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MMA and the Public

by A. A. Sandosham

GLANCING THROUGH the scrap book of paper-cuttings wherein the MMA has come before the public during the past year one cannot help but feel flattered that the Association is closely identified in people's mind with the profession in the country. Nevertheless, it is regrettable that there has been so much misunderstanding about our functions and our limitations, the MMA often being unfairly criticised for not taking action against alleged professional misbehaviour etc.

Ethical Matters

It is not generally realised that we are as anxious as, if not more so than, the public that the medical profession should maintain high ethical standards for the good of the people and for the maintenance of the regard and esteem of the public for our noble profession. By and large we find our members conform to the traditions of good professional behaviour. However, as it happens with any group of people, there is always the occasional individual who tends to stray from the straight and narrow path. We may have our suspicions and we may hear rumours of misdoings by one or other of our colleagues. But everyone has to be treated as innocent until he is proved guilty. None can be proved guilty until a complaint is received and a competent authority enquires into it and sits in judgment after the respondent has been given every opportunity to defend himself. Only then can punishment be meted out in keeping with the gravity of the offence.

Unfortunately, the MMA seldom receives specific complaints of professional misconduct against a doctor from a patient, members of the public or

his colleagues. Even if such a complaint is received the MMA has limited powers to deal with the situation. The MMA can only deal with its members and a dissatisfied member can resign and refuse to take the advice or abide by the decision of the Association,

To assist the members of the medical profession the MMA has drawn up the Ethical Code which outlines the duties of doctors in general, to the sick and to each other. The formation of rules is one thing, observance of them in the rough and tumble of professional practice is quite another. While a formal code of ethics may provide the doctor with a standard, problems will always arise in the course of his professional work on which he needs specific guidance. One of the most important functions of the MMA is to provide the advice and assistance on ethical problems that members may seek.

From time to time doctors working together in a practice or in the same locality find themselves at variance with one another. Most of these disputes concern relationships not governed by law but by the traditions of the profession. To assist members to resolve such differences the MMA has set up an Ethical Committee of experienced men to hold an enquiry under the umbrella of the Association and provide impartial adjudication.

False Sick Certificate

It has been alleged that certain private medical practitioners give medical leave to undeserving cases for some financial consideration and the MMA is requested to investigate this and take action. This

can be a very difficult matter. The beneficiary, the malingerer, is most unlikely to cooperate with the investigator and the benefit of the doubt has to be given to the doctor. After all, if a patient goes along to the doctor with a complaint of acute abdominal pain the previous night and the examination reveals no obvious cause for it, the doctor cannot summarily dismiss him as a malingerer. He may well have a hidden pathology which is not obvious at the first examination and which may require rest and further investigation. The doctor has to use his judgment and experience and his knowledge of psychology on the patient before he can decide if it is a genuine case. If it turns out that the 'patient' was wanting leave, which he could not otherwise get from his firm or Government Department, to attend a wedding or a cricket match, the fault lies in the 'patient' and not the doctor who gave him the benefit of the doubt. Besides, this type of abuse — the issue of false medical certificates — can be most difficult to prove in a court of law.

Use of 'Bogus' or 'Imitation' Drugs.

There has been a spate of publicity in the local press claiming that certain doctors are using 'bogus' or 'imitation' or sub-standard drugs and suggesting that MMA should investigate immediately and take action. It is not clear what the accusation is all about. Doctors don't manufacture drugs but buy them from licenced pharmacists. It is possible that some of the confusion in the lay mind results from the multiplicity of trade names (depending on the manufacturer) under which various drugs (often known by the chemical or generic name in scientific circles) are marketed, the public assuming that one brand is superior to another. It is possible that certain drugs, owing to bad storage or prolonged keeping, have lost some of their potency and doctors prescribe these unwittingly. In such cases, it is as much to the disadvantage of the doctor who wants to cure as to the patient who wants to be cured.

It is possible but unlikely that reputable drug firms put out medicines which do not conform to the formula and specifications of the recognised pharmacopoeas. Government has set up a Standards Institute of Malaysia which among other things

is expected to lay down the minimum requirements of purity etc. of the various ingredients that go to make up a drug imported or manufactured in the country. This will prevent the marketing locally of spurious and adulterated drugs. The MMA recognises the value of SIM and sends its representatives to serve on its many Technical Committees. Government is proposing to set up a National Pharmaceutical Laboratory and when ready this would be able to periodically check the purity, potency and efficacy of the drugs and be of assistance to the doctor and the public.

Doctors and Dispensing.

A doctor in private practice in this country examines and treats his patients. It is a great convenience for the doctor and his patient that the doctor (whose training includes dispensing) has in his premises a stock of drugs he needs to treat his patients with and is in a position to dispense immediately the medicines required. If the doctor only prescribes and sends his patients elsewhere to get the medicines they need, it entails sick persons having to travel to a pharmacy and waste precious time waiting for the dispensing to be carried out. In the long run this system may result in the public having to waste more time and energy and also to pay more for the same service. It must be realised that today drug manufacturers have put out the medicines in such convenient forms as pills, capsules, injections with disposable syringes etc. that the dispensing part of the doctor's work is greatly eased.

In spite of this, the Malaysian Pharmaceutical Society criticises the MMA as being concerned only with nurturing its monopolistic interest. The Malaysian Pharmaceutical Society probably thinks that only pharmacists should be allowed to dispense medicines. However, we are told that out of a total of 250 pharmacies in Malaysia, a hundred are in Kuala Lumpur and Petaling Jaya; and of these 100 only about 12 are dispensing pharmacies allowed to dispense scheduled drugs under the Poisons Ordinance. What sort of service do they propose to provide the public?

Sexual Norms: Its Behaviour

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Introduction

IN ORDER TO understand the sexual standards of any society, one must have some knowledge of the ways in which our social existence shapes our sexual natures. One must know something about sexual similarities and differences existing between man and animals, within man and woman, and among various societies in the world today. The subject of normal sexuality is an extremely broad one and a very difficult one to define as it merges into the vague borderlands of sexual deviation.

Normality in sex implies an existence of a standard of normality within societies. However no absolute standards can be found, for what is considered to be sexually normal varies from country to country and from epoch to epoch. A sexual practice that is considered acceptable at one time or place may be an abhorred perversion at another. Even within the same culture, each individual may adhere to different sexual standards, depending upon the influences between his upbringing and the potency of his sexual needs. It is thus safe to assert that there are no sexual norms and practices which has not somewhere been condemned, and none which has not elsewhere been accepted (Storr, 1964). Every society must control potentially destructive sexual behaviour through some sanction of reward and punishment. But it is clear that effective control can only be achieved in many variegated ways (Gebhard, 1971).

Learned and Cultural Aspects of Sexuality

The learned aspect of sexual behaviour can be seen within society, e.g., people of higher education are more likely to engage in premarital petting

reaching orgasm, more likely to masturbate and engage in more oral-genital play (Reiss, 1960). The lower social classes are more likely to ejaculate faster, women having less orgasm, and women feeling that sexual relations is for the pleasure of men only and the duty of the wife (Masters and Johnson, 1970).

Since all cultures have a learned mode of sexual behaviour, no culture has the 'truly physiological' or 'natural' or 'normal' way of acting sexually. The present medical and psychological knowledge (Berg and Street, 1953; Ellis, 1954) defines all sexual behaviours which do not physically injure a person or reflect great internal conflict as normal. Even the injurious behaviours that are considered abnormal are often only the symptoms of some mental disorder. Thus oral-genital contact, masturbation and all positions in coitus are accepted as normal today.

Differing Sexual Responses of the Male and the Female

The female sex drive is not by nature significantly less than the male's (Kirchwey, 1924). The male is generally more easily aroused by physical excitement or by sexual phantasy, while the average female is aroused more frequently by motion pictures (not necessarily pornographic) or literary reading. While the male sexual arousal appears to be more genital in nature, the female arousal is more psychic and emotional. The male seeks recognition and demonstration of his masculine powers through sexual relationships; the female, on the other hand, finds that often sexuality is thrust upon her. The Kinsey (1953) report indicates that petting of a

fairly heavy nature was common among virgins. The female is probably an individual who has strong sexual desires but is striving to keep them under control.

