encrusted with haemosiderin; they were surrounded by fibroblasts, macrophages laden with haemosiderin and some carbon pigment (Figs. 1 and 2). Examination in polarised light did not show birefringent inorganic structures in any of the sections. No acid-fast bacilli were found. Elsewhere, fibrosis was minimal and large numbers of haemosiderin-laden macrophages were present within the alveoli. The alveolar capillaries were distended with blood. There was minimal right ventricular hypertrophy but the heart, weight 280 g, was otherwise normal. The liver, weighing 1690 g, showed portal cirrhosis (Fig. 3). Excess of stainable iron was present in many parenchymal cells, in the Kupffer cells and fibrous tissue (Fig. 4). Iron was also seen in the endocrine and exocrine portions of pancreas, the gastric and duodenal mucosa, testes, (200 g) and bone marrow. The caecum was grossly inflamed; sections showed micro-ulceration of the mucosa, and a dense infiltration of the mucosa and submucosa by polymorphonuclear leucocytes. Large numbers of Gram-negative bacilli were present in multiple organs, including heart, kidneys, adrenals, lungs and blood vessels, suggestive of terminal septicaemia.

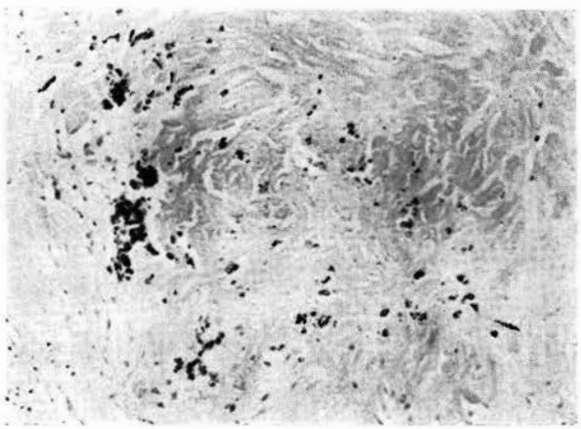

Fig. 1
Section of subpleural pulmonary nodule showing haemosiderin granules surrounded by dense acellular collagen. Prussian blue reaction, X 140.

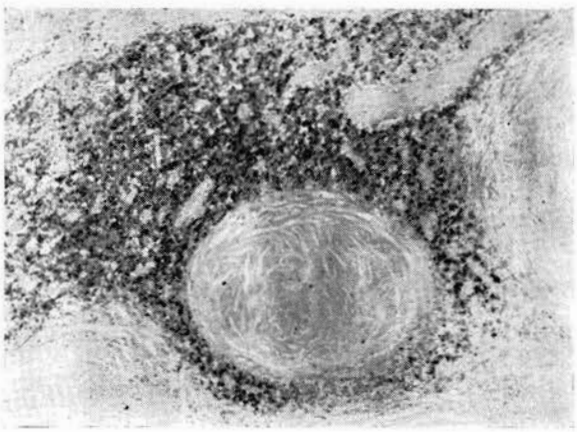

Fig. 2
Peribronchial lymph nodes showing fibrotic nodules surrounded by macrophages laden with haemosiderin and a small amount of carbon pigment. Prussian blue reaction, X 90.

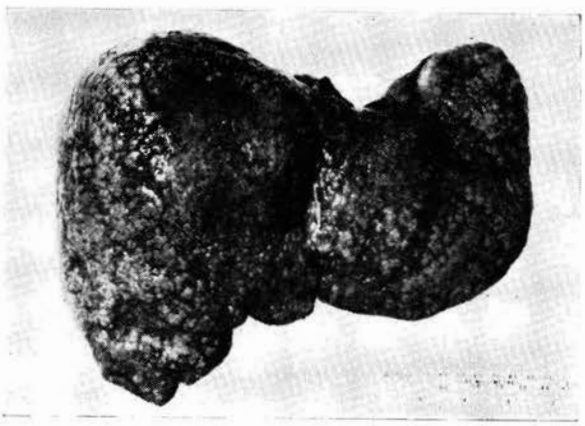

Fig. 3
Gross appearance of liver showing scarring and nodularity of the surface.

The total iron content of the wet formalin-fixed tissues was determined by bathophenanthroline after nitric-sulphuric acid digestion, and haem iron calculated from spectrophotometrically-determined pyridine haemochrome after alkaline digestion. The results are given in Table I. The copper content of the liver tissue was 3 μg/g.

A sister of the patient was examined and found to have normal levels of haemoglobin, serum iron and iron-binding capacity.

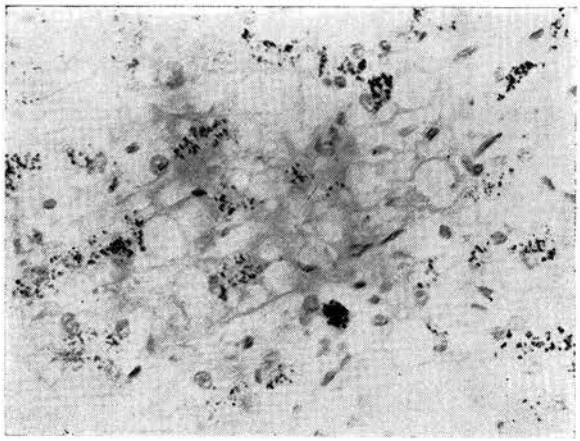

Fig. 4
Photomicrograph of liver showing haemosiderin within vacuolated parenchymatous cells and Kupffer cells. Prussian blue reaction, X 350.

Table 1

Tissue	Haem Iron μg/g of wet tissue	Non-haem Iron	
		μg/g of wet tissue	Estimated total in organ in μg.
Liver	15	130	220 x 10^3
Pancreas	26	129	
Spleen	138	236	47 x 10^3
Lungs	104	288	536 x 10^3

Summary of clinico-pathological findings:

1. Advanced portal cirrhosis with extensive fibrosis and abnormally-distributed haemosiderosis of parenchymal and Kupffer cells and fibrous tissue. Quantitatively the haemosiderin did not exceed the storage iron of normal liver (Morgan and Walters, 1963); the haemoglobin-iron content of this liver was low, however, and functional tissue over-shadowed by fibrosis.

2. Idiopathic pulomonary nodular fibrosis, associated with congestion and haemosiderosis. The haemoglobin-iron content of lungs was high, but there was considerable excess of haemosiderin-iron in macrophages. No acid-fast bacilli or birefringent inorganic structures found.

3. Diabetes with haemosiderosis of pancreas.

4. Haemosiderosis of stomach, duodenum and testes, with splenic and bone marrow haemosiderin increase.

5. Terminal Gram-negative septicaemia.

Discussion

Established, cryptogenic portal cirrhosis is present in the patient, and although the total haemosiderin content is not high, it is concentrated in the reduced parenchyma of the damaged organ. The nodular fibrotic lesions of the lungs are of unknown aetiology, and are associated with marginal, haemosiderin-laden macrophages in the alveoli elsewhere. The lesions are not very similar to the usual findings in idiopathic pulmonary haemosiderosis (Spencer, 1962). A more generalised haemosiderosis involves the pancreas, with diabetes, gastric and duodenal mucosa and testes.

Although the lung lesions raise the possibility of a dust disease, there is no history of exposure to iron ore or siliceous dust, and no birefringent inorganic structures present microscopically. The condition appears different to Kaschin-Beck disease in Manchuria (Hiyeda, 1939). Although surface water after rain, well water and untreated river water in West Malaysia are often highly ferruginous, the town water consumed by this patient has minimal iron content, and his dietary habits were apparently normal. The iron intake from his consumption of toddy amounted to about 3.8 mg per week.

Widespread distribution of haemosiderin in the tissues is of rare occurence here and raises the possibility of an aberrant iron metabolism; however, there is no real evidence for either genetic or acquired disturbances leading to excess of storage iron.

The amounts of iron found in the organs (Table I) are very low compared with the large quantities described in the literature on haemochromatosis (Kleckner, 1958) and on pulmonary haemosiderosis (Finch and Finch, 1955). The episodes of haemoptysis over 10 years, and also blood donation, would have some effect in reducing the total iron stores. Nonetheless, the local breakdown of red cells is likely to have maintained the lung iron. The amounts of iron found would correspond to those reported in younger subjects during the evolution of iron overload in the Bantu (Bothwell and Bradlow, 1960). Urinary excretion of iron after desferrioxamine is also much lower than is usual in idopathic haemocrhomatosis or even in transfusion siderosis (Dreyfus and Shapira, 1958). The bone marrow iron stores are qualitatively less marked than is frequently seen in hereditary haemolytic or in refractory anaemias in this region.

Kent and Popper (1968) have drawn attention to the inverse relationship between mild iron deposition and marked fibrosis in cirrhosis as compared

with haemochromatosis, where the reverse obtains. In the present case, however, both liver and lungs exhibit the same relationship of mild iron deposition with heavy fibrosis.

Whether the widespread but moderate distribution of haemosiderin in the present case is secondary to the fibrosis in lungs and liver remains unknown, as does the nature of pulmonary lesions and aetiology of the cirrhosis. In cirrhosis with secondary iron deposition, generalised deposition throughout the body is uncommon (Powell, 1971). Co-existence of idopathic pulmonary haemosiderosis and haemochromatosis have not been shown (Finch and Finch, 1955; Dubin, 1955; Zimmerman, Chomet, Kulesh and McWhorter, 1961).

MacSween (1966) reviewed abdominal crises, circulatory collapse and sudden death in haemochromatosis, and among the possible mechanisms he cited Gram-negative bacteraemia and/or endotoxin shock as a cause of the circulatory collapse, with possible origin in the gastro-intestinal tract. The present case, with terminal acute inflammatory changes in the caecum, exhibited intravascular Gram-negative bacilli in multiple organs; the terminal methaemoglobinaemia, occuring without demonstrable enzyme defect in the red cells, may also have resulted from bacteraemia.

Summary

Haemochromatosis is well-known in classical form, the secondary fibrotic changes in the tissues giving rise to characteristic manifestations. The present patient is a rare example of portal cirrhosis and nodular pulmonary fibrosis of unknown aetiology, accompanied by widespread moderate haemosiderosis of tissues. There is no positive indication of a primary disturbance of iron metabolism. The disparity between degree of iron deposition and degree of fibrosis makes it likely that the latter lesion is the primary event.

Acknowledgements

We are grateful to Dr. M. Somasundaram for allowing us to investigate the patient under his care, the staff of the Nutritional Anaemia Research Core Laboratory, Department of Pathology and Mr. Yee Kwok Hoi for their assistance and to Dr. L. Powell, University of Queensland, for discussion. One of us (J.C.W.) is in receipt of a Special Commonwealth Award. This study was assisted by funds from the US Public Health Service Asia grant No. AM 11048.

References

1. Bothwell, T. H. and Bradlow, B. A. (1960) Siderosis in the Bantu. Arch. Path. **70,** 279.
2. Dreyfus, J.-C. and Shapria, G. (1958) The metabolism of iron in haemochromatosis. In *Iron Metabolism. An International Symposium sponsored by Ciba.* Ed. F. Gross, S. R. Naegeli and H. D. Philps. p. 296. Berlin, Gottingen, Heidelberg, Springer-Verlag.
3. Dubin, I. N. (1955) Idiopathic hemocrhomatosis and transfusion siderosis. Amer. J. Clin. Path. **25,** 514.
4. Finch, S. C. and Finch, G. K. (1960) Idiopathic haemochromatosis, and iron storage disease. Medicibe. **24,** 381.
5. Hiyeda, K. (1939) The cause of Kaschin-Beck's disease. Japanese J. Med. Sci. **4:** 91.
6. Kent, G. and Popper, H. (1968) Liver biopsy in diagnosis of hemocrhomatosis. Amer. J. Med. **44:** 837.
7. Klechner, M. S., Jr. (1958) Hemosiderosis and hemocrhomatosis, In *Iron in Clinical Medicine.* Ed. O. Wallerstein and S. R. Mettier, p. 104. Berkeley and Los Angeles, University of California Press.
8. MacSween, R. N. M. (1966) Acute abdominal crises, circulatory collapse and sudden death in haemochromatosis. Quart. J. Med. **35,** 589.
9. Morgan, E. H. and Walters, M. N. I. (1963) Iron storage in human disease. J. Clin. Path., **16,** 101.
10. Powell, L. Personal communication.
11. Spencer, H. (1962) *In Pathology of the Lung,* p. 526. London, Pergamon.
12. Williams, R. (1967) Cirrhosis with secondary siderosis or primary haemochromatosis? Proc. Roy. Soc. Med. 60: 1255.
13. Zimmerman, H. J., Chomet, B., Kulseh, M. H. and McWhorter, C. A. (1961) Hepatic hemosiderin deposits. Arch. int. Med. **107,** 494.

Splenectomy in Idiopathic Thrombocytopaenic Purpura

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IDIOPATHIC THROMBOCYTOPAENIC PURPURA is generally treated initially by conservative methods. When these fail, or if the side-effects of drug therapy are severe, splenectomy is considered. The author would like to recount 3 cases of Idiopathic thrombocytopaenic purpura that were treated by splenectomy and discuss the indications for surgery in each case.

Case No. 1:

The patient, a 13 year old Siamese girl, was admitted to the Gynaecological ward on 19.12.72 with a history of bleeding PV for the preceeding 13 days. The flow had been excessive for 4 days prior to admission and this was her reason for hospitalisation; it was also her first period. She was transfused two pints of blood and given 100 mgm testesterone propiorate intra-muscularly. With this regime, she improved and her bleeding PV stopped. Four days later, she developed severe bleeding from the gums and purpuric spots all over the body. She was transferred to the medical unit where she was noted to be pale and having a liver 2 finger-breadths enlarged below the costal margin. The spleen was not palpable.

The following were the results of relevant investigations done on her: Hb: 30%; TWDC: 5,900/c.mm. P_{67} L_{21} E_{10} M_2; Platelet Count: 40,000/c.mm; Bleeding Time 1 min; Clotting Time: 3 min; Hess's Test: Negative; LE cells: Negative; Liver Function Test: Normal. A full blood picture showed evidence of iron deficiency anaemia and thrombocytopaenia. Bone-marrow examination revealed changes compatible with a diagnosis of Idiopathic Thrombocytopaenic Purpura. This diagnosis was finally adhered to, as the author could not elicit a cause for a secondary thrombocytopaenic purpura.

The patient was put on Tablet Prednisolone 15 mgm tid and her bleeding gums and purpura stopped initially. However, she later developed bleeding gums again off and on, though she did not develop fresh purpuric spots. Her platelet count constantly hovered between 40 to 90 thousand per cubic millimetre while she was in the ward. She was discharged after a month from the ward, but on follow-up, her platelet count remained low (70,000/c.mm) and she still had frequent bleeding from the gums. After 4 months of conservative therapy with steroids, she was advised to undergo splenectomy.

At operation, under steroid cover, she was noted to have an enlarged spleen as well as two splenecules; these were also removed. The patient's platelet count rose to 230,000/c.mm 10 days after operation; the prednisolone was tapered off completely. On histology, the spleen showed enlargement and hyperactivity of the lymphoid follicles and mild neutrophilic and eosiniphilic infiltrates in the pulp.

The patient has been followed up after operation. She is now free of any bleeding tendencies, though her platelet count has dropped to 100,000/c.mm.

Case No. 2:

The second patient was a 24 year old Malay man who was admitted to the wards in October 1972 with an eight month history of repeated attacks of epistaxis. On clinical examination, no significant

findings were noted. There was no purpura or bruising, though a mild degree of this did develop later on.

The following investigations were done: Hb: 90%; TWDC: 10,350/c.mm. P_{49} L_{36} E_4 M_{11}; Platelet Count: 90,000/c.mm; Clotting Time: 3 minutes; Bleeding Time: 1 minute. The Full Blood Picture was normal except for a reduced number of platelets. Bone Marrow studies were compatible with a diagnosis of Thrombocytopaenic Purpura. X-rays of the chest, skull and facial sinuses were normal. No cause could be found for his thrombocytopaenia, and it was therefore regarded as Idiopathic.

He was put on Tablet Prednisolone 10 mgm tid. He improved somewhat, but his epistaxis never really stopped. Moreover, his platelet count was mostly below 100,000/c.mm on repeated follow-up, though on a few occasions it did touch normal. After 6 months of steroid therapy, he had developed marked Cushingoid features.

He was advised splenectomy, to which he agreed. At operation, the spleen was found to be normal in size. A single splenecule was found in the colonic mesentery, and this was also removed. On histology, the spleen showed fibrous thickening of its trabeculae and congestion within its pulp. The lymphoid follicles were not increased in size or number and the germinal centres were conspicuous.

The patient made an uneventful recovery. His platelet count rose to 300,000/c.mm soon after the operation, but fell to about 190,000/c.mm later. He has been off steroids since then, and has not had any attacks of epitaxis so far.

Case No. 3:

The third patient was a 52 year old Malay woman who had been having purpura, bruising and haemoptysis off and on for about 10 years. All through this period, except for one hospital admission when she had been given prednisolone, she had never really taken any proper treatment. She first came under the author's care in January 1973. She presented with the symptoms listed above. On clinical examination, she had purpuric spots and areas of bruising; otherwise, no positive findings were noted.

Her investigations showed: Hb: 12.3 gm%; TWDC: 15,200; P_8 L_{18}; E_1 M_1; Platelet Count: 30,000/c.mm; X-ray Chest: Normal; Sputum for AFB: Negative; LE cells: Negative. Her full blood picture was normal except for reduced platelets. Her Bone Marrow showed changes compatible with Thrombocytopaenic Purpura.

She was put on Tablet Prednisolone 15 mgm tid. Her haemoptysis stopped and her purpuric spots disappeared completely. Later, however, she developed purpura again in spite of high doses of prednisolone. Moreover, she developed marked Cushingoid features also. She agreed to undergo splenectomy and the operation was performed in April 1973. The spleen was enlarged and of normal histology except for widely separated lymphoid follicles.

She recovered well from surgery except for a mild wound infection. Her platelet count rose to 300,000/c.mm soon after surgery, but a few months later, dropped to between 110,000 to 160,000/c.mm. After operation, she has been off steroids completely. There is no more bruising, but she did have 1 episode of very mild haemoptysis recently.

Discussion:

In addition to the general supportive measures like blood and platelet transfusion, administration of steroids and splenectomy are the two main-stays of therapy in Idiopathic Thrombocytopaenic Purpura. The general teaching is that the disease is usually self-limited in children and therefore does not usually need splenetomy. In adults, however, the disease is often chronic, and splenectomy is more frequently indicated.

The author has presented these cases to illustrate the need for splenectomy in three different age-groups. In the first case, though the patient was adolescent, splenectomy had to be performed as the platelet count remained very low in spite of prolonged steroid therapy.

In the second case, the patient's epistaxis, which could be severe and prolonged at times, did not abort in spite of high doses of steroids. He had marked Cushingoid features after several months and it was felt better to perform a splenectomy than suffer prolonged steroid toxicity.