While the male is anxious about his own sexuality, the female plays a relatively passive role (Storr, 1964) as she does not need to assert herself. Thus for the male, love is a thing apart but for a female it is her whole existence. These profound differences between the male's interest and goal in sexual relationship and that of the unmarried female produce highly complex misunderstandings. Because physical intimacy, particularly orgasm, is less central to the female's sexual development, the couple in the dating ritual can misunderstand each other (Hettlinger, 1967), as Greene (1964) stated 'she wants love, but he wants sex'. For the male petting or intercourse is likely to be desirable while his feelings for the female may not be deep at all.

If she finds him attractive and enjoys his company, she will accede to further intimacies, not because she craves for them but because she wishes to please him. She may assume, quite wrongly, that since (for her) passionate love-making could be an expression of a deep commitment. He, on his own part, may equally be wrong to assume that her readiness for petting reflects (as it would in him) an erotic passion, and may induce her to accept more pressure than she wishes to.

What seems to the male an obvious and extremely desirable incentive with all the possible risks (most to the girl) may be to her an entirely superfluous and even unattractive proceeding to which she only agrees because she loves him.

Calderone (1965) commented: "The female plays at sex when she is not ready because fundamentally what she wants is love; and the male plays at love, for which he is not ready because what he wants is sex". Because her total physical and psychic maturity is earlier than that of the male she is less interested in casual intimacies, is often more sophisticated in directing a relationship towards a more permanent fulfilment of marriage and child-bearing.

Infantile Sexuality

The first sexual experience of the male takes place early in childhood. His penis swells and grows stiff when his bladder is full. He will soon discover that it is accompanied by a pleasurable feeling not entirely within his control. These observations were made by Sigmund Freud (1924) in his essay on Infantile Sexuality which raised a furore among contemporary Viennese society.

The importance of infantile sexuality deals with Freud's discovery of the Oedipus complex from which the theories of psychosexual development, sexual behaviour and deviance originated and it played a major role in the modern understanding of sexual behaviour and pathology. The inability of the male to totally control his penile erection has been interpreted in early Christian times as the work of the devil. Thus the uncontrollable penis was proof of the original sin of Adam as recorded in the Scriptures.

Adolescent Sexuality

The sexual behaviour of young people is an important issue today, particularly in the controversial realm of sex education and contraception (Wagner, et al., 1969). As many taboos surrounding sex and sexuality disintegrate, a new openness in depth and range of discussion emerges.

Sexual behaviour has long been recognized as a major concern of adolescence and of others about adolescence.

The adolescent sexual dilemma occurs in the widely recognized fact (Kinsey, 1953) that man attain their greatest sexual capacity in the late teens. They grow up in a society which refuses to recognize and acknowledge their sexuality, but invariably blames the younger generation for non-conformity which is frequently exaggerated and misinterpreted. Nocturnal seminal emissions or 'wet dreams' appear to be the only means generally accepted in orthodox society by which young men can obtain sexual relief from the strain and pressure of their sexual excitements.

To understand the sexual behaviour of adolescents, one must be aware of the context within which a teenager struggles to find his identity and come to terms with his new physical maturity. There is continuing conflict between the traditional 'what ought to be' and 'what is'. This schism makes it more difficult for the teenager to find a consistent, unambiguous sexual standard. The marked ambiguity in attitudes and behaviour which characterizes traditional institutions merely intensifies his confusion. Specific factors causing a reduction in ambiguity over sexual matters are:

- (a) The apparent decline of parental control.
- (b) General decline in community's scrutiny of teenagers.
- (c) An apparent weakening of the churches' influence on sexual matters, and

- (d) Growing unwillingness of college authorities to act as parent-figures to their students.

Sex problems were said to range fourth in the list of what adolescents considered as major health problems, after drugs, smoking and drinking (Brunswick, 1971). The major anxieties were the fear of contacting venereal disease and the fear of pregnancy. Girls appeared to be more concerned about sexual matters than boys and among adolescent girls, sexual matters were an area of primary concern.

Schofield (1968), in a study of the sexual behaviour of young people, illustrated that less parental discipline caused more opportunities for sexual behaviour. Conformity with other teenagers was very important especially in the field of sexual behaviour. Many young males thought that their friends had more sexual experiences than themselves and there is an urgent desire to conform. It was also discovered that experienced girls were usually more independent than their male counterparts, rejecting family influences, thereby causing greater friction with their parents.

Some Statistics

Hall (1972) in a survey among males in Santiago, Chile, indicated that among males between 18 to 54 years of age, only two percent reported not having had any sexual experience. The median age for sexual relations was 15 years. Forty-six percent had their first experiences at 15 years and 67% before the age of 19 years. Ninety-four percent of unmarried males and 23% of unmarried women were sexually active. The use of contraceptives, whether married or single occurred in less than 50% of cases. Extra-marital intimacies were reported in 61% of married males and in the upper classes.

McCance and Hall (1971) in a study of unmarried college females at Aberdeen University noted that 44% had experienced sexual relations. Only fifty percent of the experienced girls and 28% of the inexperienced girls thought that contraceptive materials and advice were adequately available. Contraceptives devices were not used in 53% on the first occasion. However, the use of contraceptives increased with the frequency of sexual relations and the stability of the relationship.

Eysenck (1972) in a study of personality and sexual behaviour came to the conclusion that extroverts were more likely to have intercourse much earlier and more frequently, with more different persons per unit time, in more diverse positions, and would indulge in more varied sexual behaviour outside sexual relations than introverts.

Masturbation

The incidence of male masturbation is generally fixed at 95% of the total male population (McCary, 1967). Slightly less than two-thirds of males experienced their first ejaculation through masturbation, about three-quarters learnt about masturbation from verbal and literary sources. Surveys indicated that most adolescent boys masturbated two-and-a-half times a week and in about 17%, four to seven times a week. The incidence of masturbation in men progressively declined in the post-adolescent years and became sporadic throughout life.

Among the unmarried female's erotic activity, masturbation ranked only second to heterosexual petting. Thirty-seven to 85% of women masturbated depending on the sub-cultural groups. Among previously married women, masturbation accounted for 13-44% of the total sexual outlet. The frequency was higher for the higher educated in the upper social classes. In contrast to men, they showed a reduction in frequency after the teens.

It has only recently been realised by psychiatrists that the fear of masturbation and guilt it caused, appeared to have more dangerous consequences than the act itself. Many culture-bound psychiatric disorders related to the mythology and taboos of masturbation manifest the syndromes of Spermatorrhea (Carstairs, 1967), Masturbatory Insanity (Hare, 1962) and Koro (Rin, 1965; Yap, 1965 and Gwee, 1968).

The Double Standards of Sexuality — Male Dominance

The core of the double standards of sexuality in many cultures seemed to involve the notion of female inferiority. The standards gave males more rights than females and assumed such attitudes as proper. Thus the female role carried a lower status as compared to the male role (Reiss, 1960). Man's physical strength made him a much better hunter, while women were more incapacitated during child-bearing and rearing. Initially, economic reasons supplanted sexual motives and provided a more or less stable heterosexual relationship. Thus men's physical superiority conferred on him economic, political and military advantages thus making it possible for him to define women as inferior.

The double standards are an ancient sexual code in a modern society. It is evidently the feminist movement, with its platform of equality, that has greatly weakened the double standards. Furthermore contraception has removed the fear of pregnancy. The lower social classes conflict

more with the double standards while the upper social classes would be more likely to modify the double standards and accept transitional levels (Whyte, 1943).

The concept that the wife should submit to the husband's sexual approach and never make an approach herself is anomalous and is indicative of centuries of male dominance. It reduces the female into a mere instrument for man's pleasure and she becomes little more than a receptacle enabling him to discharge his own sexual desires.

Virginity and Frigidity

The tremendous over-valuation of virginity has a long history and its origins are far less creditable than are generally supposed. Intercourse before marriage was regarded as a grave sin, though more heinous for females than for males. Virginity was spiritually held at a higher status than marriage.

With the double standards, the male believed non-virginal women to be *bad* and therefore desire to marry virgins. At the same time, their sexual standards made them constantly strive to render as many women non-virginal as possible. This meant that they were lowering their own chances of marrying a virgin.