The third case was, of course, a classic indication for splenectomy. The patient was elderly and she had a long history of the disease; moreover, a trial of steroids did not produce complete relief of symptoms; all these factors were in favour of performing a splenectomy.

An interesting point that must be borne in mind is that splenectomy does not always relieve the symptoms. Pre-operatively it may be predicted that 80% of patients under 45 years of age will

respond well to splenectomy; in those above this age, there is only a 50% response rate. Secondly, the patients who respond well to steroids will benefit by splenectomy if this is indicated; in these who do not respond to steroids, about 50% will benefit from splenectomy. Post-operatively, the patients who show a rise in platelet count soon after the splenectomy, will generally respond well to this procedure. However, in many cases, the platelet count will fall to pre-splenectomy levels, but the patient will still show a relief of symptoms. One of the causes of a failed splenectomy is the presence of splenecules that are missed at operation.

In the present series, it is interesting to note that the two younger patients did not have any recurrence of symptoms after splenectomy. The elderly lady, however, did have an episode of haemoptysis after operation, although she has no more purpura or bruising. The first patient's platelet count has dropped to low values, but she is still symptom- free.

Splenecules were removed from two of the patients and this probably has played an important role in ensuring the success of the operation.

Conclusion:

The author has presented three cases of Idiopathic Thrombocytopaenic Purpura in different age groups who have been treated by splenectomy. This operation is a safe one for patients who require it and promotes their safety and well-being.

Acknowledgements:

The author would like to thank the following:

(1) Mr. T. N. C. Roe, Consultant Surgeon, Hospital Besar, Alor Star, for performing the operations on all the patients.

(2) The Director – General of Medical Services, Malaysia, for permission to publish the paper.

References:

1. Cecil – Loeb, 13th Edition, 1971: Text-book of Medicine.
2. de Gruchy, D. C.: 3rd Edition, 1970: Clinical Haemotology in Medical Practice.
3. Price's Text Book of Medicine, ELBS Edition, 1973.

Trimethoprim-Sulphamethoxazole in the Treatment of Infections in Obstetrical and Gynaecological Practice – A Bacteriological and Clinical Study

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Introduction

IN RECENT YEARS, Gruneberg and de Lorenzo (1968) and Bohni (1969) of the Roche Research Laboratories in the U.S.A. and in Switzerland have developed experimentally, in close co-operation with the Wellcome Research Laboratories (Bushby and Barnett, 1967; Bushby and Hitchings, 1968) the invitro and invivo chemotherapeutic basis for the combination of trimethoprim (TM = 2.4, diamino – 5[3, 4, 5 – trimethoxybenzyl] and sulphamethoxazole (SMZ = 5 methyl – 3 sulphonilomido-isoxazole). Since then, there has been a large number of reports attesting to the efficacy of this combination of drugs. Favourable results have been reported in the treatment of urinary tract infections (Cox and Montgomery, 1969; Brumfitt et al, 1969; Lao et al, 1971), gonorrhoea (Csonka and Knight, 1967; Lao et al, 1971), chronic chest infections (Drew et al, 1967), typhoid (Akinkugbe et al, 1968) and proteus septicaemia (Naoll, et al, 1962; Cooper and Wald, 1964). However, there have been few reports on the use of trimethoprim-sulphamethoxazole in the treatment of gynaecological and obstetrical infections. Chong and Lean (1970) recently described their experience with this drug in the treatment of these infections in the Kandang Kerbau Hospital, Singapore, and Williams et al (1969) described the treatment of bacteuria in pregnant women with this drug combination.

This paper describes a clinical and bacteriological study on the use and effectiveness of trimethoprim-sulphamethoxazole in the treatment of obstetrical and gynaecological infections as seen in patients treated in the University Hospital, University of Malaya Medical Centre.

Materials and Methods

One hundred and forty patients with evidence of infection in the gynaecological and post-natal wards were included in the study. Trimethoprim-sulphamethoxazole was not prescribed to pregnant patients. The post-partum patients had urinary tract infections, puerperal pryexia or wound infections. The gynaecological patients had infections commonly seen in the gynaecological wards, namely, pelvic inflammatory diseases, septic abortions, urinary tract infections and post-operative infections. Table I shows the types of cases so treated.

Table I
Conditions treated with Trimethoprim-sulphamethoxazole

(A)	Gynaecology:	1. Urinary tract infections	26
		2. Pelvic inflammatory diseases	18
		3. Septic abortions	40
		4. Post-operative infections	17
(B)	Obstetrics:	1. Urinary tract infections	24
		2. Puerperal pyrexia	13
		3. Post operative wound infection	2
		TOTAL	140

Diagnosis was made on clinical and laboratory investigations. The patients so treated were managed personally by one of us. Routine investigations included haemoglobin estimation, total leucocyte and differential count and microscopic examination of the urine and vaginal discharge. Cultures of microbiological organisms and sensitivity testing were done for urine, cervical and vaginal secretions, and pus and blood when indicated.

After doing the preliminary investigations, these patients were prescribed trimethoprim-sulphamethoxazole (Bactrim-R). A course of Bactrim consisted of 2 tablets, 2 times daily for 5 days, giving a total of 1.6 gm. of trimethoprim and 8 gm. of sulphamethoxazole.

Daily assessment of the patients were carried out. Improvement was based on response to the treatment using the criteria of pyrexia, pulse rate and presence or absence of pain and tenderness. Possible side-effects, namely hypersensitivity reactions, anorexia, nausea, vomiting, rash, etc. were specifically looked for. Blood count and urine examinations were repeated at the end of the treatment.

Results

There were 101 gynaecological patients and 39 obstetrical patients in the series. Out of these 140 patients, 50 (35.7 per cent) had urinary tract infection.

The response was considered to be good when symptoms and signs disappeared within 48 hours. This was apparent in 75 per cent of the patients, as shown in Tables II and III. Moderate response, in which symptoms and signs improved between 48 hours and 96 hours were apparent in 19.3 per cent of patients. A satisfactory response was therefore seen in 94.3 per cent of the patients. Poor response was considered when the patients' condition remained the same after 96 hours or had deteriorated. This was seen in 5.7 per cent of patients. There was no significant difference in the responses between the obstetrical and gynaecological patients.

Table II
Responses of Gynaecological Infections to Bactrim

Type of Cases	No.	Response		
		Good	Mode-rate	Poor
Urinary Tract Infections	26	19	5	2
Pelvic Inflammatory Disease	18	12	4	2
Septic Abortions	40	31	7	2
Post-operative Infections: Pelvic Cellutitis	16	10	4	2
Peritonitis	1	0	1	0
TOTAL	101	72	21	8

Bacteriology

Out of 140 patients, 91 patients yielded culture of micro-organisms. In 9 patients, it was possible to culture 2 different types of bacteria. Out of the total 100 pathogenic organisms so cultured, there was a preponderance of coliform organisms, namely, 38 per cent (Table IV).

Table III
Responses of Obstetrical Infections to Bactrim

Type of Cases	No.	Response		
		Good	Moderate	Poor
Urinary Tract Infections	24	21	3	0
Puerperal Pyrexia	13	10	3	0
Post-operative wound Infections	2	2	0	0
Total of Table III	39	33	6	0
Total of Tables II & III	140	105 (75%)	27 (19.3%)	8 (5.7%)

Table IV
Invitro Sensitivity Results to Bactrim

Organisms	No. Isolated	No. Sensitive
E. Coli	20	18(90%)
Staphy. Pyogenes	21	19(90.9%)
Coliform Organisms	17	14(82.4%)
Proteus	14	14(100%)
Klebsiella Aerogenes	7	3(43.9%)
Pseudomonas Pyocyaneus	7	0(0%)
Streptococcus Faecalis	5	5(100%)
α-Haemolytic Streptococcus	4	4(100%)
β-Haemolytic Streptococcus	3	3(100%)
Anaerobic Streptococcus	2	2(100%)
TOTAL	100	82(82%)

The invitro testing of sensitivity against trimethoprim-sulphamethoxazole showed that 82 per cent of the bacteria were sensitive. High degrees of sensitivity were obtainable from E.Coli and the coliform organisms, staphylococcus pyogenes, proteus and the streptococci. Poor degrees of sensitivity (42.9% sensitive) was obtainable with the Klebsiella species. Pseudonomas pyocyaneus was resistant to the drug.

Toxicity

There were no abnormalities detected in the routine laboratory tests. Adverse reactions in the blood has been reported, but these are rare and consist mainly of agranulocytosis and purpura (Hanley, 1969).

Clinically, there were 3 patients who developed rashes towards the end of the courses of treatment. None were severe and all these disappeared without further complication on stopping the drug.

Nausea was seen in 2 patients and none had vomiting. Our incidence of side-effects was 3.6 per cent. Hanley (1969) reported an estimated incidence of 1 per cent during the first 6 months of marketing the drug from October 1968 to April 1969. The most common adverse reations had been skin rash, followed by nausea and vomiting, then glossitis. These 3 together composed 62 per cent of the total.

Conclusion

It would appear that the combination of sulphamethoxazole and trimethoprim is most effective in the treatment of obstetrical and gynaecological infections. Good and moderate responses were seen in 94 per cent of patients. The bacteriological investigations confirmed the high sensitivity of organisms isolated (82 per cent sensitive) to the drugs. The percentage of success suggest it might be more effective than penicillin and streptomycin, the commonly used antibiotics in Malaysia for treating these patients. A comparison of these different drug combinations has been reported (Wong, Ng and Chai, 1973). Toxicity to the drug was minimal in our study (3.6 per cent).

Acknowledgement

We thank Mr. A. E. Long of Roche, Malaysia for supply of Bactrim, Mrs. Ivy Phang for typing the manuscript, and Professor T. A. Sinnathuray for permission to publish this paper.

References

Akinkugbe, O. O., Lewis, E. A., Montefiore, D. and Okubadejo. (1968): Brit. Med. J., 3: 721.
Bohni, E. (1969): Chemotherapy, 14, suppl.
Brumfitt, W., Faiers, M. C., Pursell, R. E., Reeves, O. S. and Turnbull, A. R., (1969): Postgrad. Med. J. Suppl. Vol. 45: 56.
Bushby, S. R. M. and Barnett, M. (1967): Proc. 5th Intern. Congr. of Chemotherapy, Vienna, p. 753.
Bushby, S. R. M. and Hitchings, G. H. (1968): Brit. J. Pharmacol., 33: 72.
Chong, K. D. and Lean, T. H. (1970): Proc. Obstet. & Gynaec. Society of Singapore, Vol. 1: 42.
Copper, R. G. and Wald, M. (1964): Med. J. Aust., 2: 93.
Cox, C. E. and Montgomery, W. G. (1969): Postgrad. Med. J. Suppl. Vol. 45: 65.
Csonka, B. W. and Knight, G. J. (1967): Brit. J. Vener. Dis. 43: 161.
Drew, C. D. M., Hughes, D. T. M. ,Fowle, A. S. E. and Casell, M. A. (1967): Proc. Fifth Inter. Congr. of Chemotherapy, Vienna.
Gruneberg, E. and de Lorenzo, W. F. (1968). Antimicrobial Agents and Chemotherapy, 340.
Hanley, T. (1969): Postgrad. Med. J. Suppl. Vol. 45: 85.
Lao, L. M., Guevaro, M., Moreiro, J. G., Almarle, R. O. and Lao, al L. M. (1971): Symp. Chemo. Trop. Med. of S. E. Asian and Far East. 10th SEAMEO Trop. Med. Seminar.
Lao, L. M., Tinio, J., Alora, B. A., Meudoza, T. L. and Pedio, F. S. (1971): ibid.
Naoll, E. W. P., Sewards, H. P. and Waterworth, P. M., (1962): Brit. Med. J. 2: 1101.
Wong, W. P., Ng, K. H. and Chai, K. H. (1973): A comparison of trimethoprim-sulphamethoxazole and penicillin/streptomycin in the treatment of gynaecological infection Med. J. Malaysia, 28: 125.
Williams, T. O., Brumfitt, W., Condie, A. P. and Reeves D. S. (1969). Postgrad. Med. J. Suppl. Vol. 45: 71

Oral Prostaglandin E_2 and Amniotomy for Induction of Labour

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Summary
THIS IS a preliminary communication of an ongoing study of the efficacy, safety and acceptability of oral prostaglandin E2 in association with amniotomy for the induction of labour. Out of the initial series of 43 cases, vaginal delivery was achieved in 38 on prostaglandin E2 alone, 2 with the addition of oxytocin infusion. Three Caesarean sections were performed, one for borderline disporportion and two for foetal distress. The mean induction delivery interval was 11 hours for primigravidae and 6 hours 9 minutes for multigravidae. There were no untoward maternal or foetal side effects.

Introduction

The name prostaglandin was coined by von Euler in 1935 for the active principle in seminal and prostate extracts. Consequent on successful laboratory biosynthesis (Bergstrom 1964), elucidation of precise chemical structure (Bergstrom 1967), and commercially applicable chemical synthesis (Corey 1971) it has achieved the "wonder drug" status of the early 1970's comparable to penicillin in the 1940's and steroids in the 1960's.

An ideal agent for the ending of the pregnant state – universally effective, safe, acceptable, possessing no side effects and requiring minimal monitoring – is yet to be found. It is therefore not surprising that when the biological significance of prostaglandins in human reproductive physiology was recognised, the substance was tried extensively in all trimesters and by very varied routes of administration. (Karim et al 1969, 1970, 1971) Embrey (1970) Beazley et al (1970) Ratnam (1973). The possibility that oral prostaglandins may be such an agent for induction of labour has been the objective of this investigation.

Patients and Method

The patients, randomly selected, were normal healthy females with no maternal or obstetric complications. All of them had regular menstrual pattern and were sure of their last menstrual period. Their inclusion in this study was based either on their post-dated pregnancy or treated mild pre eclampsia near term. On admission after the usual labour-room preparation they were subjected to a vaginal examination where cephalopelvic disproportion was excluded. A pelvic scoring was noted (Appendix A) as an index of inductivity rating following which the forewaters were ruptured artificially. One miligram prostaglandin E2 (PGE2) in the form of 0.5 mg. capsules was given orally immediately.

Appendix A
Method of Pelvic Scoring

Qualities/Score:	*0*	*1*	*2*
Cervical effacement	Tubular 2 cm long	1-2 cm	Less than 1 cm
Dilatation of the cervical os	Closed	1 cm	2 cm
Consistency of the cervix	Firm	Soft, not stretchable	Soft and stretchable
Direction of the cervical os	Sacral	Axial	Anterior
Station of presenting part in relation to the ischial spines.	Above – 2 cm	– 2 cm to – 1 cm	– 1 cm to zero

One hour later, depending on the frequency and strength of the uterine contractions, this dose was either repeated or doubled to 2 mg, which

was the maximum single dose. Thereafter at hourly intervals 1 mg PGE2 was repeated until labour was established. Once labour was established (contractions of about 40 seconds duration recurring once in 2 to 3 minutes) PGE2 administration was discontinued and labour was expected to progress normally. If the contractions subsided or diminished in intensity or frequency, an additional maximum single dose was given at hourly intervals. The foetal heart rate and rhythm and uterine contractions were monitored clinically by the nursing staff and recorded intermittently at half-hourly intervals until delivery. Maternal blood pressure, pulse and respiration were recorded as in a normal labour but the nursing staff were briefed to watch out for usual signs of toxicity such as nausea, vomiting, diarrhoea, tachycardia, headache and blurring of vision. Labour was reviewed frequently by one of us or the patient's consultant not less than every 6 hours by vaginal examination. If at the end of 12 hours, labour has not been established, i.e. good effective uterine contractions with progressive effacement and dilatation of cervix to 6 cm. or more, treatment was discontinued and case considered a failure. If foetal distress or uterine hypertonus occurred, treatment was stopped and effective measures taken to deliver the foetus.

The biological monitoring of every patient after PGE2 administration was carried out by performing the following investigations: (a) full blood picture including haemoglobin, erythrocytes sedimentation rate, total and differential leucocyte count, blood indices & platelet count; (b) enzyme studies serum glutamic oxalo-acetic and glutamic pyruvic transaminases, (c) full liver function tests; (d) full urinalysis and blood urea; (e) random blood sugar.

Results

Vaginal delivery was achieved in 38 out of the 43 patients included in this report. Of the 5 failures two had spontaneous vaginal delivery within two hours of commencement of an oxytocin infusion – two units in 500 ml. dextrose at 20 drops per minute. The remaining three were delivered abdominally, one for borderline disproportion and two for foetal distress. (Table I).

Induction – Established labour interval

The average induction – established labour interval was 4 hours. Two-thirds of patients were in labour by the third hour and more than ninety per cent by the sixth hour of commencement of induction (Table II).

Induction – Delivery Interval

In this series the average induction – delivery interval was 11 hours for primigravidae and 6 hours 9 minutes for multigravidae. As expected a corelation exists between the pelvic score and the induction delivery interval i.e. the higher the score the shorter

Table I
Details of *5* Induction Failures

Reg. No.	Age	Gravida	Body Weight (lbs.)	Pelvic Score	Induction Labour Interval (hrs.)	Total PGE2 given (mg.)	Remarks
8172575	32	3	230	4	6	11	SVD after 2 Units oxytocin infusion within 2 hours. Baby weighed 8 lbs. 3 ozs.
0889474	24	1	141	3	5½	11	SVD after 2 Units oxytocin infusion for 5 hrs. 10 mins. Baby weighed 8 lbs. 6 ozs.
1813685	24	1	125	3	4½	8	LSCS for foetal distress. Baby weighed 6 lbs. 3 ozs. Failed oxytocin induction 4 days before PGE2.
7537118	21	1	116	6	4½	6	LSCS for borderline disproportion. Baby weighed 6 lbs. 4 oxs. Height of patient – 4ft. 8 ins.
156236	32	2	151	4	4½	7	LSCS for foetal distress. Baby weighed 7 lbs. 2 ozs. Involuntary secondary infertility for 7 yrs.

Table II. Induction – Established Labour Interval

Duration in hours	No. of patients	Percentage
1 – 3	28	65.1
4 – 6	11	25.5
7 – 9	1	2.4
10 – 12	3	7.0
12 or more	–	–
	43	100

the interval and vice versa (Table III). On the other hand the pelvic score did not reflect the dosage of prostaglandin needed (Table IV). The body weight of the patient presumably was a more important parameter as illustrated by one of the 5 failures. (Case Registered No. 8172575) A gravida 3 para 2 with a pelvic score of 4 had an induction – established labour interval of 6 hours. She did not deliver after 11 mg. of PGE2 following which the uterine contractions subsided. Twenty four hours after commencement of PGE2 a two-unit oxytocin infusion was instituted and she delivered normally within two hours. She, however, weighed 230 pounds (104.5 kg.).