The *virginity paradox* could lead to conflict when a male discovered that his girl friend had indulged with someone else or when the husband discovered that his bride was not a virgin.

The double standards seemed to be shared by many individuals in a net of contradictory and unfulfilled desires, especially in an urban, industrial society. Many females utilised the double sex standards to attract males and then *castrated* their sexual potency. This situation led a female who, on the surface seems highly-sexed, but who is internally quite frigid – a sweet, sexy virgin whose dual nature may well cause her much internal conflict. Such a virgin was similar to *waxed fruit* – in both cases the appearance might be appetising but the object was incapable of fulfilling its promise. This situation led to a sensual type of sexuality which might constantly frustrate both persons in their attempt to maintain a stable relationship. In short, the sort of behaviour made people accept only the surface aspects of sexuality (Sharp, 1955).

Premarital Sexual Relations

Although the majority of pre-literate societies and cultures are opposed to most forms of extra-marital sex (adultery), the vast majority are in favour of premarital sexual intercourse. Murdock's (1949,

1954) and Service's (1957) examination of pre-literate societies revealed that 70% allowed premarital coitus for both males and females, but only about 20% allowed full extra-marital coitus. Furthermore, Gebhard (1971) found that in pre-literate societies roughly two-fifths to half were in favour of females indulging in premarital coitus.

The few cultures who fully restrict premarital coitus vary in nature with their restrictions. In many of them, the restrictions are of a double standard nature, i.e., the male is allowed to have sexual freedom while the female is severely condemned. Comparatively speaking, modern society is highly restrictive in terms of sexual behaviour but in practice, most people break the formal rules. Nevertheless, Kinsey (1948) found that the majority of men and women in his study engaged in premarital coitus.

The objections to premarital relations brought upon by parents are that it spoils a girl's matrimonial chances. She is solemnly warned by them that men were glad enough to take her virginity and would drop her as soon as they had what they wanted. Thereafter, she will be *damaged goods* and of little demand in the marriage market. The Chesser (1968) report found "those who had premarital sexual experience seemed to find greater pleasure in sexual relations at the beginning of their marriages than the virgins."

Various authors (Terman, 1938; Burgess & Paul, 1953; and Kinsey, 1948) indicated that 50% of women in California, Chicago and New York respectively entered marriage non-virginal. From half to two-thirds of his female subjects who engaged in premarital sex reported that they later married that man. Thus it seemed that the largest outlet for sexual intercourse among women was this 'affectionate-person-centred' type of coitus. The vast majority indulging in this type of coitus seemed to accept this behaviour as correct, i.e., they believed in a sexual standard which allowed indulgence when in love. Therefore, a major standard of premarital coitus is one which accepts intercourse as correct when strong affection, love or engagement is present.

This altered standard occurs for at least two groups:

- (a) those who accept sexual relations only when there is a stable relationship present.
- (b) those who accept sexual relations when there is physical attraction regardless of the degree of stability and affection present.

Illegitimate Teenage Pregnancy

Teenage pregnancy is an end result of adolescent sexual behaviour and such behaviour is difficult to change but its outcome can be affected by contraception and abortion (Gabrielson, et al., 1971). It is important not to lose sight of the personal problems of these girls who court pregnancy as well as the social, educational, psychological and medical implications of teenage pregnancies. Teenage sexual activity is reflected in the increasing numbers of pregnancies in this age group and adolescents find it difficult to obtain contraceptives or may use them ineffectively. Girls favourably disposed to abortions tend to be older and of higher socio-economic status without current religious affiliations.

Demographers have noted that the younger the girl is when she starts having babies, the more babies she is likely to have (Campbell, 1968). The teenage population, the poor and the less educated are particularly adverse. Among women, there appeared to be an inverse relationship between education and both the number of children wanted, expected or intended (Ryder & Westoff, 1969).

Friedman (1972) indicated that dynamic conflicts of teenage illegitimate pregnancies were a flight from an intense involvement with a seductive father, identification with a pregnant mother, sister or friend, hostility towards a restrictive family, a wish for self-punishment or a depressive search for pleasure to avoid a depression or emptiness. In a study of 200 unwed mothers, she indicated that they were more sexually naive and had massive repression and denial of interest in the knowledge of sex. There was an avoidance of sexual knowledge matched by an emotional avoidance and a blunting of feelings which consistently reflected a deep-seated attitude towards sexual matters. Furthermore, evidence indicated that most of them did not discover their pregnancy till four to five months late and thus achieved a worry-free state of mind for a few months.

The unwed mother frequently entered into a sexual relationship with little conscious thought of what might happen to her. Her knowledge of the personality of her lover was poor and she usually focussed on the love he gave only. There was a defective ego function in these women who lacked an awareness of the consequences. The carrying of the pregnancy to term was not a rational decision concerning the baby, but rather, the natural consequence of not thinking of the pregnancy.

Many men who caused girls to become illegitimately pregnant were said to be irresponsible and used the double sex standard. It was interesting

that the contraceptive use of the condom was mainly to protect themselves from venereal disease, rather than to protect the girl from pregnancy. There was no concern for the female at all. It appeared that frequently the girl who became pregnant had casual relationships with a 'permissive-without-affection' double standard male and where there were shifting partners.

Marriage

To most young women, the wedding day is the most momentous event of their lives (James, 1969). The priest instructs her "it is ordained for the procreation of woman it is a remedy against sin and to avoid fornication, that such persons have not the gift of continence might marry and keep themselves undefiled."

The idea of marriage is like a medicine (cure) against fornication desires from St. Paul's notorious injunction "better to marry than burn". The implication is that sex is sinful both before and outside marriage and even within marriage it is tainted with guilt and suspicion. The couple creates unrealistic expectations of marriage and are so doomed to disappointment. The moral overtones turn sex into a problem with the inevitable emphasis of the age-old association of sex with sin.

The young bride cherishes three illusions and thus has false expectations.

(a) The Romantic Illusion

It is the most precious experience in life originating from romance and sexual desires and yet one of the most dangerous. It is not the sole foundation for a meaningful marriage. We are in a society where sexual relations are considered by the majority as sanctioned only within marriage. This gives rise to the myth that the first time one falls in love, one has to prove one's sincerity by being willing to marry. The wedding ring and the marriage vows are magical instruments that transform everything and 'they lived happily ever after'. The truth is that the kind of love that will endure gradually blossoms after marriage and has no relationship to a piece of paper which legalises it. Romance merely plants the seeds that may or may not grow to a deep relationship.

(b) The Feminine Mystique

The firm notion that women are pure, delicate and have to be protected from the outside world is an attitude that lurks in the male mind. He must fully support his wife, and feels he is entitled to a bigger salary. Women, he thinks, are not the same as men and that the natural place and identity of women are in the home.

(c) The Monogamous Fallacy

This is the belief that men are only capable of loving one person during the course of a life-time. Time alone can show whether the affection was essentially physical. Unfortunately there is also a risk that couples pursue a wild-goose chase for a perfection that is beyond their reach. Many wives torment themselves needlessly because they are told there is only one type of sexual experience and they have been unable to achieve it. If she accepts the romance to be permanent, she will fall victim to the same illusion.

The root of the problem is a belief that one must love only one. It is perfectly possible to love, in different ways, more than one person. What makes it difficult for one to recognize this fact is a sense of guilt that leads to such an exaggerated emphasis on sexual behaviour and is a great obstacle in realizing the full interpersonal potential. So far as one becomes more emotionally matured, one's enjoyment of sex will no longer be a problem. The gulf between the dream and the reality will close.

Marriage and Sexual Boredom

The boredom which settles down in so many marriages after a while is in a large number of cases traceable to sexual monotony which deadens the emotional life like a slow paralysis (Masters & Johnson, 1970). It is of gradual onset and so insidious and the victim seldom realises it is happening. The honeymoon is a flight from reality with a return ticket. Once married, guilt feelings are said to cease to exist when a pregnancy occurs, they are congratulated, not censured. The signing on the dotted line gives the magical approval for sleeping together. Sex should cease to be a problem but this is not so. Bedroom boredom is so insidious that one mistakes it for the inevitable consequences of marriage. The commonest cause is a lack of variety in sexual behaviour and after a time, sexual life becomes insipid. When marital relations become stale for a man, he reacts by seeking various vicarious satisfactions supplied by pornography, sex films and sexual fantasies.