Table III
Corelation between Pelvic Score & Induction – Delivery Interval

Pelvic Score	No. of patients	Average induction – delivery interval
4	13	10 hrs. 31 mins.
5	17	6 hrs. 46 mins.
6	10	7 hrs. 30 mins.
7	2	4 hrs. 15 mins.
8	1	3 hrs.
	43	

Table IV
Relation of pelvic Score to dosage of PGE2 required

Pelvic Score	No. of patients	Average dosage of PGE2 reqd.
4	13	5.3 mg.
5	17	4.9 mg.
6	10	3.4 mg.
7	2	5.0 mg.
8	1	5.0 mg.
	43	

Obstetric Complications

One patient had post-partum haemorrhage requiring transfusion of one unit of blood. She however gave a history of post-partum haemorrhage requiring 3 units of blood in the previous pregnancy. Another patient had a retained placenta without post-partum haemorrhage. She too gave a history of a similar complication previously.

Side Effects

There was no report of uterine hypertonus though admittedly the monitoring was only clinical. Similarly there was no significant effect on the foetal heart rate or rhythm. Of the two failed induction which resulted in Caesarean section for foetal distress one was 18 days past due date and the other had two loops of cord round the baby's neck at operation.

After delivery the foetal well being was assessed by Apgar score at one and ten minutes, and the figure ranged from 8 to 10. One baby had severe jaundice requiring exchange transfusion but it is doubtful if this could be attributed to the prostaglandin.

Maternal gastro-intestinal symptoms of vomiting and/or diarrhoea were completely absent in this series. The wide variation in the incidence of these undersirable side-effects: 2 per cent (Karim and Sharma 1971) 9.7 percent (Ratnam 1973) and 36 percent (Craft 1972) with somewhat similar dosage schedule suggests a racial/ethnic susceptibility. The results of all post delivery investigations were within normal limits.

Discussion

The findings of this study corroborate with earlier observations that oral prostaglandins E2 was effective and safe to induce labour. A striking feature of our experience has been the complete absence of side effects leading to very high patient acceptablity bordering enthusiasm. The minimal clinical monitoring required – no more than the usual observations by the nursing staff in a normal labour – is highly relevant in situations where work load is heavy and adequacy of staffing marginal.

We undertook to perform amniotomy at the onset of induction fully appreciating that it would accelerate the progress of labour when used in conjunction with prostaglandins (Craft 1972). It is felt justified, however, as the object of the exercise is to study the feasibility of wider clinical usage of oral PGE2 rather than to evaluate deliverately its effectiveness as a uterine stimulant.

The mode of action of prostaglandins in human parturition remains to be elucidated. Gillispie,

Brummer and Chard (1972) produce evidence of oxytocin release by direct stimulation of the pituitary. Alternatively it could act by an enhancement of the response of the myometrium to oxytocin endogenous or administered. (Brummer 1971) (Gillespie 1972). The ease with which two of the PGE2 failures in this study responded to oxytocin infusion would appear to support the latter view.

Acknowledgements

We wish to thank the Director-General of Health, Malaysia, for permission to publish, Dr. Shamsuddin Abdul Rahman and Dr. B. Mehra for including their patients, doctors and nurses of Hospital Bersalin, Kuala Lumpur for their help, May & Baker Ltd., for making the prostaglandin available and Mrs. S.L. Mah for secretrial assistance.

References

1. Beazley, J. M., Dewhurst, C. J. and Gillespie A. (1970) 77; 193.
2. Bergstrom, S., et al (1964) Biochimica et Biophysica Acts. 90; 207.
3. Bergstrom, S. (1967) Science, 157; 382.
4. Brummer, H. C., (1971) J. of Obs. & Gynae. Br. Comm. 78; 305.
5. Corey, E. J. (1971) Ann. of N.Y. Acad. Sci., 180; 24.
6. Craft, I., (1972) B.M.J., 1; 191.
7. Craft, I. (1972) B.M.J., 1; 653.
8. Embrey, M. P., (1970) B.M.J., 1; 256.
9. Gillespie, A., (1972) B.M.J., 1; 150.
10. Gillespie, A., (1972) B.M.J., 1; 543.
11. Karim, S. M. M., (1968) Prostaglandins, London Aca. Press, P. 65.
12. Karim, S. M. M., (1971) J. of Obs. & Gynae. Br. Comm. 78; 289.
13. Karim S. M. M., & Sharma S. D., (1971) B. M. J., 1; 260.
14. Ratnam, S. S., et al (1973). First Joint Congress, RCOG. Queenstown, N.Z.

The Cardiorespiratory Fitness and Energy Expenditure of the Temiars

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Abstract

A PRIMITIVE SETTLEMENT OF Temiars was selected for a study of their physical work capacity in their natural environment. Twenty boys and 10 men were subjected to exhaustive exercise on a step-ergometer and their maximal oxygen consumption, heart rate and blood lactate levels were observed. The boys aged between 12 – 18 years, were found to have a mean maximal oxygen uptake of 45.9 $\pm$ 6.7 ml/min/kg body weight, a mean maximum heart rate of 94.4 $\pm$ 4 beats per min., and a mean lactate level of 75 $\pm$ 18 mg%; whilst the men showed a higher maximum oxygen consumption of 53.2 $\pm$ 2 ml/min/kg, a lower maximum heart rate of 187 $\pm$ 10 beats per min. and a variable blood lactate level of 94.4 $\pm$ 32.4 mg%. These results are comparable to those found in city dwellers and those studied in other primitive populations. The health of the subjects was good and their dietary intake sufficient in Calorie intake. There was little evidence of obesity although their staple diet was tapioca root, but telemetric monitoring of their routine daily activity revealed that jungle dewllers seldom tax their oxygen transport system to induce any adaptive changes.

Introduction

In-depth study of 'pure' primitive societies forms an important part of the International Biological Programme in their efforts to delineate the effects of urbanisation on man. Studies on such communities are rare and have been reviewed by (Andersen, 1966; Andersen, 1967 and Lammert, 1972).

The orang asli of Malaysia have not been studied with regard to their cardiovascular fitness, but their sociological classification, and the efforts of the Ministry to uplift their standards of health and living have been described (Williams-Hunt, 1952; Jimin Idris, 1972).

This is the first study of the Temiar in which their cardiovascular fitness has been assessed in their natural environment along the Ninggiri tributary of the Kelantan River, just east of the central main range. A study of their physiological and metabolic responses to maximal exercise, a look at their general health and nutrition, and their daily routine activity was carried out.

Materials and Methods

Subjects

The subjects selected at random were 25 Temiar boys attending a Government school at Gemalah and 10 Temiar men from the surrounding settlements within a three-mile radius. Most of the schoolboys were born in the region, but the men were not very sure of such details.

Medical Examination

All subjects underwent a physical medical examination in which a history of malaria, filariasis and yaws were especially asked for. Urine and electrocardiographic examination on a portable Cardiostat T (Siemens) Electrocardiogram were carried out.

Maximum Aerobic Capacity

The maximum aerobic power was taken as the International Reference Standard for cardiovascular fitness (Shephard *et al,* 1968) and the direct method of estimation was employed. All subjects were made to exercise on a double-step ergometer of 0.4 m high per step. Whilst on the single step, electrocardiographic monitoring was carried out until a heart rate of about 160 beats/min was attained. The subjects were then made to exercise on the double-step to the point of exhaustion, as indicated by a heart rate of 180 beats/min or more. Expired air was collected through a one-way valve into a Douglas Bag during the last minute of exercise, or for a timed period until the limit of exercise tolerance had been reached. The volume of gas was measured using a calibrated gasometer, and two samples of the gas were taken in 50 ml syringes and kept for later analysis in the laboratory by a Haldane Gas Analyser. Four minutes after cessation of exercise, 0.1 ml of blood from a finger-prick was taken and kept in a deep freeze for later analysis of lactate level using a standard Sigma Kit which used the enzymatic method for lactic dehydrogenase.

Telemetric Monitoring of Routine Daily Activity

The daily routine activity of four men from the sample of 10 subjects tested were observed from 0645 hours to 1530 hours. One subject had his heart rate monitored by a transmitter device attached to a head band from two chest leads at V_1 and V_5, and received by a standard Sony tape-recorder. The other three subjects were monitored by auscultation at crucial intervals.

Nutritional Assessment

A cursory investigation into the diet of the Temiar boys and men was done by observing 24 hours of the eating habits. For the boys, it was much simpler in that they received daily rations from food dropped by helicopter, with known supplements of tapioca from doting villagers. The food was weighed and photographed and re-evaluated in the Medical Faculty. For the men, it was more difficult and the same method of photography and reproductive analysis was carried out. The Calorie intake per day was calculated using the Food Composition Tables (1968).

Observations and Results

Medical Examination

The medical examination did not reveal as many illnesses as was found in the Polunin (1953) study. There were no signs of malaria or enlarged spleens, elephantiasis or yaws. Skin affectations were common (60% for both men and boys) carious teeth (50% in men and 30% in boys). One boy was disqualified from testing due to consolidation of the lower lobe of the right lung and was referred to the Hospital at Kota Bharu. There was a high incidence of upper respiratory tract infection (80% (for men and boys) of varying degrees.

There was also a high incidence of alkaline urine (pH 8) as found by litmus paper and concommitant trace albuminuria (albustix) in 70% of men tested, but only in 2 out of 25 boys tested.

The mean blood pressures are given in the table below:

Table I
Systolic and diastolic blood pressure in Temiar men & boys.

Subject	n	Age Range (yr)	Systolic Blood Pressure (mm Hg)	Diastolic Blood Pressure (mm Hg)
Temiar Boys	25	12 – 18	112±7.9	68.0±10.3
Temiar Men	10	19 – 40	126±7.8	79.0± 9.4

Aerobic Capacity

The maximum aerobic capacities between Temiar men and boys about the fringe ages of 18 and 19 showed very little differences. The subjects were divided according to whether they were still schooling or whether they were working in the *ladangs*. However, the subjects aged between 12 – 14 years were significantly different only in somatotype but not in maximum aerobic power. The heart rate of boys were higher than that for men, as especially demonstrated by the 40 year-old subject (167 beats/min). This lowering of maximal heart rate has already been commented upon (Astrand, 1960). The physiological and metabolic responses observed are presented in Table 2.

Nutrition

The diet of the Malayan aborigine *(Orang Asli)* and their agriculture and food taboos have been well documented (Williams-Hunt, 1952; Jimin Idris, 1972) as well as their sociology (Wilkinson, 1913). The observations of this study are presented in Tables 3 & 4 for what they are worth. The schoolboys have the regulation three meals a day with snacks in between, whilst the adults have only two set meals, and eat at will thereafter. It was also observed that there was an abundance of fruit, fish and birds. It can be seen that the WHO recommended Calorie intake for boys aged 10-12 years (2,280 Calories) and that for semi-sedentary men (3,000 Calories) was well met by the range of food intake by boys (2,256-4,916 Calories) and men (2,533-5,477 Calories) as seen in this study.

Table 2
Cardiovascular and Metabolic Responses of Temiars

Subjects	$\dot{V}E$ (1/min)	$\dot{V}O_2$ (ml/min/kg)	$\frac{\dot{V}E}{\dot{V}O_2}$ (1/1)	R	HLa (mg %)	Hf (beats/min)	$\frac{\dot{V}O_2}{Hf}$ (ml/beat)
Temiar boys	65.44	45.9	34	1.20	75	194	10
S.D.	±11.0	± 6.7	± 7	±0.1	±18.2	± 4	± 2
range	(40.9 – 89.3)	(29.8 – 52.4)	(27 – 50)	(0.98 – 1.38)	(36 – 109)	(180 – 205)	(5 – 13)
Temiar Men	15.5	53.2	30	1.16	94.4	187	14
S.D.	±19.5	±14.9	± 7	±0.15	±32.4	± 10	± 3
range	(45.1 – 86.3)	(38.1 – 77.5)	(24 – 46)	(0.84 – 1.31)	(57 – 155)	(167 – 196)	(11 – 19)
Urban Schoolboys*	71.08	46.9	34	1.11	77	196	11
S.D.	±26.6	± 7.5	± 6.6	±0.10	±28	± 8	± 3
range	(34.3 – 132.5)	(31.3 – 62.7)	(25 – 46)	(0.9 – 1.4)	(36 – 136)	(180 – 212)	(6 – 16)

*Thinakaran et al (1974)

Table 3
Calorie Intake of Temiar Estimated Minimum and Maximum Intake of Temiar Boys

Meal	Food Item	Ration Wt.	Ration Cal.	Maximum Seen Wt.	Maximum Seen Cal.	Possible Maximum Wt.	Possible Maximum Cal.
Breakfast	Tea (sugar and milk)	7g	28	14g	56		
	Biscuits	120g	480	200g	826		
Lunch	Boiled rice	140g	182	420g	764		
	Salt fish	100g	192	150g	288		
	Tapioca leaves	10g	6	10g	6		
	Banana (medium)	100g	88	200g	176		
Dinner	Boiled rice	140g	182	420g	764		
	Canned sardines	100g	309	150g	464		
	Tapioca leaves	10g	6	10g	6		
	Banana (medium)	100g	88	200g	176		
Snacks	Tapioca					454g	695
						454g	695
			1,561		3,526		
With regular snacks			695		695		
Totals			2,256		4,221		4,916

Calorie values derived from Food Composition Tables for use in West Malaysia, published by the Department of Social and Preventive Medicine, University of Malaya, Kuala Lumpur, 1968.

Table 4
Calorie Intake of Temiars Estimates of Minimum and Maximum Intake of Temiar Men

Meal	Food Item	Minimum		Maximum		Supplements	
		Wt.	Cal.	Wt.	Cal.	Wt.	Cal.
Breakfast	Tea (sugar and milk)	7g	28	14g	56		
	Tapioca	454g	695	681g	1,043		
Lunch	Tapioca	454g	695	200g	1 043		
	Sugar cane juice (1 cup)		146		146		
Dinner	Tapioca	454g	695	681g	1 043		
	Fresh fish	200g	142	400g	284		
	Banana (large)	150g	132	300g	264		
Supplements	Petai (legumes)					50g	60
	Bamboo shoots					100g	27
	Bananas					150g	132
	Tapioca snacks in the middle of the night					454g	695
Occasional	Wild Boar or other meat					150g	684
Total			2,533	3,879			
With minimum supplements			3,447	4,793			
With maximum supplements				5,447			

Calorie values derived from "Food Composition Tables for use in West Malaysia" by the Department of Social and Preventive Meidicine, University of Malaya, 1968.

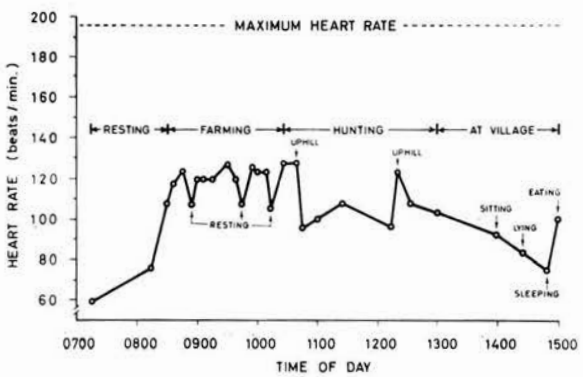
Routine Daily Physical Activity

The routine daily physical activity as measured by the change in heart rate (which is used as a measure of oxygen consumption or Calorie expenditure) revealed that the Temiar men did not require to extend themselves very much in their jungle environment to survive. The mornings were spent in clearing the jungle and planting of tapioca, bananas and hill padi. There was a short break for lunch which consisted of two pieces of baked tapioca root, then they set about hunting with their blowpipes. Their heart reates seldom exceeded 130 beats per min. (See Fig. 1)

Discussion

Although many sociological and anthropological studies have been carried out on the Orang Asli, this is the first investigation into their cardiorespiratory fitness. The study has clearly shown that there is no difference between the cardio-respiratory fitness of these primitive people with that of selected populations, whether primitive or urban (Andersen, 1966) as shown in Table 5. The Temiar has been subjected to disease as much as, if not more so than his urban counterpart (Polunin, 1953), and although Burns-Cox *et al.* (1972) have suggested that coronary heart disease is less frequently encountered the

TELEMETRY MONITORING OF HEART RATE OF A JUNGLE DWELLER DURING DAILY ACTIVITY.



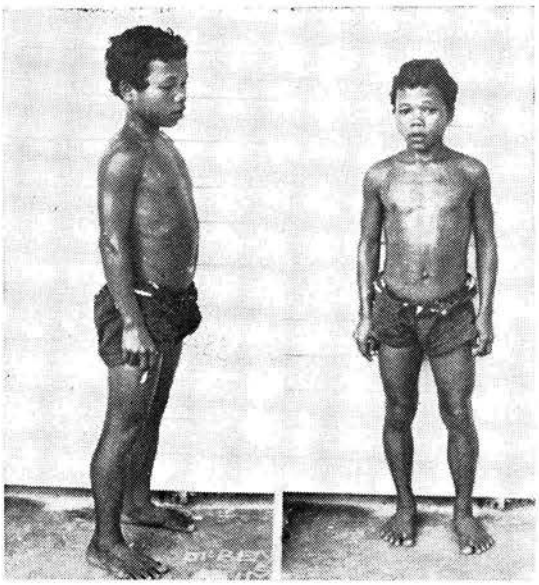


Figure 2
The average Temiar Boy (Aged 14 years)
Somatotype $1\frac{1}{2}$: $4\frac{1}{2}$ 1:

further into the jungle one goes, his study has been confined to an urban hospital, and contradicted by that of Prathap (1974) who found no difference in the incidence of cholesterol content of the Orang Asli, wherever they may have come from or even when compared with some urban communities.

That cardiorespiratory fitness is a function of a purposeful effort to obtain it is indicated by this study, whether the subject be a jungle dweller or a city dweller. Thinakaran *et al* (1974) showed that there were no significant differences between Temiar or urban schoolboys, and for that matter, with Japanese or European schoolboys (Andersen *et al,* 1971). Studies in men are also similar (See Table 5). However, one Temiar subject had an extremely high aerobic capacity (77.5 ml/min/kg) whilst his brother had an aerobic capacity of 47.3 ml/min/kg. This showed extremes of variability within the group tested itself. The second highest figure found was 75.0 ml/min/kg and the lowest, the 40 year-old subject was 38.1 ml/min/kg. It seems from these figures that there is some evidence to support the statement that there is no racial predisposition to high maxima in aerobic power, although there is some genetic pre-disposition found (Klissouras, 1971). But most champion long distance runners, skiiers and swimmers have aerobic capacities of about 70-90 ml/min/kg. A group of trained Norwegian skiiers showed an average aerobic power of 71 ml/min/kg (See Table 5).

Table 5
Comparison of Maximum Aerobic Power of Different Peoples

Subject	Age (years)	Vtt max. (ml/min/kg)	Hf (beats/min)
Bantu Negroes	20 – 40	48	180
Eskimos	20 – 40	44	173
Nomadic Lapps	20 – 40	54	191
Arctic Indians	20 – 40	49	–
Kalihar Bushmen	20 – 40	47	–
Eskimo Hunters		38	–
Alucaluf Indians		38	–
Norwegian skiiers		71	178
Temiar Men	19 – 40	53	187
Norwegian students	18 – 24	44	–
Malaysian Medical Students	18 – 24	35	182
Japanese Boys	12 – 18	47	
Malaysian Malays	12 – 18	49	193
Malaysian Indians	12 – 18	47	198
Malaysian Chinese	12 – 18	44	196
Temiar Boys	12 – 18	46	194

It has already been shown that jungle dwellers rarely need to tax oxygen transport capacity in order to survive in their natural environment, and therefore, no adaptive changes can be expected. However, there are several striking differences between the Temiar schoolboy and his counterpart in the city. The physical appearance is one area where the Temiar is predominantly mesomorphic, rather short and devoid of fat. This can be hardly said of the city dweller (Chan *et al,* 1974). There seems to be no evidence of malnutrition, as the Temiar have shown great skill with the blowpipe whose dart is tipped with a poison which has been described by Chan & Chang (1971). Besides food taboos found prevalent in the culture (Bolton, 1972) the children were also found to be well nourished by Robson *et al* (1973).

Two question remain unanswered. The question of the alkaline urine which could possibly be due to eating *buah petai* which was in season at the time, and the fact that for all the carbohydrate consumed by the men, there was very little sign of obesity. This could possibly be because of the great energy expenditure entailed in their frequent all-night bomo dances.

Acknowledgments

The authors are grateful to the Ministry of Culture, Youth and Sports for a financial grant to carry out this project; to the Department of Orang Asli Affairs for invaluable help with personnel and facilities; to the Faculty of Medicine, University of Malaya for the use of laboratory facilities and the Medical Illustration Unit, to Chan Choy Har, Chen Lee Lee, Chong Yoke Kheng, Margaret Leong, S. Nagappan and V. Ramasamy for tecnhical

assistance, to Miss Yvonne Pavee for typing the manuscript, and to Mr Peter Velappan of the Physical Education Inspectorate, and Dr M. Jegathesan for the support given, and to the Malaysian Association of Sports Medicine under whose auspices this project was undertaken.

References

Andersen, K. L. (1966) Work capacity of selected populations. In: *The Biology of Human Adaptability.* editors: Baker, P. T. and Weiner, J. S. Clarendon Press, Oxford.

Andersen, K. L. (1967) Ethnic group differences in fitness for sustained and strenous muscular exercise. *Canad. Med. Assoc. J., 96*: 832-835.

Andersen, K. L., Shephard, R. J., Denolin, H., Varnauskas, E. and Masirony, R. (1971) Fundamentals of exercise testing. *World Health Organisation, Geneva.*

Astrand, I. (1960) Aerobic work capacity in men and women with special reference to sex and age. *Acta Physiol. scandinav.*, 49: (*Suppl.* 169).

Bolton, J. M. (1972) Food taboos among the Orang Asli in West Malaysia: a potential nutritional hazard. *Amer. J. clin. Nutrition, 25*: 789-799.

Burns-Cox, C. J., Chong, Y. H. and Gillman, R. (1972) Risk factors and the absence of coronary heart disease in aborigines in West Malaysia. *Br. Heart J., 34*: 953-958.

Chan, Onn-Leng, and Chang, P. (1971) The pharmacological activity of Malaysian blowpiep dart poison. *Proc. Vth Malaysia-Singapore Congr. Med., 1970, Kuala Lumpur,* pp 105-108.

Chan, Onn-Leng, Thinakaran, T., Mohd Nor bin Che Noh, Sundsten, J. W., Yeo, R. and Klissouras, V. unpublished data. (1974)

Food Composition Tables for use in West Malaysia (1968) *Dept. of Social and Preventive Medicine, Faculty of Medicine, University of Malaya,* Kuala Lumpur.

Jimin bin Idris (1972) A brief note on the Orang Asli of West Malaysia and their administration. *Dept. of Orang Asli Affairs, Ministry of National and Rural Development,* Kuala Lumpur.

Klissouras, V. (1971) Hereditability of adaptive variation. *J. Appl. Physiol., 31*: 338-344.

Lammert, O. (1972) Maximal aerobic power and energy expenditure of Eskimo hunters in Greenland. *J. Appl. Physiol., 33*: 184-188.

Prathap, K. and Montgomery, G. L. (1974) Aortic and coronary atherosclerosis in the Malaysian Orang Asli. *Pathology,* (in press).

Polunin, I. (1953) A medical natural history of Malayan aborigines. *Med. J. Malaya, 8*: 55-174.

Robson, P., Bolton, J. M. and Dugdale, A. E. (1973) The nutrition of the Malaysian aboriginal children. *Amer. J. clin. Nutrition, 26*: 95-100.

Shephard, R. J., Allen, C., Benade, A. J. S., Davies, C. T. M., diPampero, P. E., Hedman, R., Merriman, J. E , Myhre, K. and Simons, R. (1968) The maximum oxygen uptake – an International Reference Standard of cardiorespiratory fitness. *Bulletin W.H.O. 38*: 757-764.

Thinakaran, T., Duncan, M. T., Chan, Onn-Leng, Mohd Nor, Klissouras, V. (1974) Ethnic differences in physiological responses to maximal effort. *Abstracts, XXth World Congress in Sports Medicine, Melb.,* A13.

Wilkinson, R. J. (1913) The aboriginal tribes. *Federated Malay States Government Press,* Kuala Lumpur.

Williams-Hunt, P. D. R. (1952) An introduction to the Malayan aborigines. *Government Press,* Kuala Lumpur.

A Comparative Study of Eldoncards for Blood Grouping ABO and RHo (D) with the Tile Method of Typing

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Introduction

ELDONCARDS measure 10.5 cm by 7.5 cm. Each card contains a test portion covered with a cellulose film, upon which specific serum reagents have dried. These have been used in Denmark for 20 years.

Three kinds of cards are produced: white cards for ABO-D blood grouping; black cards for CDE testing and white cards for compatibility tests. This series studies the ABO-D grouping cards.

The card (Fig. I) contains 3 test panels and one control panel. Reagents are deposited on the cards by means of a special dispensing machine. In any series, 7,000 – 20,000 cards are produced and marked. The potencies of the anti-A, anti-B and anti-D sera used surpass the minimum requirements of the N.I.H., U.S.A. Random samples are then taken from each series and their efficacy is tested by means of known blood cells. Furthermore, before distribution, 50 cards are used and found faultless in the blood bank of the Copenhagen County Hospital in Gentofte.

Each card is hermetically sealed in metallic foil. This guarantees the stability of the card for a minimum of two years, provided they are stored below 22°C (70°F).

Materials and Method

The Clinic carried out 303 blood grouping for a comparative study between the Eldoncard method and the tiles method. A 50 percent washed cell suspension in 0.9 percent saline was used. These tests are all carried out by the authors and a trainee technician with no previous experience of laboratory work.

Blood collection

Samples of blood are collected from antenatal patients without any form of selection. About 2 ml of venous blood is collected in a dry syringe and allowed to clot in a plain container. The sample is tested by both method at the same time, usually within 36 hours of collection.

Laboratory technique for Eldoncards:

1. A portion of the serum with some loose cells is pipetted off to a small test tube and centrifuged at about 2000 r.p.m. for 2 minutes.

2. The clear serum is pipetted off to another clean test tube for storage in the freezer for future use if necessity requires a cross-matching or rechecking of the patients' blood group.

3. The deposited blood cells are washed with normal saline for three times and finally resuspended in a concentration of about 50 percent in saline.

4. The dried sera on the Eldoncard is reconstituted by the addition of a drop of fresh tap water to each panel.

5. A drop of the above cell suspension is dropped onto each of the four Eldoncard panels and also the tile grouping sera respectively. Eldoncard supplies a plastic comb for its mixing to be used only once and discarded. (Fig. I)

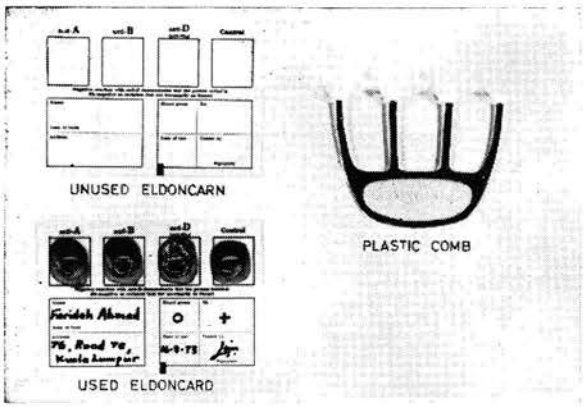

Fig. I
Eldoncard with Plastic Comb

6. After mixing for 30 seconds, wait for a minute and then agitate the card gently for a minute or so and note its reaction.

7. Report accordingly as shown in the diagram (Fig. 2). The tile method is done simultaneously and its agglutination checked with the Eldoncard.

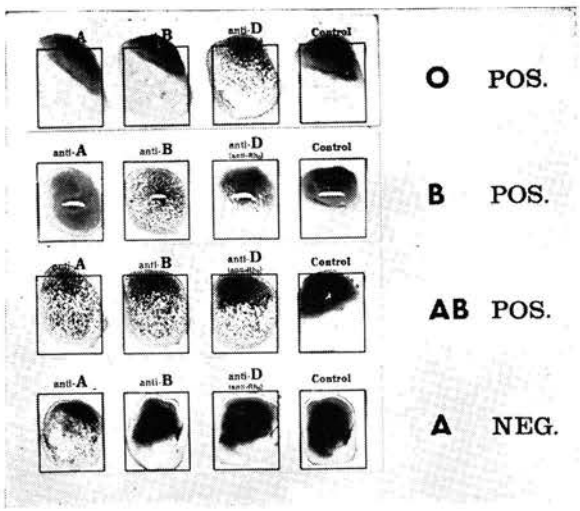

Fig. 2
Eldon Cards Blood Groupings

N.B.: A quality control of washed known cells is used for checking the grouping sera used for the tile method test. Therefore its accuracy is dependable.

Caution

Cord blood and blood having irregular antibodies, non-specific cold agglutinins, rouleaux formation, haemolysis, or absence of the regular antibodies are not recommended for use by this Eldoncard method. In severe anaemia cases the panels showing agglutination will be pale and small, hence the washed cell suspension method as described above is recommended instead of the prick method of obtaining blood.

Results:

The results are shown in the Table I.

Table I

Blood Group	Eldoncards method	Tile Method
A Pos.	92 samples	92 samples
B Pos.	69 samples	69 samples
O Pos.	124 ,,	124 ,,
AB Pos.	15 ,,	15 ,,
A Neg.	2 ,,	2 ,,
B Neg.	1 ,,	1 ,,
TOTAL	303 ,,	303 ,,

Comparative results of 303 blood samples showing ABO-D groupings.

Discussion:

Eldoncards are made for blood grouping using whole blood obtained by finger or ear-lobe prick. This study uses a 50 percent washed cell suspension. In 303 blood samples tested there was total agreement between the results: Eldoncards method and the tile method using Ortho Diagnostics antisera. In only one test was there any difficulty in reading the results of the Eldoncards – this was the anti-D panel.

The provision of a negative control panel is useful as any agglutination means the entire Eldoncard is not to be relied on. Agglutination may result from auto-antibodies in certain forms of hemolytic anaemia; in maternal antibodies in erythroblastosis foetalis and in bacterial transformation of the cells. In any blood sample which shows agglutination in the control panel, a direct Coombs test is indicated.

The advantages of using the Eldoncards are many. In a small hospital where the laboratory facilities are limited and where blood grouping is not frequently done, Eldoncards has a longer storage life and less wastage as they come in boxes of 5 cards when compared with antisera for the tile method. There is no fear of contamination or inactivation of test sera.

One Eldoncard costs M$1.50 and the antisera for grouping costs about M$0.35 for grouping one sample.

Eldoncard also provides a set of permanent records which could either be filed or carried by the patient.

A little caution is not out of place. In the beginning of this study the blood and sera in the four panels disappeared after 24 hours. Investigations soon revealed that, while they are left to dry in the open, the blood cells and sera are eaten by cockroaches!

The main disadvantage of the Eldoncard is that there is no indicator to show the quality of the dried typing sera on each card. The only way to tell that a card is no longer suitable for grouping is by the change in colour of the dried sera; the wrinkled surface of the test panels and when the covering paper adhers to the dried sera. Eldoncards are also costly.

When a 50 percent suspension of washed cells is used, the Eldoncard method of grouping is as reliable as the tile method using Ortho Diagnostics antisera. The instructions supplied by the manufacturers are easy to follow. Girls without any basic laboratory training have performed many of these tests correctly. Weak A subgroups of importance to transfusion are said to give clear-cut reactions on the cards.

Brun (1965) reported favourably on his 12 years experience with Eldoncards in the Copenhagen County Hospital, Gentofte. Eldoncard is the only method of ABO-D grouping used in the blood bank. Of 92,000 portions of blood used for transfusion, 3 haemolytic transfusion reaction were recorded. One of these patients had anti-c antibody of the incomplete type; one was caused by an ABO error due to a manually produced deficient card; the third was probably due to an anti-Kidd antibody.

A total of 128,000 ABO-D groupings were reported. The accuracy was checked by: 20,000 double tests; 11,600 reverse serum groupings and 2,000 ABO-D groupings by the classical technique. He reported a total of 25 errors (1 : 5,000) attributable to the Eldoncard method.

Acknowledgement

The authors are grateful to:

1. Mr. J. Chong, Pharmacist, Norse Crown (Mal.) Sdn Bhd for the supply of Eldoncards.
2. Miss K. E. Quah, for carrying out the grouping.
3. Staff of the Clinic, Maternity & Nursing Home for typing the script.

Synopsis

303 blood samples from antenatal patients are typed for ABO-D grouping. Each sample is typed by Eldoncards as well as the conventional tile method. Eldoncards are found to be as reliable as the conventional tile method of typing.

References

1. Brun, G. C. 12 years experience with the Eldoncard Method. Proc. 10th Congr. Int. Soc. Blood Transf. Stockholm (1964), 1043-1046 (1965).
2. Eldon, K. Simultaneous ABO and Rh Groupings on Cards in the Laboratory or at the Bedside. Danish Med. Bull. 2: 33-40 (1955).
3. Eldon, K. Comparative Studies on some tube, slide and Card Techniques for compatibility tests. Proc. 7th Congr. Int. Soc. Blood Transf; Rome 1958, 411-413 (1958).
4. Information Manual, Nordisk Insulin Laboratorium, Gentofte, Denmark.

A Case of Rupture of a Main Bronchus from a Closed Chest Injury and its Management in a Child

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Introduction

THE INCIDENCE OF injuries resulting from accidents especially motor vehicles incidents is ever increasing and chest injuries are getting commoner too.

Severe crush injuries to the chest can result in a complete rupture or laceration of the trachea, main bronchus or the lobar bronchus.

The patient presents with a severe respiratory distress with signs of tension pneumothorax or alarmingly increasing subcutaneous surgical emphysema. Despite immediate drainage of the tension pneumothorax, large volumes of air-leak continues unabated and the patient remains distressed. Radiography of the chest shows a total atelectasis of the involved lung.

Confirmation of a rupture of a bronchus is readily obtained by bronchoscopy, either a rupture is seen or blood-stained secretions detected in the involved bronchus.

Prompt repair should result in saving the life and functioning of the lung. Delay could result in death or infection and fibrosis of the collapsed lung.

Surgical aim is in suturing of the laceration or end to end anastomosis of the transected bronchus or end to side anastomosis of an avulsed lobar bronchus.

Case History

S. Bin. S., a four year old Malay boy was admitted on 21.6.1972 with a history of having been run over by a motor vehicle.

He was severely dyspnoeic, the respiratory rate 44/minute, BP 104/60, and the pulse rate 120/minute. He was drowsy. His pupils were equal and reactive to light.

He had the following external injuries:–

1. Laceration 3" long left parietal eminence of the scalp.
2. Contusion of the right eye-lids and the left Malar region.
3. Abrasion left lateral wall of the chest.
4. A broad hand of abrasion across the back of the chest wall.

Clinical Examination:

The significant findings were in the respiratory system. The trachea was deviated to the left. There was no subcutaneous surgical emphysema. The right chest was hypersonant on percussion. On auscultation vesicular breath sounds were absent in the right chest.

A clinical diagnosis of right tension pneumothorax was made. A plain radiograph of the chest showed complete atelectasis of the right lung. A large bore needle was immediately inserted in the right pleural cavity through the second intercostal space. There was continous unabated leak of large volumes of air despite continuous suction.

Immediate bronchoscopy revealed blood-stained secretions in the right main bronchus. A rupture of a major right bronchus was strongly suspected.

Pre-Operative

No premedication was given. On examination, the patient was slightly pale, conscious, restless and dyspnoeic. Respiration was 50/minute. BP 140/100, pulse rate 130/minute.

Induction was done in the semi-recumbent position with 50% oxygen and 50% cyclopropane followed by atropine and scoline intravenously. He was intubated with an endotrachael tube and respiration controlled with nitrous oxide, oxygen, d.tubocurarine and turned to the left lateral position.

Endotracheal suction was done and the patient ventilated. On opening the chest the flow rates had to be increased slightly to compensate for the leak. Endotracheal suction was done whenever necessary. Transfusion of a pint of blood was started and the parameters – the pulse rate, blood pressure and colour were maintained. Neostigmine and atropine were used for reversal.

Operative Management

Right thoracotomy through the bed of the right 6th rib confirmed an oval defect in the wall of the right main bronchus with a completely avulsed right upper lobe bronchus from the right main bronchus. There was leak of air through the defect in the right main bronchus and the whole right lung was totally atelectatic. The apical portion of the right upper lobe was contused and lacerated with minimal bleeding.

The avulsed right upper lobe was sutured to the oval defect in the right main bronchus with interrupted silk sutures, and the laceration in the right upper lung was sutured. The whole of the right lung expanded immediately on suturing the avulsed upper lobe bronchus to the main bronchus.

Two drainage tubes were inserted in the pleural cavity – one at the upper end, and the other at the lower end of the right pleural cavity. The thoracotomy wound was sutured in layers.

Post-Operative Care

1. For analgesia he was given Talwin (pentazocine) 5 mg 4 to 6 hours p.r.n.
2. Physiotheraphy was done by the physiotherapist as well as by the nursing staff.
3. Nasal oxygen.
4. Antibiotics. I/M Crystalline Penicilline and Streptomycin for one week followed by Penbritin (ampicillin).

1st to 2nd Post-Operative Day:

General condition: The patient was slightly febrile and respiratory rate increased from 26 to 50 per minute on the second post operative day. Pulse rate was about 120 per minute and BP 120/90.

Blood Gas Report:

pH	7.45
PCO_2	25 mm Hg.
PO_2	50 mm Hg.
Base deficit	5 m Eq/L.

Standard Bicarbonate 22 m Eq/L. The patient was coughing satisfactorily during physiotheraphy. The upper chest tube was removed on the second day. X-Ray of the chest showed a slow progressive collapse consolidation of the right upper lobe during the first two days.