Sexual Deviation

Although it may be impossible to define normality in sexual behaviour even within the confines of a single society, there do exist other standards in terms of which it is possible to make comparative appraisals. One such standard is that of emotional maturity, a concept which is found in the writings of every psychodynamic school. It is a standard to which no human being ever attains and is therefore

an ideal at which rather to aim at than to achieve. Maturity can be defined as the ability to form a stable relationship with the opposite sex which is both physically and emotionally satisfying, and where sexual intercourse forms the main, though not the only mode of expression of love. It is those whose emotional development is retarded and cannot reach maturity that deviation occurs.

It is assumed that for the mature person, the heterosexual intercourse is generally the most rewarding form of attaining sexual satisfaction, and that it will therefore be the chief sexual aim for most people – most of the time. In ideally mature form, it is a relationship between a man and a woman at which giving and taking is equal; and in which the relationship forms the most important channel through which love is expressed and received. This is one of the most natural, and certainly the most rewarding and the most life-enhancing of all human experiences. It is also the only one which both achieve complete satisfaction and yet can be endlessly repeated. But this wonderfully enriching experience is only possible when the two persons concerned with have achieved a relationship at which, at least in the actual process of love-making, each is able to confront the other exactly as they are, with no reservation and pretences. In this most intimate relationship, both are completely vulnerable to each other and reveal themselves for what they are. So if one had not been able to fully emerge from childhood, one's childishness would inevitably manifest itself in one's behaviour. Sexual deviation can generally be understood in terms of a persistence of a childish kind of relation to another person, or else as an attempt to overcome sexual relations and so reach a greater degree of adult freedom.

Sexual Guilt

A sense of guilt about sex which is often deeply embedded in a mind of a child, encourages an expression of deviant tendencies, or it acts as a dam which holds back the stream of normal development, forcing the sexual impulse into more tortuous channels. Since guilt is a crucial factor in the production of sexual deviation, it is important to discuss its origin. The attitude of society is a potent influence in causing guilt, and this is particularly true of our civilization, which is far less tolerant to sexuality than many cultures.

Sexual guilt is a burden from which few human beings can completely emancipate themselves in a society which is based upon supposedly moralistic values and over which hangs the shadow of hundreds of years of moral disapproval. Parents by their behaviour, often convey to children attitudes which

they themselves would repudiate, unaware they are passing on collective prejudices which have become deeply implanted thereby causing guilt. A parent, for instance, may freely be able to answer a child's question about sex in private, but not in the presence of strangers. Whilst many parents have learnt not to condemn the developing sexual interest of their children, they seldom actually praise sexuality or say anything good about it. The absence of positive approval for the sensitive child is enough to label the subject as *bad* and to create a sense of guilt about it. Finally the process of toilet training which gradually instills into the child's mind the notion that both the processes of excretion and its products are dirty, and create adverse attitudes to sex.

To some extent guilt about sex is inevitable, however liberal or understanding the parents, for sex cannot normally find its full expression in the family circle. The so called incest taboo precludes the satisfaction of even infantile sexuality and so sex for the child is bound to remain partially a secret and there are some things about which he feels some sense of guilt.

Sexual Inferiority

A sense of sexual inferiority is an impediment of equal importance to development. Sexual confidence is probably believed to depend upon physical attractiveness. A woman may be extremely beautiful and yet not believe that she is lovable. Beautiful women may be gratified by admiration and yet feel this is directed merely towards her physical presence and not towards her as a person. The distinction between love 'for oneself' and love because one is physically attractive is a very sophisticated concept, i.e., the personality is discrete from the body.

Confident that one is, or can be, lovable is more essential than the assurance in one's physical appeal. Although a high degree of physical attractiveness may lead to a succession of conquests, it does not enable a man or a woman to achieve a sustained relationship unless it is supported by an underlying conviction of being valuable as a person. Many sexually attractive people who have no such conviction terminate a sexual partnership almost as soon as they have achieved it for fear that, if the relationship were to continue, the partner would discover that they were fundamentally unlovable and abandon them on this account. Continuous promiscuity is often related to a failure to achieve a mature sexual relationship. On the other hand, those who lack beauty, but who feel confident of their acceptability as persons, are generally more able to make close and deep relationships in spite of doubts of their own physical attractions. A

generalized feeling of being unlovable may often be attributed to an earlier failure in the relationship between the child and her mother or a more specific inability to identify the current role assigned by society to male or female.

To be totally confident as a man or woman is a gift which is granted to so few that it seems doubtful that such a state of mind can be said to exist. The young men and women are never bony, muscle-bound, heroic figures in advertisements and films. The more intimately one becomes acquainted with even the most successful human beings, the more one realises that Don Juans are little boys, that the highly promiscuous are incapable of love, and that the most ravishing exterior may conceal the most profound uncertainty.

An extreme feeling of sexual inferiority means that the person concerned may turn away from any attempt to be sexually competitive or attractive resulting in attempts to seek self-esteem in other ways of being loved. Many sexually-deviant people are for this reason intensely ambitious, trying to compensate their inner sense of inferiority by achieving power and success that can compel respect and admiration even if they cannot command the affection from their fellows. The less a person can relate himself to real people in the external world, the greater will be the tendency for him to imagine erotic situations of a totally impossible kind, and their sexuality is entirely separated from the reality of life and in which the figures he conjures have no personal characteristics other than that of sexuality. The study of sexual deviation is very largely the study of sex divorced from love.

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Oral Carcinoma in the Malay Male

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Summary

ABOUT 9% of biopsied oral carcinoma cases occurred in the Malay male. The authors report on 95 Malay male patients. The M : F ratio was 1 : 1.1. The peak incidence was between 60-69 years (37.3%). The tongue (27.3%), gingiva (20.4%), palate (12.5%), buccal mucosa (12.5%), floor of mouth (6.8%) and lips (6.3%) were involved in descending order of frequency. Carcinoma presented clinically as: (1) an ulcer (59.2%), (2) an exophytic growth (34.6%), and (3) a swelling (6.2%). Grade I carcinoma formed 66.0%, Grade II 28.7% and Grade III 5.3%. A comparison is made with the Malay female, the Malaysian Chinese male and female and with oral cancer studies in Australia, China, Finland, Indonesia, South Africa and United States.

Introduction

Of Peninsular Malaysia's multiracial population of 9.4 million, the Malay male forms 25.3%, the Malay female 25.4%, the Chinese male 18.5%, the Chinese female 17.7%, the Indian male 5.9% and the Indian female 5.1% (Chander, 1972).

Oral cancer appears to be the second commonest histologically confirmed malignant tumour in Peninsular Malaysia. The relative frequency of oral cancer as a per cent of all cancers for the Malay male was 15.6% and for the Malay female it was 9.7% (Fig. 1) (Ungku Omar-Ahmad and Ramanathan, 1968).

Between 1967-72 the Division of Oral Medicine and Oral Pathology, Institute for Medical Research, Kuala Lumpur reported in all 1,031 histologically



Fig. 1

Frequency of oral cancer as a per cent of all cancers by race and sex in Peninsular Malaysia, 1961-1963 (after Ungku Omar-Ahmad and Ramanathan, 1968).

confirmed squamous cell carcinoma biopsy cases. Of these 31.3% occurred in the Indian male, 30.8% in the Indian female, 10.7% in the Malay female, 9.3% in the Malay male, 13.8% in the Chinese male and 4.1% in the Chinese female. The buccal mucosa (43.2%), tongue (15.1%), gingiva and alveolus (14.2%), palate (13.1%), lips (6.4%) and floor of the mouth (3.8%) were involved in descending order of frequency.

The Malay male most commonly indulges in the single habit of smoking. Cigarette smoking is most popular. Less commonly, and especially the elderly male, also tends to smoke "rokok daun", cheroots and the pipe. "Rokok daun" is a local form of bidi. It is composed of a thin central core of Siamese tobacco around which is wrapped the leaf of the Nipah Palm (*Nipah fruticans*).

Multiple habits are the second commonest habit and consists of smoking, alcohol consumption and/or betelquid chewing with gambir. Gambir

the "getah gambir" of the Malays and the "Katta Kambu" of the Tamils is extracted from the shrub *Uncaria gambir*. The delicacy of flavour of this product depends upon its catechin content. The leaves are bound, steamed, and then small amounts of boiling water are allowed to trickle through. On cooling catechin crystallises out, leaving the more soluble and bitter catechu tannic acid in solution. Usually a little bran is added and the bran-catechin mixture made into cakes. Unlike the Indians, the Malays who indulge in betel-quid chewing do not add tobacco to their quids.

It is indeed interesting to note the Malay male has virtually discarded the habit of chewing betel-quid in favour of smoking. The changing trend in oral habits would certainly result in a change in the relative frequency by race and sex and anatomical sites of involvement of oral precancerous conditions and carcinoma over the years (Ramanathan et al. 1973; Ramanathan et al. In Press, a).

There seems to be a void in the information on oral carcinoma in the Malays in the English language medical literature. Studies of oral carcinoma in the Malays and comparative studies with other races in Malaysia as well as with oral cancer groups in other parts of the world would be valuable.

Material and Methods

This has been described in detail in an earlier paper (Ramanathan and Lakshimi, In Press, b). In all 95 Malay male patients were reported.

Findings

Sex Ratio

Between 1967-72 oral carcinoma was reported in 100 Malay females (Ramanathan and Lakshimi, In Press, c) thus giving a male : female ratio of 1 : 1.1.

Age Distribution

The youngest patients (2) were 26 years old and the oldest patient was 96 years. The average age for the group was 55.8 years and the median age was 57.7 years. The peak incidence was between 60-69 years (37.3%) (Table 1).

Anatomical Site

The tongue (27.3%), gingiva and alveolar process (20.4%), palate (12.5%), buccal mucosa (12.5%), floor of the mouth (6.8%) and lips (6.3%) were involved in descending order of frequency (Table 2).

In the tongue the anterior two-third (71.1%) was more commonly involved than the posterior one-third (28.9%). The margin (31.1%) posterior one-third of tongue (28.9%) and dorsum (26.7%) were about equally involved.

Table 1
Distribution by Age Groups of 91 Malay Male Cancer Patients

Age in years	No. of patients	%
0 - 19	0	0
20 - 29	3	3.3
30 - 39	7	7.7
40 - 49	15	16.5
50 - 59	25	27.5
60 - 69	34	37.3
70 - 79	6	6.6
80 - 89	0	0.0
90 - 99	1	1.1
Total	91*	100.0%

*In 4 patients the age was not recorded.

The upper and lower gingiva and alveolus were equally affected. The left (40.6%) and right quadrants (40.6%) were more commonly involved than the anterior quadrant (18.8%). The hard palate (59.1%) was more commonly involved than the soft palate (40.9%).

Clinical Features

Carcinoma presented most commonly as: (1) an ulcer with raised indurated margins in 48 patients (52.2%); (2) an exophytic growth in 28 patients (34.6%) and (3) a swelling in 5 patients (6.2%).

Carcinoma presented as an ulcer most frequently on the buccal mucosa (34.0%), tongue (27.7%) and gingiva (25.0%). Carcinoma presented as an exophytic growth most commonly on the tongue (29.0%), buccal mucosa (19.4%), gingiva (19.4%), palate (16.1%) and lips (16.1%).

Symptoms

The commonest symptoms were complaints of an (1) ulcer (35.7%), (2) growth (24.4%), (3) swelling (9.6%), (4) pain (8.9%) and (5) neck swelling (6.7%). Table 3.

Duration

Table 4 shows the duration of signs and symptoms at the time of diagnosis.

Histological Grading of Carcinoma

The histological grading of carcinoma is shown in Table 5.

ORAL CARCINOMA IN THE MALAY MALE

Table 2
Distribution of Oral Carcinoma by Anatomical Site
in 95 Malay Males

Anatomical Site	Total	%
Tongue		
Margin - left - 6		
right - 8		
Dorsum - left - 6		
right - 6		
Inferior surface		
left - 4	48	27.3
right - 2		
Base - 13		
NOS - 3		
Alveolar process		
Upper - left - 6		
anterior - 2		
right - 7		
Lower - left - 7	36	20.4
anterior - 6		
right - 6		
NOS - 2		
Hard palate		
left - 7		
right - 5		
NOS - 1		
Soft palate		
left - 4	22	12.5
right - 4		
NOS - 1		
Buccal mucosa		
left - 11		
right - 10	22	12.5
NOS - 1		
Buccal groove		
Upper - left - 2		
right - 3		
Lower - left - 4	12	6.8
right - 3		
Floor of mouth		
left - 5		
anterior - 5	12	6.8
right - 2		
Buccal mucosa, commissure		
left - 3		
right - 2	5	2.8
Pterygomandibular plica and glosso-palatal arch		
left - 3		
right - 2	5	2.8
Labial groove		
lower - 1	1	0.7
Mouth - NOS -	2	1.1
Total:	176*	100.0%

*Oral cancer extended to more than one site in some patients.

NOS - Not otherwise specified.

Table 3
Symptoms

No.	Symptoms	Total	%
1.	Ulcer	48	35.7
2.	Growth	33	24.4
3.	Swelling	13	9.6
4.	Pain	12	8.9
5.	Neck swelling	9	6.7
6.	Restricted tongue movement	3	2.2
7.	Ear-ache	3	2.2
8.	Difficulty in chewing and swallowing	2	1.5
9.	Bleeding	2	1.5
10.	Headache	2	1.5
11.	Trismus	2	1.5
12.	Dental socket failing to heal after extraction	2	1.5
13.	Anaesthesia	1	0.7
14.	Loss of weight	1	0.7
15.	Hoarse voice	1	0.7
16.	Excessive salivation	1	0.7
Total		135	100.0%

Table 4
Duration of Signs and Symptoms in 61* Malay Male
Cancer Patients

Duration	No. of patients	%
< 3/12	21	34.4
3/12 - 6/12	23	37.7
6/12 - 1 yr.	6	9.9
1 - 2 yrs.	10	16.4
> 2 yrs.	1	1.6
Total	61*	100.0%

*For 34 patients this information was inadequate.

Table 5

Histological Grading of Squamous Cell Carcinoma in 94 Malay Male Cancer Patients

Histological grading	Total No. of patients	%
Grade I	62	66.0
Grade II	27	28.7
Grade III	5	5.3
Total	94*	100.0%

*In one patient the biopsied tissue was inadequate for histological grading.

Discussion

Table 6 shows the distribution of oral cancer patients by race and male : female ratio. In the Malays and Javanese there were more female cancer patients (M : F : 1 : 1.1). This could be attributed to the betel-quid chewing habit being more popular with the females.

Table 6

Distribution of Cancer Patients by Race and Male: Female Ratio

No.	Race	Year	M : F ratio
1.	Malays8 (Malaysia)	1973	1 : 1.1
2.	Chinese 7, 9 (Malaysia)	1973	3.5 : 1
3.	Americans3 (U.S.A.)	1968	4 : 1 (1941-64) 3 : 1 (1955-64)
4.	Australians13	1969	3.7 : 1
5.	Bataks4 (Indonesia)	1951	1.7 : 1
6.	Chinese1 (Shanghai)	1959	1.9 : 1
7.	Finns11	1967	2.7 : 1
8.	Javanese4	1951	1 : 1.1
9.	South Africans12	1970	White 3.7 : 1 Negroes 6.4 : 1

In contrast Chierici and colleagues (1968) reported a recent increase in the incidence of oral carcinoma in the females in the United States for a different reason. These authors recorded the M : F incidence as 4 : 1 for the years 1941-64 and for the more recent period of 1955-64 the ratio was slightly less than 3 : 1. Comparing these two respective periods the percentage of women smokers had increased from 54% to 75% thus accounting for the increase ratio of F : M oral cancer patients.

Table 7 shows the average age and median age of oral cancer patients by race and sex. The average age of the females was higher than the corresponding males. The median age of the Malay male and female was the lowest.