3rd. Post-Operative Day:

Patient was still febrile, respiration slightly laboured – rate 50 per minute and the patient was not able to cough satisfactorily despite the physiotheraphy. At this stage a P.V.C. Portex Nasoendotrachael tube was passed under L.A. The child was restless initially but was able to tolerate it subsequently. With this tube it was now possible to carry out endobronchial suction under strict asepesis – posturing and intermittent ventilation with oxygen after each endobronchial suction. Humidification – aerosol therapy was given effectively through the tube using a 'T' piece device. Oxygen tension of inspired air was maintained at about 40%. Endotrachael aspiration was sent for culture and sensitivity. Feeds were initially given through Ryles tube.

Blood gas report after the tube had been placed was as follows:–

pH	7.45
PCO_2	29 mm Hg
PO_2	137 mm Hg.
Base excess	3 m Eq/1

4th Post-Operative Day and Subsequent Progress:

The General condition improved slightly and the patient was less febrile, less dyspnoeic with a respiratory rate of about 40/minute. The X'Ray of the chest showed slight improvement in the area of consolidation.

Blood gas result on the 4th day:–

pH	7.465
PCO_2	32 mm Hg.
PO_2	86 mm Hg.
Base deficit	o M Eq/1
Standard bicarbonate	23 Eq/1

On the fifth day the lower tube was removed as drainage was minimal. At the same time the child was able to take fluids orally and had progressed to take semi-solids. The tube was left in place for 9 days.

Daily X'Rays of the chest and blood Gas analysis were done. Subsequent progress was uneventful and on the 15th post operative day, the lung had expanded sufficiently but there was some residual consolidation in the hilar region. The nasotrachael tube was removed. The child did not have any stridor but had hoarseness of the voice. His voice improved over the next one week.

At the time of discharge laryngoscopy revealed no abnormality and the X'Ray showed minimal haziness around the hilar region (probably due to residual effects of scarring).

Blood Gas report on the day of discharge was as follows:–

pH	7.47
PCO_2	30 mm Hg
PO_2	71 mm Hg
Base deficit	0.5 m Eq/1

Follow-up: One month later Clinical examination revealed no abnormality. X'Ray of chest showed very minimal scarring around the hilar region. The right upper lobe had fully expanded. No other abnormality could be seen in the lung.

Discussion

Use of a double lumen tube was not feasible in this age group and neither was a bronchial blocker necessary. This patient was adequately managed with an endotracheal.

The use of a nasotracheal tube is a useful method that can be employed in the management of cases where the patients are unable to co-operate fully or are unable to have adequate physiotherapy and I.P.P.V. This technique has been found to be useful not only for the removal of secretions, for providing adequate humidification but also in assisting the expansion of the lobe. Furthermore, this technique of prolonged nasotracheal intubation is more satisfactory in neonates, infants and children, as it produces less gagging and allows eating and drinking. There is no danger of patient biting the tube. The larynx in children is funnel shaped up to the age of ten years with its narrowest part at the cricoid, whereas the adult larynx is narrowest at the cords. There should be a slight air leak when the tube is in position. For the past two years we have been using this nasotracheal route for our patient with respiratory problems with satisfactory results. In the case of adults this procedure was not used for more than three days.

The most likely cause for the progressive collapse of the upper lobe, besides being due to contusion of the apical segment is the oedema occuring at the anastomotic site causing narrowing of the lumen and thereby causing poor drainage and ventilation. Active measures had to be taken as one could not allow the lobe to progressively collapse. This problem becomes more obvious if one realises the cartilaginous and membranous airways in man receive systemic (bronchial artery) blood supply in contrast to the gas exchange ducts and alveoli which are supplied by the pulmonary circulation. Furthermore it is known that in the upper lobe (zone) alveolar perfusion is minimal and is dependent on an adequate pulmonary blood pressure, degree of vascular constriction and on gravity. Hypoxia and acidosis and hypocapnia cause both pulmonary precapillary vaso-constriction as well as the constriction of the respiratory bronchioles and gas exchange ducts. All these factors will lead to lung damage and infection resulting subsequently in a broncho-pleural fistula.

In these cases it is important therefore that besides frequent clinical examination one should also do daily X'Rays and blood gas analysis (arterialised capillary samples as in this case) especially in the initial stages, as it will give one a better guide to the progress of the leision.

Acknowledgements

We wish to thank Dr. M. Balasundram for his reports on the X'Rays. Our thanks to the Director General, Ministry of Health, Malaysia for his permission to publish this article.

References

1. Cardio-Respiratory Resuscitation by A. Gilston and L. Resnekov.
2. Respiratory Therapy by Belinkoff.
3. General Anaesthesia volume 1 3rd. edition by J. Nunn and T. C. Grey Chapter 5.
4. Bates, M., and Beard, H. J. (1956) "Six cases of Traumatic Rupture of the Bronchus". Thorax, 11, 312.
5. Soothil, E. F. (1960) "Closed Traumatic Rupture of the Cervical Trachia". Thoraxm 15, 89.
6. Bickford B. J. (1962) "Chest Injuries in Childhood and Adolescence". Thorax 17, 240.
7. Sellaors T. H. (1961) "The Management of Chest Injuries". Thorax 16.

Imperforate Vaginal Septum with Haematocolpos

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IMPERFORATE VAGINAL SEPTUM with haematocolpos is an uncommon condition. Warner and Mann (1955) gave an incidence of 0.02 per cent when he found 5 cases out of a total of 20,963 gynaecological admissions. The incidence as given by Rosenthal and Block is 1 in 1,000-2,000 of total gynaecological admissions. This article reports on 7 cases seen in the University Hospital over a period of 6 years (1968-1973).

Clinical Features (See Table I)

The patients presented at about a year or two after the age of normal menarche, namely, 13 to 16 years.

Lower abdominal pain appear to be the most common symptom in a review of literature. Of the cases seen in the University, one patient had severe colicky lower abdominal pain. Less severe abdominal pain was seen in 4 other patients. One complained of a dull low backache.

Urinary symptoms seem to be the most common symptoms in the present series of patients. In 5 of the cases seen, retention of urine was the main presenting symptom, ultimately causing them to seek treatment. Frequency of micturition and dysuria were the other common urinary complaints.

An awareness of an abdominal swelling is a common presenting symptom but this did not seem apparent in the patients under review even though the haematocolpos in some of these patients were fairly large and prominent.

Bowel symptoms are usually common but not as main presenting symptoms. Constipation were seen in 3 of the patients and 1 had tenesmus.

Patient (T.L.L.) Case No. 2 was rather unusual. She had complaints of regular menstrual bleeding and dysmenorrhoea for the 6 months prior to being seen. She was admitted with the main complaint of urinary retention. Examination under anaesthesia revealed a fusiform mass 5 cm. x 5 cm. situated on the right side of the vagina. A firm tubular cervix could be seen to the left of this mass (see diagram). The diagnosis was of unilateral haematocolpos due to uterus didelphys and a partial double vagina with imperforate septum (Chew et al, 1970).

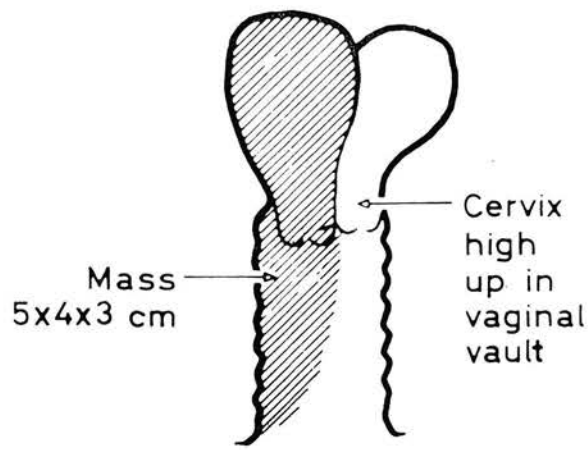

Fig. 1
Coronal Section of uterus and vagina.

Clinical Presentations of 7 Cases of Cryptomenorrhoea

No.	Name	Age	Main Complaints	Other Complaints	Physical Signs			Case Referred in as
					Abdomen	Genitalia	Rectal	
1.	L.S.W.	13	Colicky abdominal pain for 2 days	Dysuria for 2 days	Regular, suprapubic cystic mass 24 wks size	Tense, bulging membrane. Distinct hymenal ridge	Tense, cystic mass anteriorly	Ovarian cyst
2.	T.L.L.	13	Urinary Retention	Dysmenorrhoea Tenesmus Frequency of micturition for 1 month	Bladder distended to 16 wks. size. 400 ml. urine at catheterization No abdominal mass	Fusiform mass 5 cm & 5 cm. in the right part of vagina. Cervix to the left.	Tender mass anteriorly	Ovarian cyst, Pregnancy Had appendicectomy 3 mth. ago
3.	L.C.H.	14	Backache for 6 months		Cystic, regular mass, 22 wks. size	Tense, bulging, bluish membrane at introitus. Distinct hymenal ridge		Abdominal tumour
4.	L.K.T.	15	Urinary retention	Periodic paraumbilical discomfort for 1 year. Constipation for 2 days	Cystic suprapubic mass 20 wks. size.	Distended, bluish membrane covering vaginal orifice. Distinct hymenal ridge	Cystic mass anteriorly	Imperforate hymen
5.	W.M.	13	Urinary retention followed by frequency (overflow incontinence)	Dysuria – 1 mth. Suprapubic ache Constipation	Cystic, immobile mass arising from pelvis	Thick bulging membrane at introitus	Distended vagina with small uterus	Imperforate hymen
6.	L.A.K.	16	Urinary Retention	Dysuria Suprapubic pain Constipation	Cystic, suprapubic mass 16 wks. size	Tense, bluish membrane across lower vaginal orifice		Imperforate hymen
7.	C.T.H.	15	Urinary Retention	Lower abdominal pain – 3 days	Tense, cystic swelling 22 wks. size	Bulging bluish membrane at introitus	Cystic mass anteriorly	Imperforate vagina

Physical Signs

Secondary sexual characteristics were seen in all 7 patients. Following catheterization of the bladder, when retention of urine was the presenting symptom, a cystic swelling arising from the pelvis can usually be palpated as was seen in 6 of the patients. Very occasionally, the uterus may be felt perched on the haematocolpos or the dilated tubes of haematosalpinx may be felt (Tompkins, 1939).

Examination of the genitalia usually revealed a tense, bulging, bluish membrane at the introitus. The colour depends on the thickness of the membrane. This may not be obvious if the vaginal obstruction is higher up in the vagina. The hymenal ridges were quite often seen distinct and stretched out around the rim of the membrane. Often, the distended membrane caused gaping of the labia.

A rectal examination was done in most cases and was usually necessary to confirm the presence of a cystic mass filling the sacral hollow.

Discussion

Quite often imperforate vaginal septum is labelled "imperforate hymen". This is because of controversy over the development origin of the vaginal septum. Blair-Bell (1911, 1912) showed that all such membranes are not imperforate hymen and that imperforate hymen are far less common than a transverse septum at a higher level in the vagina. Blair-Bell suggested that they resulted from non-fusion between the portions of the vagina developed from Mullerian elements and the urogenital sinus. Koff (1933) believed that the vaginal septum resulted from arrest of canalisation in that part of the vaginal part derived from the sino-vaginal

bulbs of the urogenital sinus. He regarded the hymen as being totally derived from the sinus epithelium. Kanagasutheran and Dassanayake (1958) suggested a possible theory which may satisfactorily explain all types of vaginal septae and imperforate hymens encountered. They postulated that abnormal proliferation of the surrounding mesoderm invaded the vaginal plate and fused in the substance to occlude it in various ways; a mesodermal sheet with its adjacent epithelial layer may then persist as a vaginal septum. They also showed that the membranous obstruction at the vaginal orifice is rarely an imperforate hymen.

Diagnosis is often not difficult if the condition is kept in mind and local examination is not omitted. Diagnosis of haematoclopos due to imperforate septum seems obvious when an abdominal mass is felt with a tense, bulging membrane seen on separating the labia. Failure of performing a simple inspection of the vulva had led to misdiagnosis as in 3 of the 7 cases under review and in unjustified laparotomy in one of the patients. This condition needs to be differentiated from various conditions such as pregnancy, tuberculous, peritonitis, acute or subacute appendicitis, ovarian cyst and pelvic kidney. Three of the patients were referred in as possible ovarian cyst, abdominal tumour and a pregnancy. One of them, T.L.L. patient No. 2 had an appendicectomy done a few months before admission because of symptoms and signs suggestive of an acute abdomen.

Diagnosis is more difficult in cases of vaginal agenesis and high obstruction, when rectal and vaginal examination may not disclose the distended part of the vagina. In these cases, instillation of radio-opaque material into the bladder with radiography may be useful or a laparotomy may be required (White, 1966).

The main line of treatment is excision of the membranous obstruction under strict aseptic conditions with prophylactic antibiotics as blood is an excellent medium for bacterial growth. Too often, a simple incision is performed and though this allows drainage, re-stenosis is common. Adequate resection of the septum is necessary, consisting of a cruciate incision followed by excision of the four quadrants of the septum. The edges of the incision are sutured with continuous locked catgut sutures to secure haemostasis. The retained menstrual blood is allowed to drain spontaneously without any abdominal pressure, drains or packs as these predispose to sepsis. Vaginal examination should not be done in the early post-operative period. A sterile pad should always be worn. Close observation would be necessary to detect any evidence of sepsis. Douching, tub-bathing and swimming must be avoided until after the first next period. Jeffcoate (1967) advocated vaginal examination after 2 menstrual periods to assess the state of the uterus and fallopian tubes. If residual haematosalpinges are discovered, laparotomy with a view to conservative surgery is advisable. Haematometra scarecly seems to be a realistic clinical entity, the thick uterine walls permitting very little blood to collect therein. Cases in which the agenesis of the vagina is considerable may need a combined abdomino-perineal approach to adequately drain the menstrual blood.

Congenital anomalies of the urinary tract are often associated with haematocolpos, usually with high membranous obstruction or vaginal atresia. The commonest anomaly appears to be the absence of a kidney, as was seen in one of the patients under review, T.L.L. Case No. 2, at intravenous pyelogram. She had absent right kidney with a slightly enlarged normal functioning left kidney. Other anomalies seen in other series were pelvic kidneys, horse-shoe kidneys, duplications and malformations of the ureters and bladder anomalies (Bryan et al, 1949; Ball & Douglas, 1949).

The urinary tract may be affected by back-back-pressure changes. Hydroureters and hydronephrosis have been reported. Dewhurst (1963) recorded a fatal case of ascending urinary tract infection consequent on the obstruction.

In the past, many fatalities have been recorded as a result of fulminating sepsis. Tompkins (1939), in his review of 113 cases of haematocolpos, reported 6 deaths and 1 severe pelvic infection. However, such cases are uncommon in this modern era of antibiotics and asepsis. In general, full restoration of functions of the genital tract is the rule. Normal menstrual flow is established, as was seen in all our patients.

Summary

1. The main clinical features of 7 cases of vaginal septum with haematocolpos are presented.
2. The aetiology of the membranous obstruction is discussed.
3. Diagnosis is not difficult if the diagnosis is kept in mind and a simple vaginal examination is done.
4. Treatment consists of an adequate excision of the obstructing membrane.

Acknowledgement

Thanks to Professor T. A. Sinnathuray for reviewing the article, the Medical Illustration Department of the University of Malaya for the diagram, and to Mrs. Ivy Phang for typing the manuscript.

References

Ball, T. L. and Douglas, R. G. (1949): Amer. J. Surg., 78: 40.

Blair-Bell, W. (1911): Lancet, 1: 1269.

Blair-Bell, W. (1911): J. Obstet. Gynaec. Brit. Emp., 19: 533.

Blair-Bell, W. (1912): J. Obstet. Gynaec. Brit. Emp., 21: 209.

Bryan, A. L., Nigro, J. A. and Counseller, V. S. (1949): Surg. Gynaec. Obst. 88: 79.

Chew, S. Y., Chan, L. and Chan, D.P.C. (1972): J. Asian Fed. of Obstet. Gynae.

Dewhurst, C. J. (1963): Gynaecological Disorders of Infants and Children, Cassel, London, p. 32.

Jeffcoate, T. N. A. (1967): "Principles of Gynaecology", Butterworths, London.

Kanagasuntheram, R. and Dassanayake, A. G. S. (1958): J. Obstet. Gynaec. Brit. Emp., 65: 487.

Koff, A. K. (1933): Contribution to Embryology, Carnegie Institute, Washington, 24: 61.

Rosenthal, A. H. and Block, R. E. (1958): Amer. J. Surg., 95: 487.

Tompkins, P. (1939): J.A.M.A., 113: 913.

Warner, R. E. and Mann, R. M. (1955): Obstet. Gynaec., 6: 405.

White, J. A. (1966): Obstet. Gynae., 27: 695.

Congenital Atresia and Stenosis of the Duodenum – A Case Report

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Introduction

CONGENITAL ATRESIA and stenosis are the commonest causes of neonatal obstruction of the small intestines; one or other occurs once in 20,000 births. The sites of the obstruction is as follows (Davis and Poynter):–

Duodenum above the papilla	15 per cent	33 percent
Duodenum below the papilla	18 per cent	
Jejunum	15 ,, ,,	
Ileum	25 ,, ,,	
Colon (usually ascending colon)	10 ,, ,,	
Multiple sites	17 ,, ,,	

We wish to report a case of Mongolism with duodenal atresia and stenosis treated at General Hospital, Johor Bahru recently.

Case Report

A 15 day old male Chinese infant P.N.Y. was refered to the surgical unit General Hospital Johor Bahru from a district hospital as a problem of intestinal obstruction in a newborn on 6th June 1973. It had apparently been a normal pregnancy and delivery for the 39 years old mother of ten children. She had not noticed any marked difference in the appearance of the infant compared to the other siblings when they were babies.

There was a history of vomiting three to four times daily since birth. The vomitus consisted of yellowish liquid mixed with curd. The vomiting was not projectile. Muconeum was passed a few hours after birth and on the third or fourth day of life the muconeum gave place to stools showing the presence of milk curds. The passage of muconeum during the first three days of life does not make negative a diagnosis of intestinal obstruction. For the past four days prior to admission the baby had been constipated. The mother noticed it had been feeding poorly since birth. She had not noticed any abdominal distension.

On physical examination the facies of mongolism was noticed and other confirmatory signs such as short hands with incurved fifth fingers and widely separated first and second toes made a confident diagnosis of Down's syndrome possible. The baby's general condition was satisfactory and there were no signs of dehydration. The cardiovascular and respiratory system were normal. The abdomen was soft with minimal distension of the epigastrium but there were no visible peristalsis observed nor any mass palpated per abdomen. There was diastasis of the recti abdominis muscles. Rectal examination revealed no mass nor any faeces. A plain radiograph supine showed marked distension of the stomach and duodenum and an erect view showed air and fluid levels in the stomach and deodenum. Our preoperative diagnosis was Duodenal Atresia/Stenosis. Differential diagnosis: Annular pancreas.

Preoperatively intravenous infusion and gastric suction were started. Laparotomy was done on 9th June 1973, two days after admission. We found the stomach and the first part of the duodenum dilated beyond a constriction 3 mm. long where the second part of the duodenum began. This

stenosis only admitted the end of a fine probe about 1 mm. in diameter. There were no other sites of obstruction in the jejunum, ileum or the colon. The liver, gall bladder, spleen and pancreas were all normal.

Operation

We decided at operation to perform a DUODENO-DUODENOSTOMY because technically it was possible to do it and we thought it was more physiological than the standard operation of Duodeno-jejunostomy.

An incision was made anteriorly extending from the dilated first part of the duodenum across the stensosis to the collapsed second part of the duodenum. With the anastomosis partially completed with fine 5/9 silk a polythene Ryle's tube was guided through the anastomosis and threaded to the jejumun. The anastomosis was completed in one layer. The patient vomited once on the first post-operative day despite intravenous fluids and gastric suction. The patient became cyanosed and on auscultation there were rhonchi in the lungs. We started postural percussion immediately with tracheo-bronchial suction and this was continued daily for several days. The patient had been on injections Ampicillin. Feeding with clear sterile fluids was commenced on the fourth post-operative day. A gastrograffin swallow was done on the seventh post-operative day to exclude anastomotic leak and also to test the patency of the anastomosis Fig. 1 and Fig. 2. It was reported that the stomach and first part of the duodenum were less dilated and that the dye flowed easily through the anastomosis; there was no leak.

This case was presented at the Combined Monthly Meeting of General Hospital, Johor Bahru on 27th June by Dr. M. Yusof Said.

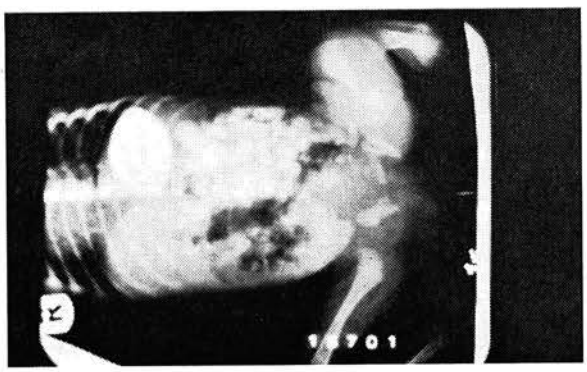

Figure I
Gastrograffin Swallow
Taken on the 7th Post-Operative day, showing patency of Duodeno-Duodenostomy.

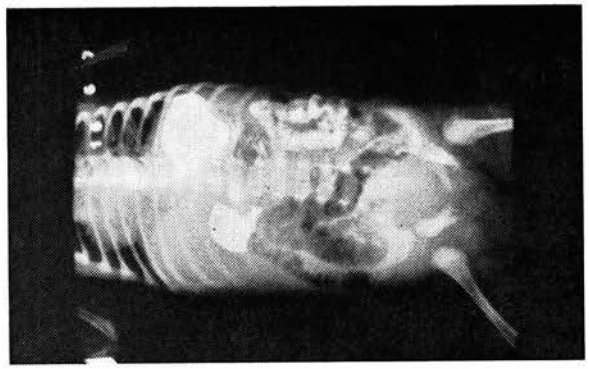

Figure II
Gastrograffin Swallow
Taken on the 7th Post-Operative day.
The first and second parts of duodenum are still dilated.

At the last follow-up in October 1973 the baby was thriving Fig. 3.

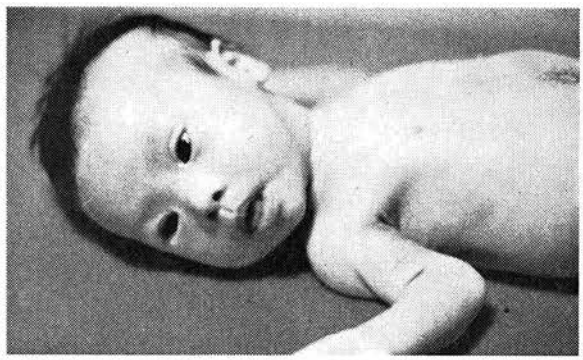

Figure III
Mongol with
Duodenal Atresia/Stenosis Thriving.
3 Months after Operation.

Discussion

Luow (1952) in a study of neonatal obstruction occuring over the period 1926 to 1951 at the Hospital for Sick Children, Great Ormond Street, found 31 reports of cases involving the duodenum. In about 20% of the cases the obstruction was placed proximal to the ampulla of Vater, while in 75% of the cases it was placed distal but close to the ampula of Vater. 5% of cases showed an area of atresia in the third of fourth part of the duodenum. In all cases the duodenum proximal to the obstruction was grossly distended and the walls thinned out to such an extent that rupture could take place.

In the rare condition of duodenal stenosis there is usually a diaphragm present with a small

central perforation, with the result that the intestinal obstruction is not complete. The perforation is usually so small that the symptoms and signs are those of atresia, but if food can pass through, the condition may be difficult to detect. Such an example is presented in this case report.

Symptoms and Signs

As we are dealing with a congenital malformation associated with obstruction, persistent vomiting takes place within the first 24 hours of taking feeds. Vomiting becomes frequent and leads to severe denyhdration and alkalosis and death will ensue within one week unless surgical relief is given. After a feed gastric peristalsis will be seen and the vomit will become projectile in character. Bile will be present in the stomach content in 80% of cases, but where the obstruction lies proximal to or at the level of the ampulla of Vater bile is not present in the vomit, so that delay in diagnosis may occur as the clinical picture is one of mucous gastritis. Normal meconium stools may be passed in the first 48 hours but soon constipation will develop as no food is passing through the duodenum. Farber (1933) showed that squamous epithelial cells derived from the skin of the foetus from the third month of foetal life onwards were ingested in the amniotic fluid and were present in the meconium stools. Failure to demonstrate these cells shows that the intestinal obstruction is complete and that the lesion has been present before the third month.

In atresia a plain radio-graph will show marked distension of the stomach and the duodenum proximal to the lesion, but no air will be seen in the small intestine. The duodenum often is so dilated that radiography suggest that there are two stomachs present. In the rare cases of stenosis; where the size of the lumen is compatible with life, the onset of symptoms of vomiting and constipation is delayed. There is no justification of giving a barium meal; the danger of aspirating vomitus is too great. When it is absolutely necessary to give opaque material (partial obstruction) a small amount of gastrografin given through the gastric tube is useful for demonstrating the location of the obstruction, but the opaque material should be aspirated directly after the films have been exposed.

Differential Diagnosis

Suprapapillary duodenal atresia is distinguished from oesophageal atresia by the fact that there is no dribblling of saliva and there are no attacks of cyanosis after feeding. The absence of a palpable lump serves to differentiate duodenal obstruction from infantile pyloric stenosis and the latter occurs later.

The Surgeon must remind himself that duodenal obstruction in infancy can also be caused by volvulus of the midgut, congenital bands and an annular pancreas.

Lastly, attention is directed to the high incidence of mongolism amongst sufferes from duodenal atresia and stenosis. White, Carter and Luow (1952) found a high incidence of mongolism, 10 out of a consecutive series of 32 cases being affected.

Treatment of Duodenal Atresia

Intravenous infusion is given to restore the electrolyte imbalance and the state of dehydration set up by severe vomiting. Gastric suction is set up prior to operation to prevent the aspiration into lungs of fluid secretions that pour into the distended duodenum and stomach.

Anaesthesia

General anaesthesia with the use of nitrous oxide, oxygen and other, is the anaesthetic of choice. The metabolic rate of the infant is high and respiration is often depressed due to a state of alkalosis, so a high percentage of oxygen has to be given. General anaesthesia, administered by an anaesthetist experienced in anaesthetizing infants, by providing relaxation of the abdominal wall, simplifies the surgeon's task. Endotracheal anaesthesia provides a free airway in the presence of an unstable respiratory centre, and prevents inhalation of gastric contents.

Probably the safest, by no means the most satisfactory is local infiltration with oral sedation. When local anaesthesia is employed some form of restraint is necessary; the best method is to bandage the wool-covered extremities firmly to a padded crucific.

Operation

Retrocolic duodenojejunostomy is the operation of choice. The mortality has been reduced by the following small addition to the operation. After completing the anastomosis, a stab incision is made through the wall of the pyloric anturm. Through this incision a plastic catheter is passed, and its tip is guided through the anastomosis. The tube is anchored to the stomach wall by a catgut stitch, and a valvular opening is constructed. The tube is brought to the surface either through a stab incision or through the upper part of the laparotomy incision, whichever gives the more direct passage. This additional step allows rest to the duodenum until its muscle tone has recovered, when molk feeding can be commenced through the tube. Gastrojejunostomy should not be used for this condition. During the anastomosis the intestinal content is removed by suction and clamps are not applied

as they may devitalise the thinned out duodenal wall. A single layer of interrupted fine silk sutures will complete the anastomosis.

Ehrenpreiss and Sanblom (1949) claim to have reduced their operative mortality from 75% to 25% by intubation of the anastomotic opening.

Post-operative management based on the knowledge that the dilated duodenum will not regain tone or true peristalsis for several days will lead to further reduction in operative mortality.

Acknowledgements

We wish to thank the Director General of Medical and Health Services of Malaysia, Tan Sri Datuk (Dr.) Abdul Majid Ismail for permission to publish this case report and Cik Siti Mariam and Cik Salmah for typing it.

References

1. Ehrenpreis, T. and Sandblom, P. Acto Paediat, Uppsala 38, 109 1949.
2. Farber, S., J. Amer, Med. Ass., 100, 1753, 1933.
3 Gross, R. E., The Surgery of Infancy and childhood, Saunders, London and Philadelphia, 1953.
4. Luow, J. H. and Barnard, C. N. Congenital Intestinal Atresia: Observations on its Origion. Lancet 2: 1065, 1955.
5. Luow J. H. Congenital Intestinal Atresia and Stenosis in the newborn. Observations on its pathogenesis and treatment. Ann. Roy. Coll. Surg. 25: 269, 1959.
6. Masen Brown J. J. Surgery of Childhood Edward Arnold (Publishers) Ltd. 1962.

A Simple Technique of Intra-Uterine Transfusion of Foetus in University Hospital, Kuala Lumpur

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Introduction

PRIOR TO the introduction of intra-uterine transfusion, severe Rhesus iso-immunization causes a very high foetal mortality of about 80% to 100%; however after its introduction by Liley in 1963, this procedure is now accepted as a standard for the management of severe Rhesus iso-immunization and the foetal salvage has improved considerably to between 35% to 50% (Whitfield 1972).

The purpose of this paper is to present a simple technique used in University Hospital, Kuala Lumpur for performing intra-uterine transfusion of the foetus.

Selection of Patients:

Patients are selected for this procedure on the basis of spectrophotometric analysis of amniotic fluid. A placental scan is done first to localise the placenta. Amniocentesis is then performed. Spectrophotometric analysis of amniotic fluid is carried out. Patient is then selected for the intra-uterine transfusion of foetus only if the spectrophotometric analysis of amniotic fluid as outlined by Liley indicates that the foetus is severely affected. An additional indication is a history of previous foetal loss due to erythroblastosis.

Preparation of Patient

A patient selected for the procedure is admitted on the day before the procedure is to be done. Laboratory studies on admission include complete blood count, repeat antibodies studies, and urinalysis. Amniocentesis is performed and 2 to 4 mls. of Myodil is injected into the amniotic cavity. On the morning of transfusion, fresh Type O, Rh-negative blood is cross matched against mother's blood and the donor's blood is centrifuged to provide packed cells.

The patient is given 50 mgs. Pethidine and 50 mgs. Promethazine Hydrochloride intramuscularly one hour before the transfusion.

X-Ray Equipment

This includes an 'under-the-table' fluoroscopic tube and spot films tunnel supporting a 9" image intensifier, the out-put phosphor of which supplies the intensified fluoroscopic image to an orthicon television camera. The image is then displayed on to two television monitors so positioned that all participants in the procedure can have adequate viewing.

Technique

The patient is placed supine on the x-ray table. Fluoroscopy is performed to determine the foetal positions. The Myodil introduced into the amniotic cavity the day before is adherent to the skin surface of foetus and outlines the foetus distinctly. Ideally the foetus should be lying in the position as the mother i.e. the foetal abdomen is directly anterior. However other positions can be acceptable as long as the operator can direct the needle into the amniotic sac, then into the foetal abdomen without encountering the placenta or any part of the baby other than the extremities. If the foetal abdomen is posterior with foetal spine upper-most, the procedure is best postponed until some change in foetal position can be induced or occurs spontaneously. The skin

area of the maternal abdomen which is directly opposite the centre of the foetal abdomen and through which the needle is to be inserted, is selected. The skin surface of the maternal abdomen is prepared and rendered sterile. A radiopaque metallic ring about 2" in diameter is placed on selected area of the maternal abdomen. The skin over the area selected is anaesthetized by local infiltration with Lignocaine. Under fluoroscopic control, an 18 cms. long 16 or 17 gauge Tuohy needle is directed into the foetal abdomen. There is a characteristic feel when it enters the foetal peritoneal cavity. 2 mls. of sterile saline solution is injected through the needle and if the saline can be introduced without any resistance, then 2 to 4 mls. of Urografin 30% is injected. A spot film is taken with an under-couch x-ray tube. One can ascertain that the contrast media has been placed in the peritoneal cavity by one or more of the following radiographic signs viz. Fig. I, Fig. II and Fig. III as shown.

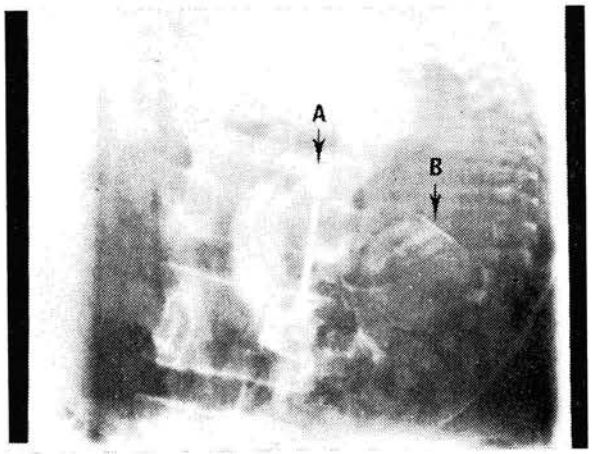

Figure I.
Shows the Tuohy Needle (Arrow A) and outline of large bowel (Arrow B)

(1) outline of the large bowel.

(2) outline of under surface of the diaphragm.

(3) outline of posterior surface of the abdominal wall.

(4) collection of contrast media between loops of small bowel producing a typical 'honey-combed' appearance.

and (5) outline of the under surface of the liver.

A polyethylene catheter is then threaded into the peritoneal cavity through this needle and the needle is then withdrawn. A spot film is taken with the catheters filled with contrast media, it gives a typical spring coil appearance. For the transfusion, fresh O Rh-negative packed cells are used. The blood is introduced gradually taking about 2 hours for the procedure. The amount of blood given is 60 mls. to 120 mls. depending on the foetal size and period of gestation. Foetal heart sound is periodically monitored during and at the conclusion of the procedure.

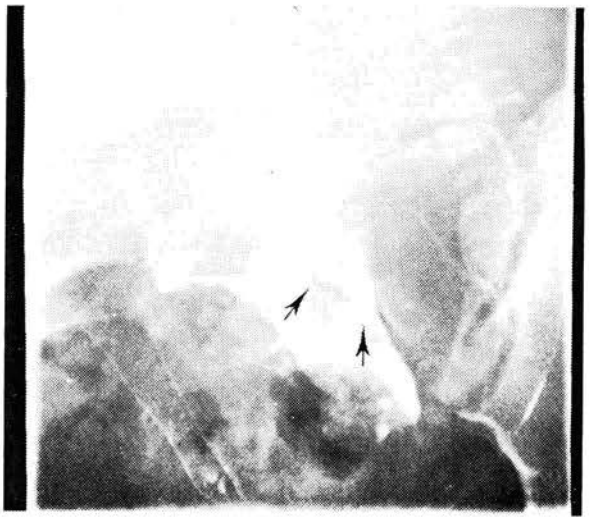

Figure II.
Shows collection of contrast media under the liver as indicated by the arrows.

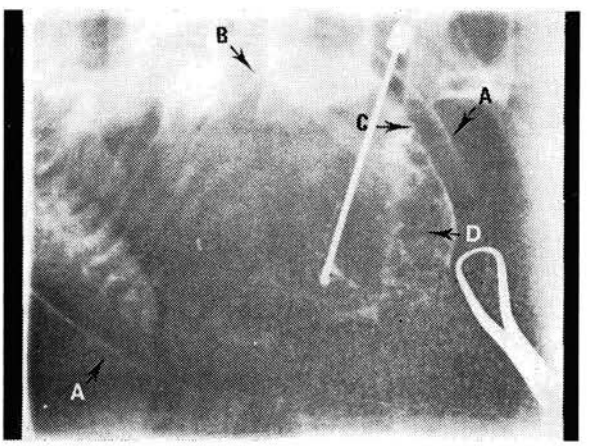

Figure III.
Shows the skin of foetal abdomen as outlined by Contrast media (Arrow A).
Crescentric shape of contrast media under the Diaphragm (Arrow B).
Outlines of posterior surface of anterior abdominal wall (Arrow C).
'Honeycombed' appearance (Arrow D).

Following completion of the transfusion, the maternal temperature, blood pressure, as well as the foetal heart rate are recorded every 4 hrs.

The intra-uterine transfusion is repeated at 2 to 3 weekly intervals until the 36th or 37th week of gestation when pregnancy is terminated.

Radiation Hazard to Foetus

With our existing obstetric-radiologic team, the radiological aspect of the procedure often takes about 30 mins. or less. With experience, one can further shorten the time of the procedure. The actual fluoroscopy is usually about 1 to 2 minutes duration, much of it done with a small field surrounding the needle tip and adjacent foetal land marks.

Beris et al (1972) found in intra-uterine transfusion that the average foetal dose was 617 m rads. to 1,117 m rads. They concluded that in view of the serious prognosis of erythroblastosis this amount of foetal radiation is acceptable.

Summary

(1) The indications of intra-uterine transfusion are briefly discussed.

(2) A simple technique of intra-uterine transfusion used in University Hospital, Kuala Lumpur is described.

and (3) Radiation hazards of the procedure to foetus are small. In view of the serious prognosis of erythroblastosis, the procedure justifies this small risk.

Acknowledgements

We wish to express our thanks to the Medical Illustration for the photography and Miss Florence Vendargon for typing the manuscript.