Table 7

Average Age and Median Age of Cancer Patients by Race and Sex

Race & Sex	Year	Average age in years	Median age in years
Malay Male	1973	55.8	57.7
Malay Female8		57.1	56.8
Chinese Male9	1973	60.9	62.5
Chinese Female7		61.9	61.0
Americans3 (U.S.A.)	1968	61.0	—
Australian Male13	1969	59.1	60.6
Australian Female13		62.6	64.8
Finish Male11	1967	57.7 (1953) 57.5 (1961)	— —
Finish Female11		58.7 (1953) 63.6 (1961)	— —

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The peak incidence for the Malay male was between 60-69 years (37.3%), for the Malay female between 50-59 years (39.4%), for the Chinese male between 60-69 years (37.0%), for the Chinese female between 50-69 years (62.8%), for the South African white males and females and for the Negro males between 50-59 years, for the Australian male between 60-69 years (25.5%), for the Australian female between 60-69 years (24.2%) and 70-79 years (24.8%). Thus the peak incidence was of the same age group in the Malay male, Chinese male and the Australian male.

Oral cancer in patients below the age of 40 years formed 11% in the Malay male, 7% in the Malay female, 6% in the Chinese male, 3% in the Chinese female, 6% in the South African white males and females and Negro males and 11.8% in the Australians. The Australians and the Malay male had the highest frequency of oral cancer patients below 40 years.

Patients between 40-79 years formed 87.9% in the Malay male, 85.9% in the Malay female 90.6% in the Chinese male, 88.5% in the Chinese female, 88% in the South Africans and 80% in the Australians. For this age group the Chinese male had the highest frequency and the Australians the lowest frequency.

Patients over 80 years formed 1.1% in the Malay male, 7.1% in the Malay female, 3% in the Chinese male, 8% in the Chinese female, 5% in the South Africans and 8.4% in the Australians. Over 80 years there were more females than the corresponding group of males. The Australians and the Chinese female had the highest frequency and the Malay male the lowest frequency for patients over 80 years.

The tongue was the commonest site of involvement in the Malay male (27.3%), the Chinese male (26.2%), the Chinese female (33.3%), Javanese male, Indonesian Chinese male, South African white female and Negro female, South African Negro male and the American white female. The tongue was the second commonest site in Australians (12.3%), in the American white male (27.0%) and in the Finns and third commonest site in the Malay female (18.0%) and in the South African white male.

Of the tongue carcinoma, the anterior two-third formed 71.1% and the posterior one-third 28.9% in the Malay male, 88.0% and 12.0% respectively in the Malay female, 72.0% and 28.0% respectively in the Chinese male and 93.3% and 6.7% respectively in the Chinese female. Carcinoma of the posterior one-third of tongue was more common in the males than in the corresponding female groups probably because smoking and alcohol consumption are more popular habits with the males.

Carcinoma of the gingiva and alveolar process was the second commonest site in the Malay male (20.4%), Malay female (23.0%), Indonesian Chinese male, Batak male and female. It was the third commonest site in the Chinese male (21.5%), Chinese female (14.6%) and South African Negro male (14.7%). It was the fourth commonest site in the Australians (3.7%) and South Africans (10.7%). Carcinoma of the gingiva was the fifth commonest site in the American white male (5%) and sixth commonest site in the American white female (7%).

In the Malay male the palate (12.5%) and the buccal mucosa (12.5%) were the third commonest sites for carcinoma. The palate was the second commonest site in the Chinese male (23.1%), fourth commonest site in the Chinese female (12.5%), fifth commonest site in the Malay female (5.6%), in South Africans (7.1%), in Australians (3.1%), in the American white male (5%) and in the American white female (8%).

Carcinoma of the buccal mucosa was commonest in the Malay female (24.9%), second commonest site in the Chinese female (22.9%) and fifth commonest site in the Chinese male (8.7%). The buccal

mucosa was the least common site in the Australians (2.7%), South Africans (5.7%) and in Americans (U.S.A. 4%).

Carcinoma of the floor of the mouth was the sixth commonest site in the Malay male (6.8%), fifth commonest site in the Malay female (5.6%), fourth commonest site in the Chinese male (9.2%) and least common site in the Chinese female (2.1%). The floor of the mouth was the second commonest site in the South African white male (19.7%), South African Negro male (17.1%) and in the American white female (20.0%). In the American white male (13.0%) and in the Australians (5.7%) carcinoma of the floor of the mouth was the third commonest site. In contrast to Europeans, carcinoma of the floor of mouth is relatively uncommon in Malaysians.

Carcinoma of the lips was relatively uncommon in the Malay male (6.3%), Chinese male (2.1%), and in the Chinese female (6.3%). In the Malay female (5.6%), Javanese female, Batak male and female, carcinoma of the lips was much more frequent because of the habit of keeping the betel-quid and especially the separate tobacco-quid ("sentil") between the lower lip and teeth. The lip was the commonest site of involvement in the American white male (33%), the South African white male (31.9%), in Australians (62.1%) and in the Finnish male (58.5% - 64.9%). The high incidence of lower lip cancer in the white male has been attributed to prolonged exposure to actinic rays of the sun. Such exposure is an occupational hazard of farmers.

In the Malay male and female the upper and lower halves of the mouth were equally affected whereas in the Chinese male and female the upper half of the mouth was more commonly involved than the lower half. In the Malay male and female the left side of the mouth was more commonly involved, in the Chinese female the left and right sides were about equally involved and in the Chinese male the right side was more commonly involved.

In the Malay male, Chinese male and Chinese female, carcinoma presented most commonly as an ulcer, secondly as an exophytic growth and thirdly as a swelling. In the Malay female however, carcinoma presented most commonly as an exophytic growth, secondly as an ulcer and thirdly as a swelling.

About 34.4% of the Malay males, 46.7% of the Malay females, 34.1% of the Chinese males and 43.8% of the Chinese females had signs and symptoms for less than three months. About 18% of the Malay males, 18.6% of the Malay females, 12.1% of the Chinese males and 25% of the Chinese

females had signs and symptoms for over a year. Among the group that sought prompt treatment there were more females than the corresponding males. More Chinese females than the other groups sought treatment after a duration of one year.

The histological grading of carcinoma showed Grade I formed 71.4% in the Malay female, 66% in the Malay male, 60% in the Chinese female and 55.7% in the Chinese male. Grade III carcinoma formed 5.3% in the Malay male, 8.2% in the Malay female, 13.1% in the Chinese male and 14.3% in the Chinese female. It would appear that Grade I carcinoma occurred more commonly in the females than in the corresponding male groups and Grade III carcinoma was more common in the Chinese than in the Malays. Grade III carcinoma was least common in the Malay male and most frequent in the Chinese female. Eighty per cent of the Malay males with Grade III carcinoma were between 60-69 years. All the Malay females with Grade III carcinoma were between 40-99 years whereas in the Chinese male 88.2% were between 40-69 years. In both the Malay and Chinese males the palate and tongue were the commonest sites for Grade III carcinoma. In the Malay female however the buccal mucosa and gingiva were the commonest sites for Grade III carcinoma.

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Maternal Mortality Amongst the Rural Malays

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IN THIS AGE OF science, space technology, and landing of the first human on the moon, we in Malaysia have still not found the way to make pregnancy less hazardous for our pregnant mothers.

There is no doubt about the fact that Malaysia has made considerable development in the medical and health fields and provided its inhabitants with a fair amount of such facilities. The progress made in hospital development, control and eradication of communicable diseases, national family programmes, dental health services and rural health services have been quite impressive. In rural health services a sizeable number of health centers, sub-centers and midwife clinics were constructed throughout the country. In addition, the major rural health services already provided, include nutrition, maternal and child care, public health nursing, environmental sanitation, etc. The crude death rates as shown in vital statistics for West Malaysia 1969 for all races have declined over the past decades from 9.7 per thousand in 1959 to 7.2 per thousand.

In this short article one would attempt to analyse in general term some of the problems associated with maternal mortality amongst the rural Malay mothers. The accuracy and comments on some of the points and statistics may be debatable amongst readers who are a specialist in their own respective fields. If they are debatable then it would all be for the better for all those who have their own special interests in this field. However, there is no doubt in the author's mind that unless there are active research programmes in the field of rural obstetrics any discussion on this complex subject will always be in general terms.

In Malaysia and other developing countries such as India and Africa the problems associated with maternal death are much more serious than those in well developed countries such as Britain, America, Sweden and Australia. It has been said by practising obstetricians that our pregnant women face the same problems as the British women 30 years ago. In Britain the probability of a woman dying during pregnancy is 0.25 per thousand, while women in a poor rural area in West Malaysia run a risk of dying twenty times more than their western counterparts.

On analysing the recent available statistics from the Department of Statistics, on Vital Statistics West Malaysia 1969, it is obvious that the great majority of those who died during pregnancy were Malay women (Table I and Table II).

These findings have been confirmed by several research workers in Malaysia. The table shows that the Malays accounted for 81.7% out of the total maternal deaths in 1969. It also shows that incidence varies between 50% in Negri Sembilan to 100% in Trengganu. Even in the more developed state of Selangor, 69.1% of Malay women died out of 55 maternal deaths. In addition these statistics also show that the districts of Mersing, Muar, Ulu Trengganu, Selama, Ulu Perak, Sik, Kota Bharu and Ulu Kelantan are some of the worse areas as far as maternal death is concerned.

The Population and Housing Census 1970 of Malaysia showed that in West Malaysia 14.9% of the Malays lived in the urban areas leaving 86.1% in the rural areas. This is confirmed by Table III

Table I

States	Total Maternal Death	Malays	Percentage
Johore	62	49	79
Kedah	66	58	88.8
Kelantan	70	66	94.3
Melaka	9	7	77.7
Negri Sembilan	14	7	50
Pahang	38	34	89
Penang	15	11	73.3
Perak	104	78	75
Selangor	55	38	69.1
Trengganu	30	30	100
Perlis	6	5	83.3
Total	469	383	81.7

Table II

States	No. of Live Birth	Malay Maternal Mortality Rate	State Maternal Mortality Rate
Johore	24,798	1.97	1.39
Kedah	23,316	2.49	2.08
Kelantan	24,200	2.73	2.74
Melaka	7,652	0.91	0.63
Negri Sembilan	7,681	0.91	0.83
Penang	6,916	1.60	0.66
Perak	25,246	3.09	1.90
Perlis	2,865	1.74	1.61
Selangor	18,509	2.05	1.07
Trengganu	14,707	2.04	1.96
Pahang	10,612	3.21	2.25

which shows that 80.84% of live birth (1969 Vital Statistics) occurred in Malay mothers who live in rural areas. It is the distribution between urban and rural areas that is relevant for this article. Table IV shows the rural distribution of the Malay popu-

lation for some of the districts mentioned earlier. One can see that these areas are heavily populated by Malays. In the five districts of Mersing, Ulu Trengganu, Sik, Ulu Kelantan and Ulu Perak there is not a single town which has a population attaining the size of an urban area - 10,000 and over inhabitants, and these are rural districts where the Malays accounted for between 66.0 to 98.0 per cent.

The outcome of a successful pregnancy depends on many factors such as nutrition, level of education, housing conditions, economic conditions, the availability and utilisation of the medical services. The maternal mortality rate of a country or a race is one of the most important parameters of any country or a race. It is a very reliable index which reflects the above factors, that is the standard of general health and the way of life of a particular race.

It is not surprising, therefore, that the death rate is higher amongst the Malays than the other races because of the fact that a great majority of them live in rural areas. As a result of their remoteness from major towns with available medical facilities they are in a disadvantageous position as far as the availability of medical services are concerned. There are glaring differences between the income of an urban and a rural household. The lowest income group will be found in the traditional rural sector where the major economic activities are to be found in uneconomic smallholder rubber, single crop paddy, inshore fishing, etc. The Malays total the majority in these activities.

The Household Budget Survey 1957-1958, gives some indication of the low income of the rural Malay. According to the Survey about 75% of the rural Malay households in West Malaysia earned an income of less than \$150.00 per month. On the other hand, 33% of Malay households in urban areas were in the same income group. One can conclude that unless the socio-economic standards of the rural Malays are improved, the death rate of the pregnant rural Malay mothers will always be much higher than their more fortunate sisters.

Another important factor which the pregnant Malay mother has to face is the availability of medical services. It is obvious that the most highly equipped obstetric hospitals with trained and experienced medical staff are located in the urban areas. The Malay mothers because of the fact that they live in remote areas are deprived of these facilities. The problem of Malay mothers who live in these areas will be much more acute if transport or other forms of communications such as telephone services are not readily available. In these cases the mothers would be exsanguinated by the time help is obtained.

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Table III

States	Metropolitan and Urban Malays		Rural Malays		Total Live Birth
	Live Birth	%	Live Birth	%	
Perak	3,728	14.75	21,547	85.25	25,275
Penang	1,343	19.39	5,586	80.61	6,929
Pahang	1,822	17.04	8,871	82.96	10,693
Negri Sembilan	802	17.04	6,839	89.50	7,641
Melaka	237	3.11	7,406	96.89	7,643
Kelantan	2,958	12.18	21,346	87.82	24,304
Kedah	1,787	7.65	21,586	92.35	23,373
Johore	9,923	40.02	14,875	59.98	24,879
Perlis	—	—	2,817	100.00	2,817
Selangor	4,632	25.14	13,799	74.86	18,431
Trengganu	4,655	31.97	9,909	68.03	14,564
Total	24,585	19.16	134,581	80.84	166,468

Table IV

District	Total Population	Total Malay Population	Total Rural Population	Malay Rural Population	% of Malay Rural Population Total to Rural Population
Muar	279,161	157,927	205,615	134,010	65.2
Mersing	34,657	24,523	34,657	24,523	70.7
Ulu Trengganu	33,694	33,275	33,694	33,275	98.8
Sik	39,051	34,307	39,051	34,051	87.2
Kota Bharu	207,837	187,374	126,481	124,753	98.6
Ulu Kelantan	62,536	41,327	62,536	41,327	66.1
Ulu Perak	61,809	54,762	61,809	54,762	88.6

It has been said that an efficient medical service is a luxury which very few developing countries could afford. At the moment Malaysia with her limited economic resources and manpower will find it difficult to provide the same medical services to her population as the more affluent countries such as Britain, America and Sweden. However, at this important period of her history when she is undergoing a marked social reform and economic development she should realise that there is an urgent need to improve the obstetric care of the rural Malay mothers. Most obstetricians will agree that the practice of obstetric is basically a science of

preventive medicine. The signs and symptoms of obstetric conditions appear early in pregnancy. These can usually be easily detected by an experienced obstetrician in the antenatal clinic. Lack of antenatal clinics and obstetrician in rural areas would mean that most of these mothers will be deprived of this vital antenatal care. Consequently their illness will be in an advanced state by the time they seek medical help.

The subject of maternal mortality is complex since its prevention is closely intertwined with socio-economic condition of the country. However,

there are several areas in the obstetric services which could be improved and these are as follows:—

- (a) There should be more obstetric centers set up in the rural areas itself which should be used purely for antenatal and post-natal care. The center should be staffed by personnel well trained in the care of diseases of pregnant women. One of the ways to obtain this type of staffing is for trainee obstetricians from obstetric hospitals to attend these centers two or three times a week. At the moment many of these maternity clinics are staffed by trained midwives whose quality and experience varies.
- (b) The obstetric center itself could be expanded at a later date to include delivery beds and operating theatre. This would eliminate the need to transfer complicated cases to the nearest general hospitals which may involve a travelling distance of thirty to fifty miles. Many of these mothers are in no condition to undertake such a journey. It is not uncommon in one's experience to find that quite a number of these mothers died in transit or soon after they reached the hospital.
- (c) Flying squad services provided by most obstetric hospitals should be fully utilised. When the obstetric centers have been fully developed, the establishment of such an obstetrical service, will take time, experience, manpower and relocation of necessary funds to the rural areas. In the meantime one could minimise the risk to the mothers if high-risk cases could be reviewed from time to time at major obstetric hospitals. High-risk cases should include, all primigravidas, women over 30 years, women with four or more children, those with medical complications such as pre-eclampsia, accidental haemorrhage and post-partum haemorrhage, those who had history of stillbirth or neo-natal death and those who had any implications developing in current pregnancy.

The flying squad team should be sent to these centers where they will assess the case and carry out the definitive treatment. This would include a Caesarean operation, if necessary. At the moment flying squad services are used to evaluate the patient at the clinics or the patient's home and from there the patients are transferred to

the general hospital. The author would like to emphasize again that many of these patients are in no condition to undertake such a long journey. The composition of the flying squad should consist of a trained obstetrician, an assistant and an anaesthetist. Its equipments should consist of at least an anaesthetic machine, resuscitative equipments and adequate supply of blood.