References

1. Fairweather, D.V. I., Tacchi, D., Coxon, A., Hughes, M. I., Murray, S. and Walker, W.: Intra-uterine transfusion in Rh-isoimmunization. Brit. Med. J., 4: 189-194, 1967.
2. Liley, A. W.: Intra-uterine transfusion of fetus in haemolytic disease. Brit. Med. J., 2: 1107-1109, 1963.
3. Liley, A. W.: The technique of fetal transfusion in the treatment of severe haemolytic disease. Aust. N.Z.J. Obstet. Gynaecol., 4: 145-148, 1964.
4. Liley, A. W. The use of amniocentesis and fetal transfusion in erythroblastosis fetalis. Pediatrics, 35: 836-842, 1965.
5. Queenan, J. T.: Intrauterine transfusion: A cooperative study. Am. J. Obstet. Gynaecol., 104: 397-405, 1969.
6. Whitfield, C. R., Thompson, W., Armstrong, M. J. and Reid, M. McC.: Intrauterine fetal transfusion for severe rhesus haemolytic disease. J. Obstet. Gynaecol. Brit. Cwlth. 79: 931-940, 1972.
7. Work, B., Jaffe, R. B., Campbell, C. and Whitehouse, W.: A technic of intra-uterine transfusion of the fetus. Obstet. Gynaecol., 27: 319-322, 1966.
8. Bevis, D. C. A., Grech, Paul and Parsons, R. J.: Radiation hazard in intrauterine transfusion. Br. J. Rad., 45: 193-196, 1972.

A Case of Modified A antigen in Acute Leukaemia

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Introduction

MODIFICATION OF a blood group antigen by disease was first recognized in 1957, when van Loghem et al. reported a case in which the red cells of a patient suffering from myeloblastic leukaemia were found to possess an exceedingly weak A antigen, though his cells had been typed a year previously and reported without comment as A. Similar changes in acute leukaemia have since been reported independently by a number of workers and the phenomenon has also been observed in a case of Hodgkin's Disease (Scott and Rasbridge, 1972).

The present report concerns a case of myeloblastic leukaemia in which fewer than 20% of the patient's red cells were agglutinable by anti-A and by anti-A,B and in which the patient's typing was initially misinterpreted as O. Details of the serological findings are presented with the object of illustrating the ease with which atypical and often significant features may be overlooked and an incorrect interpretation of agglutination tests may be made.

Materials and Methods

Case Report

Mrs. R. F., a 44-year-old Indian patient, was admitted to the General Hospital at Kuala Lumpur on 22 September 1973 with a diagnosis of incomplete abortion. Besides her vaginal bleeding, she was also suffering from purpura and other clinical manifestations suggestive of a haemorrhagic diathesis, and a total of two units of blood was requested from the Blood Transfusion Service.

The patient's group was interpreted by the technician on call as O Rh(D) positive and two units of group O Blood were crossmatched without difficulty. These were not administered, but a further request for blood was made on 25 September, when a fresh sample of the patient's blood was submitted to the laboratory.

Testing was carried out in the manner customary to the laboratory, on a white plastic tile ruled to provide separation of individual tests, the patient's cells being tested against anti-A, anti-B, anti-A,B and Anti-D, the patient's serum against A, B and O cells. Saline and albumin auto controls were also run in accordance with the routine practice.

Results

A distinct "mixed-field" agglutination reaction was observed with both anti-A and anti-A,B typing reagents. The majority of the cells in each case were unagglutinated, but a number estimated at 20% of the cells were seen to have formed into coarse agglutinates, readily visible to the naked eye in the anti-A,B test but somewhat less easily perceptible in the anti-A test due to the presence of a blue dye in the reagent. The reaction with anti-D was a normal positive one, whilst that with anti-B was unequivocally negative.

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The patient's serum agglutinated B cells strongly, but neither group O nor (significantly) group A_1 cells showed any reaction. Saline and albumin auto controls were also negative.

The possibilities considered initially were that:–

(a) the patient was of the sub-type A_3

or (b) this was a group A patient who had been transfused recently (perhaps elsewhere) with group O blood.

Either event could give rise to a "mixed field" agglutination reaction with antisera containing anti-A, but the appearances were not typically those seen with A_3 blood and the patient's history did not include a previous transfusion. It was then learned that a bone marrow examination performed on the day prior to the second transfusion request had established a diagnosis of myeloblastic leukaemia, and it was realised that the reactions observed may represent an example of A antigen modification, as is occasionally encountered in association with this disease.

The initial sample was retested and was found to give reactions identical with those of the later sample.

Further tests

The patient's cells were tested with anti-A_1 and anti-H reagents, both obtained from a commercial source. The anti-A_1 was prepared from an extract of *Dolichos biflorus* seeds and the anti-H from seeds of *Ulex europaeus*. Both tests could be interpreted as weakly positive, that with anti-H being distinctly the weaker of the two. In both cases "mixed-field" agglutination was seen, but the agglutinates were smaller and fewer than had been seen in tests with anti-A and anti-A,B.

A sample of the patient's saliva was also tested in the hope of being able to demonstrate that she secreted both A and H substance, but this information was not obtainable as she turned out to be a non-secretor (genotype *sese*).

Discussion

There are several schools of thought regarding the cause of blood group antigen modification in acute leukaemia, and the subject is reviewed by Race and Sanger (1968). The proportion of cells remaining agglutinable seems to be variable in different patients – and may even be variable in the same patient on different occasions. One case reported by Gold et al. (1958) showed only 2% of the cells agglutinable by anti-A, but during a remission the number rose to 35% and fell again before death to 8%. Reports suggest that the changes may occur not only to the A antigen but that they may also affect the H, B, I and D antigens, and Cooper et al. (1968) have reported decreased I antigenicity accompanied by increased i antigenicity in sideroblastic and megaloblastic anaemia.

In the present case the Rh antigen D was not perceptibly abnormal and the estimated proportion of cells reactive with anti-A and anti-A,B was in the region of 20%. The "mixed-field" agglutination reaction with anti-A_1 suggested that the true group of Mrs. R. F. was A_1. There was no clue as to the manner in which the disease process interferes with red cell antigen synthesis, but the fact that the patient's cells reacted only very feebly with anti-H indicates that the loss of A was not accompanied by a reversion to H.

The initial misinterpretation of the patient's group as O was not a serious matter, as the error was on the side of safety and group O blood proved to be perfectly compatible. The typing results on the earlier sample are interesting, however, because they indicate the manner in which an inexperienced laboratory worker may miss weak agglutination and may tend to enter the results he expects to observe rather than those actually obtained. The first protocol showed a negative reaction with both anti-A and anti-A,B reagents, as well as with anti-B, and this was perhaps excusable because the minor population of agglutinable cells formed into plaques of agglutination that looked not unlike the fibrin strands sometimes seen when cells from imperfectly clotted samples are typed, whilst the majority of cells remained unagglutinated. However, conscious bias came into play when the reverse grouping results were recorded, because a positive reaction was erroneously recorded for the test between the patient's serum and group A cells, leading to an apparent confirmation that the patient's group was O. Subsequent testing of the original sample of patient's serum showed that A cells were not in fact agglutinated, and group A donor blood was matched satisfactorily and administered without event.

Summary

Details of the blood grouping reactions obtained on the blood of a patient suffering from myeloblastic leukaemia are presented and it is concluded that these signify the modification of a normal A antigen associated with the disease process. Though without serious implications in this case, conscious bias in the recording of agglutination reactions caused a misinterpretation of the patient's grouping in the first instance, and there could be some situations in which such erroneous recording could invite adverse consequences.

References

Cooper, A. G., Hoffbrand, A. V. and Worlledge, Sheila M. (1968) Increased agglutinability by anti-i of red cells in sideroblastic and megaloblastic anaemia. *Brit J. Haemat.*, 15: 381-387.

Gold, E. R., Tovey, G. H., Benney, W. E. and Lewis, F. J. W. (1958) Change in the group A antigen in a case of leukaemia. *Nature (Lond.)* 183: 892-89

Loghem, J. J. van, Dorfmeier, Hanny and Hart, Mia van der (1957) Two A antigens with abnormal serologic properties. *Vox Sang., (Basel)*, 2: 16-24.

Race, R. R. and Sanger, Ruth (1968) *Blood Groups in Man*, 5th Edition, pp. 29-30. Blackwell, Oxford.

Scott, G. L. and Rasbridge, M. R. (1972) Loss of blood group antigenicity in a patient with Hodgkin's Disease. *Vox Sang., (Basel)*, 23: 458-460.

A Case of Congenital Pulmonary Lymphangiectasis

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Introduction

IT has been suggested that congenital pulmonary lymphangiectasis can be expected in one case out of every 170 post-mortem examination on stillbirths and newborn babies (Leader, B.M.J. 1972, 1 : 395). The condition is characterised by intercommunicating, thin-walled, fluid containing cystic spaces of varying sizes, lined by endothelium situated mainly in the sub-pleural, peri-bronchial and interlobular connective tissue.

The following is a case of congenital pulmonary lymphangiectasis associated with diaphragmatic hernia. This, I believe is the first reported case in Malaysia.

Case report

B/O LAY was a full-term Indian male infant weighing 2,400 g. delivered normally after a labour induced by ARM. The Apgar score at 1 minute was 5/10. Intubation and intermittent positive pressure respiration was done.

On examination, his general condition was poor. There was central cyanosis with laboured grunting respiration. Chest expansion was decreased on the left side with poor breath sounds. The apex beat was 150/min., regular and localised on the right chest. Heart sounds were normal and no murmurs were heard. The other systems were all clinically normal. An immediate chest X-ray examination revealed a left sided diaphragmatic hearnia. The diaphragmatic hernia occured through the Foramen of Bochdalek which was repaired surgically.

Post-operatively, the patient was ventilated using the Engstrom ventilator. The next day he was weaned off the respirator and nursed in an incubator with 70% oxygen. However, about 10 hours later, he suddenly became cyanosed because of a right tension pneumothorax. A right chest tube was inserted and connected to an underwater seal. He was then put back on intermittent positive pressure respiration.

Following this he had repeated episodes of cyanosis despite the above treatment. Serial chest X-rays were done which showed improvement of the right pneumothorax, although 24 hours later a left tension pneumothorax was seen. A left chest tube was then inserted and connected to an underwater seal. Repeat chest X-rays did not show any improvement. The patient remained cyanosed and expired 10 hours later.

Necropsy

At post-mortem examination performed 30 hours after death, the body weighed 2,300 g., had a crown-heel length of 47 cm and a crown-rump length of 32 cm. No air was obtained by needling the pleural cavities. The left lung (8.1 g.) was hypoplastic, collapsed and haemorrhagic. Numerous elongated thin-walled cysts containing serous fluid were present in the left upper lobe; they measured 0.2-0.6 cm in maximum dimensions. A few smaller cysts were seen in the left lower lobe (Fgi. 1). No cysts were seen in the right lung (18.2 g.), which was firm and atelectatic with some sub-pleural haemorrhages.

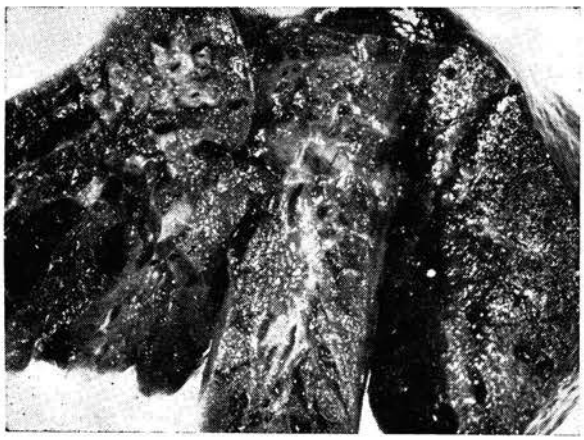

Fig. 1
Lower lobe of left lung showing numerous cystic spaces of varying sizes.

The heart (13.7 g.) had a dilated right atrium and right ventricle. The formen ovale was probed patent and its orifice measured 0.6 cm when stretched. The superior vena cava, inferior vena cava, portal vein, aorta and its major branches were normal in appearance and distribution. The foramen of Bochdalek in the diaphragm was repaired by a dacron patch graft (2.5 cm x 1.5 cm). There were numerous petechial haemorrhages in the thymus and pericardium. A haemorrhage 0.5 cm in diameter in the left adrenal gland and an extensive haemorrhage in the left choroid plexus were present. The liver, spleen and kidneys were unremarkable.

Histology

The cystic spaces in the left lung were structurally dilated lymphatics, lined by flattened endothelium which was desquamated in places (Fig. 2). The cystic spaces were mainly sub-pleural, interlobular, peri-vascular and peri-bronchial in location (Fig. 3). Atelectasis was marked with some associated over-distension of contiguous alveoli. Many of the alveolar ducts were lined by well-formed eosinophilic hyaline membrane. There was an area of necrosis with an infiltrate of neutrophils and macrophages in the left lower lobe. There were extensive haemorrhages in the alveolar spaces.

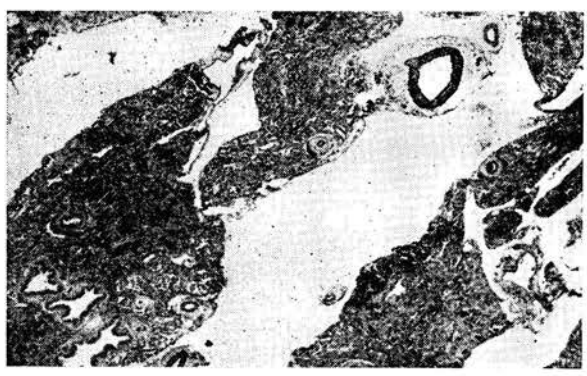

Fig. 2
Lower power magnification of the cystic spaces in the left lung. (Elastic Van Gieson)

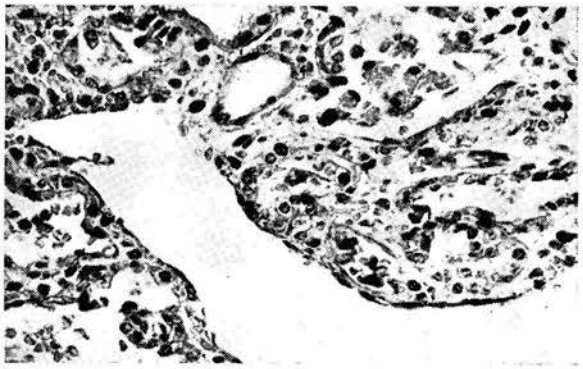

Fig. 3
High power magnification showing the endothelium lined spaces. (Elastic Van Gieson)

Sections of the right lung showed that the lymphatics were also dilated, though not forming macroscopically visible cysts. There was only mild atelectasis. Eosinophilic hyaline membrane was not well-formed. A few of the blood vessels contained fibrin thrombi. There were scattered sub-pleural and alveolar haemorrhages.

Sections of the brain showed infiltrations of moderate numbers of neutrophils in the meninges. There were multiple foci of extramedullary haemopoiesis in the liver with marked splenic congestion.

Discussion

Congenital pulmonary lymphangiectasis was first described by Virchow in 1856 and since that time most of the records are accounts of single cases. However, Laurence (1955) reported 3 cases and in 1959 a further 7 cases. In 1971, N.E. France and R. J. K. Brown reported a series of 11 new cases.

From these and similar reports, these infants develop respiratory distress and cyanosis soon after birth and is usually not relieved by high concentrations of oxygen. As a rule they die within 2 days although a few cases have survived longer. One child (Javett et al. 1963) diagnosed by lung biopsy at 7 weeks was still alive 5 years later (Noonan et al. 1970), though subjected to attacks of wheezing and respiratory distress precipitated by respiratory tract infections.

In the case now recorded, the clinical presentation was that of a diaphragmatic hernia and the condition post-operatively was complicated by bilateral pneumothorax. The left pneumothorax was not relieved even with intercostal drainage suggesting the presence of a broncho-pleural fistula.

The pathogenesis of congenital lymphangiectasis is unknown. Giammalvo (1856) suggested that there was delay in linkage of isolated lymphatic spaces. However, it has been shown by post-mortem injection experiments (Noonan et al. 1970) and re-construction of serial sections (Laurence 1959) that the spaces are part of an intercommunicating network of abnormal vessels.

Lymph vessels grow during the 9th week of foetal life and normally at the 14th week there are large lymphatic vessels lying in the abundant connective tissue dividing the lung parenchyma into distinct lobules. However by the 20th week, a reduction of both the lymphatic vessels and connective tissue occurs. Laurence (1955) postulated that, due to a failure of the normal regression of the lymphatic vessels and connective tissue, growth of these two elements continues.

Shortland-Webb et al. (1966) postulated that intrauterine obstruction to venous flow might result in increased lymphatic drainage with consequent retention of the large lymphatics of early foetal life.

Cardiovascular malformations have been quite frequently reported in association with congenital pulmonary lymphangiectasis. Total anomalous pulmonary venous drainage was most frequently found in association with pulmonary lymphangiectasis (France et al. 1971, Noonan et al. 1970). Varieties of the hypoplastic heart syndrome were also recorded with dilated lymphatics. In both these conditions, obstruction to the pulmonary venous flow in utero leading to increased lymphatic drainage is a possibility, thereby causing the retention of the large lymphatics of the early foetus (France et al. 1971, Noonan et al. 1970).

J. R. Esterly and E. O. Oppenheimer (1970) reported that 13 of their 22 cases of asplenia syndrome had dilated lymphatics and lymphatic proliferation in association with other various anomalies of the pulmonary veins and are thus more likely to have an increased lymphatic drainage.

Summary

A case of congenital pulmonary lymphagiectasis associated with diaphragmatic hernia is described. The pathogenesis of this condition is briefly discussed. Its association with cardiovascular malformations especially total anomalous pulmonary venous drainage is noted.

Acknowledgement

I wish to thank Prof. K. S. Lau for permission to report this case and staff of the Pathology Dept. for guidance.

References

1. Brit. Med. J. (1972) 1: 395 Leading article.
2. Esterly, J. R. and Oppenheimer, E. O. (1970). Lymphangiectasis and other pulmonary lesions in the Asplenia Syndrome. Arch. Path. 90: 553.
3. France, N. E. and Brown, R. J. K. (1971). Congenital Pulmonary Lymphangiectasis: Report of 11 examples with special reference to cardiovascular findings. Arch. Dis. Child. 46: 528.
4. Giammalvo, J. T. (1955). Congenital lymphangiomatosis of the lung; a form of cystic disease. Lab. Invest. 4: 450.
5. Javett, S. N., Webster, I. and Braudo, J. L. (1963). Congenital dilatation of the pulmonary lymphatics. Paediatrics 31: 416.
6. Laurence, K. M. (1955) Congenital pulmonary cystic lymphangiectasis. J. Path. and Bact. 70: 325.
7. Laurence, K. M. (1959). Congenital pulmonary lymphangiectasis. J. Clin. Path. 12: 62.
8. Noonan, J. A., Walters, L. R. and Reeves, J. T. (1970). Congenital pulmonary lymphangiectasis. Am. J. Dis. Child. 120: 314.
9. Shortland-Webb, W. R., Tozer, R. A., Cameron, A. H. (1966). Intrauterine closure of the artrial septum. J. Clin. aPth. 19: 549.
10. Virchow, R. L. K. (1856). Gesammelte Abhandlungen zur Wissenschaftlichen Medizin p. 982, Frankfurt, Meidinger.

Focal Nodular Hyperplasia of the Liver

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Focal nodular hyperplasia of the liver

FOCAL NODULAR HYPERPLASIA OF the liver refers to an uncommon slow-growing benign lesion consisting of liver cells arranged in nodules separated by fibrous tracts within which proliferating bile ducts are included occurring as solitary, sometimes multiple, well-demarcated tumour-like areas in normal livers. This lesion has been found in males and females of all age groups. Most of these lesions have been incidental findings at autopsy or during angiographical studies for other conditions. A minority have become symptomatic. Many names have been given to this lesion such as focal cirrhosis (Benz and Baggenstoss, 1953), hamartoma (Kay and Talbert, 1950), solitary hyperplastic nodule (McBurney et al., 1950), and nodular hyperplasia of the liver (Edmondson, 1958) reflecting the diversity of opinion that exists as to its nature. The aetiology of focal nodular hyperplasia of the liver remains unknown.

One such lesion was an incidental finding in the liver of a 16 year old Malay boy killed in a traffic-accident when autopsy was performed at the University Hospital in Kuala Lumpur. Focal nodular hyperplasia of the liver has not been previously described in Malaysians although this lesion is a well recognised entity.

This case of focal nodular hyperplasia of the liver is being reported because it is important to recognise this lesion and differentiate it from other liver disorders such as cirrhosis, partial nodular transformation of the liver, congential hepatic fibrosis, adenomas and hepatocellular carcinoma.

Case Report

A 16 year old Malay boy was knocked down by a car and died while on the way to hospital.

Autopsy findings

Autopsy was performed four hours after death. Multiple traumatic injuries were present: multiple skin abrasions; a 5 cm. laceration of the occipital scalp; simple fractures of the left clavicle, right femur, right tibia and fibula; and, fracture across the posterior cranial fossae with extensions into the middle cranial fossae resulting in right otorrhoea. As a result of the basal fractures in the skull aspiration of blood into the lungs had occurred.

The brain was swollen with laceration of the inferior parts of the cerebellar hemispheres and focal subarachnoid haemorrhages were present in the cerebral hemispheres. There was bilateral swelling of the cerebellar tonsils and uncal grooving. Coronal sectioning of the brain showed no intra-cerebral haemorrhage or laceration.

In the liver was found a superficial, solitary, 6 x 5 x 5 cm., firm, tan coloured, irregularly nodular, rounded mass which was replacing the caudate lobe and protruding from it (Fig. 1). This lesion was sharply demarcated from the normal liver parenchyma by a distinct fibrous capsule. Some prominent thin-walled engorged blood vessels were present on the surface of the capsule. On sectioning, the cut surface of the mass showed numerous pale, tan coloured, irregular nodules which were separated by small stellate-shaped fibrous scars and fibrous bands. The nodules ranged from 1 to 8 mm. in

diameter. Some dilated blood vessels were present at the interface between the lesion and the liver parenchyma and within the lesion itself. There was no bile-staining. The rest of the liver was smooth, reddish-brown in colour, normal in consistency and shape, and, including the mass, weighed 920 g. A normal lobular pattern was discernible and fibrosis, cirrhosis and cavernous haemangioma were absent.

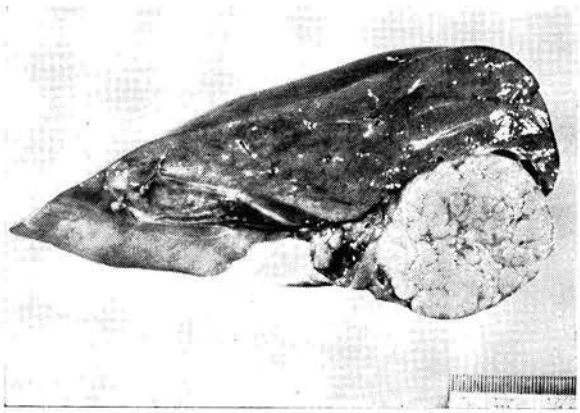

Fig. 1
Focal nodular hyperplasia of the liver. Portion of right lobe of liver showing a well demarcated, solitary, tan coloured, 6 x 5 x 5 cm., irregularly nodular mass replacing the caudate lobe and proturding from it.

The gall-bladder, biliary ducts and pancreas were normal. There was no portal veinous thrombosis or signs of portal hypertension. The spleen was normal. The other organs were normal. The autopsy did not show any metastatic tumour deposits in the organs.

The cause of death was aspiration of blood into the lungs as a consequence of multiple fractures at the base of the skull.

Histology

On histological examination, sections of the hepatic lesion stained with haematoxylin and eosin showed a pattern suggestive of mixed nodular cirrhosis with numerous irregular hyperplastic regeneration nodules of varying sizes surrounded by bands of fibrous tissue, generally thin and narrow, but occasionally rather broad, and separated in many places by small stellate-shaped fibrous scars (Fig. 2). Many of the peripheral scars were continuous with the capsule but the deeper ones interconnected with each other through fibrous bands.

The hepatic cells were swollen with clear cytoplasm devoid of lipofuscin pigment, and were arranged in one to three cell thick slightly disorganised plates separated by dilated sinusoids. There was slight increase of binucleated hepatic cells. Fatty change in hepatic cells was present focally, but other degenerative changes and necrosis were absent,

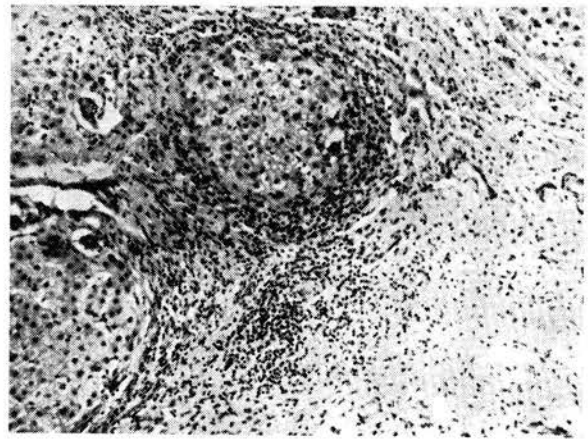

Fig. 2
Focal nodular hyperplasia of the liver showing a pattern suggestive of cirrhosis with regeneration nodules surrounded by fibrous bands and separated by small fibrous scars. Aggregates of lymphocytes with histoicytes are present within the bands and scars. H. & E. stain x 32.

and there was no cellular anaplasia or pleomorphism. The Kupffer cells were normal. Central veins were generally absent in the nodules. Many clusters of proliferating bile ducts were present at the periphery of the nodules but no cholestasis was noted. Focal aggregates of lymphocytes admixed with some histiocytes were present in the areas of scarring and fibrous bands (Fig. 3).

In the thick fibrous capsule were compressed clusters of normal hepatic cells, proliferating bile ducts and focal aggregates of mononuclear inflame atory cells.

Focal groups of dilated engorged blood vessels were present at the interface between the lesion and normal liver, within the fibrous capsule, and in the scars and fibrous bands within the lesion. Most were thin-walled, but a few showed fibroblastic proliferation of media and intima with mural thickening. There was no necrosis or inflammation of vessel walls and no thrombosis. Whether these blood vessels were arteries or veins was difficult to ascertain. Elastic stain showed no clearly definable elastic tissue in the thickened walls.

In the macroscopically normal liver tissue the hepatic cells were histologically normal and there

were no abnormal vascular changes. Focal nodular hyperplasia of the liver was the final diagnosis.

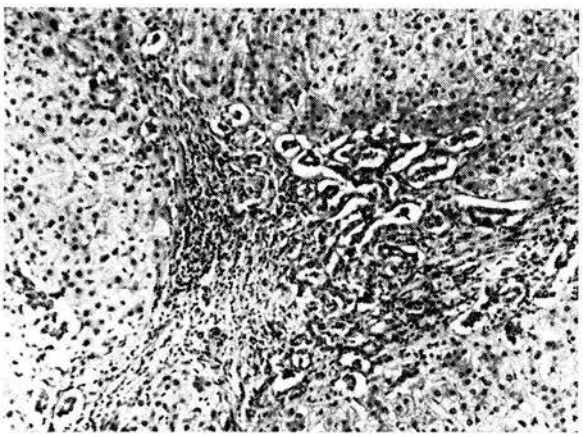

Fig. 3
Focal nodular hyperplasia of the liver. The regeneration nodules are composed of hepatic cells with clear cytoplasm arranged in one to three cell thick slightly disorganised plates separated by dilated sinusoids. Many clusters of proliferating bile ducts are present at the periphery of the nodules. Focal aggregates of lymphocytes with histoocytes are present within the fibrous bands. H. & E. stain x 125.

Discussion

Focal nodular hyperplasia of the liver is a well recognised entity of which about 300 cases have been reported in the literature over the past 30 years. There have been several large series of cases (Benz and Baggenstoss, 1953; Begg and Berry, 1953; Edmondson, 1956). The pathological features of this lesion are well documented. Amongst Malaysians this hepatic lesion has never been previously reported. Morphologically, the hepatic mass in this present case is one of focal nodular hyperplasia of the liver.

This hepatic lesion has been reported in all age groups from infancy to old age and it has been found to be more frequent in females than males (Benz and Baggenstoss, 1953; Begg and Berry, 1953; Garancis et al., 1969; Whelan et al., 1973). Clinically, focal nodular hyperplasia of the liver may be symptomatic or asymptomatic Individuals may harbour this lesion without complications for many years and be noted as an incidental finding at autopsy. Benz and Baggenstoss (1953) reported a series of 34 such lesions which were incidental findings at autopsy and had not produced symptoms. Conversely, these lesions may become symptomatic (Begg and Berry, 1953): by virtue of size, as an abdominal mass; by torsion if the lesion is pedunculated, producing infarction and pain; or by rupture of capsular veins resulting in intraperitoneal haemorrhage. Such symptomatic lesions have usually occurred in children (Edmondson, 1956). In the present case, focal nodular hyperplasia of the liver is an incidental finding at autopsy in a 16 year boy killed in a traffic-accident.

Most authors consider focal nodular hyperplasia of the liver to be a benign lesion. The lesions reported by Benz and Baggenstoss (1953) were noted as incidental findings at autopsy which is suggestive of their benign nature. In some cases in which the lesion could not be surgically removed, patients had remained in good health (Edmondson, 1958). Whelan et al., (1973) reported two cases followed up 5 and 6 years after hepatic lobectomy and showed no evidence of recurrence. Histologically, these lesions have not been reported to show cellular anaplasia or other signs of malignancy such as invasion of the liver capsule and surrounding liver tissue, lymphatics and blood vessels, and no distant metastases have been found. The present lesion shows no evidence of such malignant features and is histologically graded as benign.

The aetiology of these lesions remains an enigma. They have been variously regarded as hamartomas (Kay and Talbert, 1950; Gerding et al., 1951), benign neoplasms (Hoffman, 1942; Christopherson and Collier, 1953; Garancis et al., 1969) and regenerative lesions (Begg and Berry, 1953; Edmondson, 1958). Recent authors (Thomas et al., 1966; Palubinskas et al., 1967; Garancis et al., 1969; Whelan et al., 1973) have stressed the importance of vascular anomalies in the lesions of focal nodular hyperplasia of the liver such as dilated blood vessels (Thomas et al., 1966; Palubinskas et al., 1967), mural thickening of the walls of small blood vessels (Whelan et al., 1973), dilatation of sinusoids (Whelan et al., 1973) and a somewhat frequent association of these lesions with cavernous haemangiomas in the same livers (Benz and Baggenstoss, 1953). Arteriographical studies, during life (Palubinskas et al., 1967; Aronsen et al., 1968; Whelan et al., 1973), have demonstrated increased anomalous arterial supply to the lesion. Accumulated evidence suggests that an anomalous and increased arterial supply is an important factor in the development of focal nodular hyperplasia of the liver.

The exact mechanism for the parenchymal changes in the liver leading to focal nodular hyperplasia is at present unknown. Whelan et al., (1973) have theorized on two possible mechanisms; first, the lesion may be due to injury secondary to increased pressure in the sinusoids and portal vein branches from chronic exposure to arterial pressure. Occlusive lesions of the small blood vessels may

produce ischaemia, followed by atrophy and compensatory regenerative nodules; second, the lesion may be explained by the fact that the vascular anomaly is, in fact, a focal arteriovenous malformation. Shunting of blood away from a localized area of liver may produce ischaemia with its previously noted effects.

Morphologically, the present lesion can be described as a "focal cirrhosis' 'as most of the features of cirrhosis of the liver are present: the prominent nodularity due to regenerative nodules separated by fibrous bands and scar tissue; the disorganisation of the normal lobular pattern of the liver; the marked proliferation of bile ducts; and the presence of aggregates of lymphocytes and histiocytes within the fibrous bands and scar tissue which would suggest that this lesion is regenerative rather than neoplastic in nature. The nature of the aetiological agent cannot be ascertained although the findings of an increase in vascularity around and within the lesion, mural thickening of small blood vessels and the dilatation of sinusoids within the regenerative nodules would support the current hypothesis that anomalous vascularization in a portion of liver is an important factor in the pathogenesis of this condition.

Focal nodular hyperplasia of the liver is an eminently treatable lesion which is of excellent prognosis. Therefore, it is important to distinguish between this lesion and other liver disorders such as cirrhosis, partial nodular transformation (Sherlock et al., 1966), congenital hepatic fibrosis (Kerr et al., 1961), adenomas and hepatocellular carcinoma as these entities commonly simulate focal nodular hyperplasia clinically but, prognostically, they are very different. Differentiation is mainly morphological rather than clinical.

Summary

A case of focal nodular hyperplasia of the liver which was an incidental finding at autopsy in a 16 year old Malay boy killed in a traffic-accident is reported. The autopsy and histological findings are described. Morphologically, this lesion can be described as a "focal cirrhosis" and therefore is suggestive of a regenerative rather than a neoplastic lesion. Vascular anomalies present around and within the lesion would support the current hypothesis that anomalous vascularization in a portion of liver is an important factor in the pathogenesis of this condition. It is important to differentiate this lesion from other liver disorders as it is eminently treatable and of excellent prognosis.

Acknowledgements

The author wishes to thank Professor K. S. Lau for his encouragement in the preparation of this paper.

References

1. Aronsen, K. F. et al. (1968) A case of operated focal nodular cirrhosis of the liver., Scand. J. Gastroenterol., 3: 58.
2. Begg, C. F. and Berry, W. H. (1953) Isolated nodules of regenerative hyperplasia of the liver., Amer. J. Clin. Path., 23: 447.
3. Benz, E. J. and Baggenstoss, A. H. (1953) Focal cirrhosis of the liver: its relationship to the so-called hamartoma (adenoma, benign hepatoma)., Cancer, 6: 743.
4. Chandler, E. M. and Walters, W. D. (1964) Solitary liver tumours in childhood. Report of two cases., Ann. Surg., 160: 986.
5. Christopherson, W. M. and Collier, H. S. (1953) Primary benign liver-cell tumours in infancy and childhood., Cancer, 6: 853.
6. Edmondson, H. A. (1956) Differential diagnosis of tumours and tumour-like lesions of liver in infancy and childhood., A.M.A.J. Dis. Child., 91: 168.
7. Edmondson, H. A. (1958) Atlas of Tumour Pathology, Sect. VII, fasc. 25. Washington, D. C., Armed Forces Institute of Pathology.
8. Garancis, J. C. et al. (1969) Hepatic adenoma: biochemical and electron microscopic study., Cancer, 24: 560.
6. Garding, W. J. et al. (1951) Hamartomatous cholangiohepatoma. Report of a case., J.A.M.A., 145: 821.
10. Hoffman, H. S. (1942) Benign hepatoma: review of the literature and report of a case., Ann Intern. Med., 17: 130.
11. Kay, S. and Talbert, P. C. (1950) Adenoma of the liver, mixed type (hamartoma). Report of two cases., Cancer, 3: 307.
12. Kerr, D. N. S. et al. (1961) Congenital hepatic fibrosis., Quart. J. Med. n.s., 30: 91.
13. McBurney, R. P. et al. (1950) Solitary hyperplastic nodule of the liver simulating a neoplasm: report of a case., Proc. Staff Meet. Mayo Clin., 25: 606.
14. Palubinskas, A. J. et al. (1967) Liver cell adenoma. Angiographic findings and report of a case., Radiology, 89: 444.
15. Sherlock, S. et al. (1966) Partial nodular transformation of the liver with portal hypertension., Amer. J. Med. 40: 195.
16. Thomas, P. A. et al. (1966) Lobar cirrhosis with nodular hyperplasia (Hamartoma) of the liver treated by left hepatic lobectomy., Amer. J. Surg., 112: 831.
17. Whelan, T. J. et al. (1973) Focal nodular hyperplasia of the liver., Ann. Surg., 177: 150.

Book Reviews

A MEDICAL LABORATORY FOR DEVELOPING COUNTRIES by Maurice King M. D., F.R.C.P. Oxford Univ. Press, Lond. 1974 £3.50 net.

THE AUTHOR claims that the aim of the book is to bring a minimum level of pathological services within the range of *everyone* in the developing countries. It is primarily addressed to the laboratory assistants and medical assistants who work in health centres and district hospitals. The methods described here will also be useful to all doctors who deal with ward-side rooms, consultation rooms of general practitioners and the laboratory of every out-patient department.

The value of this work lies in that it is written in simple language and copiously illustrated, and the methods chosen are claimed to provide the greatest diagnostic value for the limited funds available, the total cost of the equipment in the basic list given here being about US $500/- including the microscope.

This is a manual which should find a place in every laboratory concerned in routinely confirming the diagnosis of common and important conditions in developing countries.

CYTOLOGY OF THE FEMALE GENITAL TRACT by G. Rioton, W. M. Christopherson and R. Lurat W.H.O., Geneva 1973, pp 41 and 195 colour illust. £19.

This is the 8th volume in the series of tumour classifications being published by W.H.O. It is concerned with cytological rather than histologeal diagnosis. It is emphasised that the cell identification and interpretation are an integral part of pathology but few pathologists have experience in cytodiagnosis. The primary application of uterine cytology is the mass screening of women for the early detection of cancer, especially asymptomatic cancer of the cervix.

Attention is drawn in the book to the importance of establishing adequate training standards for cytology technicians in order to ensure that the maximum benefit is obtained from such screening programmes.

MANNUAL ON LARVAL CONTROL OPERATIONS IN MALARIA PROGRAMMES. WHO Offset Publication No. 1, Geneva 1973 pp 199. WHO Malaria Eradication Programmes have largely depended on the attack against adult vector mosquitoes with the use of residual insecticides. In many places, however, this method has failed to produce effective results and anti-mosquito measures directed against the aquatic stages of the vectors have been increasingly resorted to as an aid.

This publication, prepared by the WHO Division of Malaria and Other Parasitic Diseases, is therefore timely and constitutes a comprehensive reference work on antilarval operations for the use of operational and engineering staff in malaria programmes and provides valuable teaching material for training courses.

CORRIGENDUM

Please note that the name of the co-author of the article 'Salbutamol in Premature Labour – a preliminary report which appeared in Vol. 28 No. 3, March 1974 pp. 191/193 should read D. K. Sen instead of D. K. Ken.

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AUTHORS

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