The author is well aware that these suggestions are not new and startling. Some aspects of this scheme is already incorporated in the existing obstetric service throughout West Malaysia. In highlighting these problems the author would like merely to appoint out to the deficiency in quality and quantity of the service.

The pregnant rural Malay mothers themselves must realise that even if the government is able to provide them with these centers, they will still run a considerable risk during their obstetric career, unless they themselves make some effort to see a trained obstetric personnel during their period of confinement. Lourdenadin in this review on the hazards of childbirth in West Malaysia has shown that 72.9 per cent of maternal death avoidable factors. He commented that this was mainly due to absence of antenatal care and delay in seeking admission into hospital. For their own safety and well-being the mothers themselves must utilise the services provided by these centers. It is not good enough for Malay mothers to obtain their obstetric knowledge from their mothers and grandmothers much of which is misleading and extremely harmful. Protein diet is one of the essential foods for the pregnant mother during her confinement. Yet one often hears the Malay mothers being warned by their ill-informed medical well wishers, to avoid meat, prawn, fish, etc. Some of the common causes of death to the pregnant women are postpartum haemorrhage, ante-partum haemorrhage, pre-eclampsia and obstructed labour. Many of these causes are preventable and the only way they can be prevented is for the mother to utilise the facilities of rural health services.

Summary

This paper shows that the incidence of maternal mortality is higher amongst the Malays, than the other races in West Malaysia. One of the main reasons for this high maternal mortality amongst the Malays was due to the fact that many of the Malay mothers live in rural areas, where there is poor availability of medical services and experienced manpower.

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In order to diminish this high maternal mortality rate, it has been suggested that obstetric centers and the Flying Squad Service should be developed, in order to manage complicated obstetric cases.

The Malay mothers themselves are advised to make use of these services since it has been found

that many of these mothers died because of absence of antenatal care and delay in seeking medical advice.

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Normal Range Estimates of Serum Chemistry Values in Adult West Malaysians

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RESULTS OF clinical laboratory investigations can only be properly interpreted when relevant normal values are available for comparison. Few published normal biochemical values of the adult population in this region are readily available to clinicians except for the reports on serum ceruloplasmin (17), cholesterol (2, 3, 6, 7, 11), lipids (2, 3), magnesium (13), and some of the steroid hormones (18). Changes in analytical techniques also tend to invalidate the use of some older data. With the introduction of automation in clinical laboratories analytical techniques are now mostly standardized. This not only makes laboratory analysis and acquiring of normal values less tedious, but also allows for inter-laboratory comparison of results.

This paper presents data from a preliminary survey of normal healthy adults carried out in our laboratory mainly with automated methods. Nineteen biochemical values were investigated and the results analysed.

Materials and Methods

The sample consisted of 577 subjects, drawn from 55 laboratory staff, 175 medical students and 347 blood donors. The blood donors were divided into two groups. One group of 193 had blood samples taken from one of the antecubital veins of the opposite arm before the blood donation. In the second group of 154 the samples were taken from the tubing of the blood donation set.

There were 504 male and 73 female subjects. Their ages ranged from 17 to 55 years, 81% of whom were between 20 and 35. Twenty-seven of the subjects were below the age of 20 years, their

ages ranging from 17 to 19. They have been grouped as adults because biochemical values for this age group do not significantly differ from those of adults (4, 5, 9, 12, 15, 19). The distribution by ethnic group and sex of the 577 subjects studied is shown in Table I.

Table I

Composition of Samples by Ethnic Group and Sex

Ethnic Group	Male	Female	Total
Chinese	218	50	268
Malay	140	13	153
Indian	138	9	147
Others	8	1	9
Total	504	73	577

Blood samples were drawn in the morning, after overnight fasting, from the laboratory staff and medical students. Collections were made at all times of the day from blood donors, the majority of whom had no food for at least 2 hours. Samples intended for glucose and urea were collected into bottles containing fluoride and oxalate. Plain universal bottles were used for samples intended for all other estimations. Separation of plasma or sera from cells were carried out within half an hour of sample collection. Analyses were performed within 48 hours of collection, along with routine hospital samples, by methods currently in use in this laboratory (Table II). Automated methods were performed on the Technicon Auto Analyzer (Technicon Corporation, Tarrytown, New York, U.S.A.).

Table II

Methods Used and Their References

	Method	Reference
Blood glucose	AutoAnalyzer Potassium Ferrieyanide	Technicon AutoAnalyzer Method N-16b I/II
Cholesterol	AutoAnalyzer-FeCl ₃ H ₂ SO ₄	Technicon AutoAnalyzer Method N-24a
Uric acid	AutoAnalyzer-Phosphotungstate	Modification of SMA 12/60 Method VIII
Total proteins	AutoAnalyzer-Biuret	Technicon AutoAnalyzer Method N-14b I/II
Albumin	AutoAnalyzer-Bromocresol Green	Beng and Lim, Amer. J. Clin. Path. 59: 14, 1973
Total bilirubin	AutoAnalyzer-Jendrassik-Grof	Simmons, N. A., J. Clin. Path 21: 196, 1968
SGOT	AutoAnalyzer-Morgenstern	Technicon AutoAnalyzer Method N-25b I/II
SGPT	Manual-Reitman-Frankel	Micro-Analysis in Medical Biochemistry Wootton; J & A Churchill, 1964, p. 112
Alkaline phosphatase	Manual-King-Armstrong	Micro-Analysis in Medical Biochemistry Wootton; J & A Churchill, 1964, p. 101
Urea	AutoAnalyzer-Diacetyl Monoxime	Technicon AutoAnalyzer Method N-16b I/II
Creatinine	AutoAnalyzer-Alkaline Picrate	Modification of Technicon AutoAnalyzer Method N-11b
Calcium	Atomic Absorption	D. L Trudeau & E. F. Freier Clin. Chem. 2: 101, 1967.
Magnesium	Atomic Absorption	D. L Trudeau & E. F. Freier Clin. Chem. 2: 101, 1967
Inorganic phosphate	AutoAnalyzer-Phosphomolybdic Acid	Technicon AutoAnalyzer Method N-4c I/II
Sodium	AutoAnalyzer-Flame II	Modification of Technicon AutoAnalyzer Method N-84 I/II
Potassium	AutoAnalyzer Flame II	Modification of Technicon AutoAnalyzer Method N-84 I/II
Chloride	Chloridometer (Buchler-Cotlove)	Cotlove, E., Trautham, H. V., and Bowman, R. L. J. Lab. Clin. Med. 50: 358, 1958.

Each set of data was examined for conformity to gaussian or log-gaussian distribution by plotting the percentage cumulative frequency on probability paper (10) and by the Chi-square test (1). Normal range estimates were calculated by the percentile method recommended by Reed et al (14), and the medians calculated according to standard formula. In all cases, the normal range estimates were calculated to include 95% of the target population with limits set at the 2.5 and 97.5 percentiles.

Results

The percentage cumulative frequency plots on probability paper for the 19 biochemical values are shown in figures 1 to 4. On normal probability paper only the plots for serum total proteins, albumin and globulins gave straight-line graphs (Fig. 1), indicating their frequency distributions to be gaussian. Chi-square test confirmed gaussian distribution for these values. The Chi-square test and plots on log-probability paper (Fig. 2) showed that 7 of the biochemical values conformed

to log-gaussian distribution. These included the A : G ratio, serum magnesium, cholesterol, urea, inorganic phosphate, potassium and calcium. Curved-line graphs were obtained when data for the remaining 9 biochemical values were plotted on both normal and log probability papers (Fig. 3 and Fig. 4). The Chi-square test when applied to their data and the respective log values also showed they do not conform to either gaussian or log-gaussian distributions. Table III compares the frequency distributions of the 19 biochemical values observed in this study with those reported by Roberts (16) and Wootton (20). Only 6 of the 19 biochemical values conformed to the frequency distribution as reported by either of these authors. Three of 7 biological values previously reported to have gaussian distribution were found to have log-gaussian distribution, the other 4 did not conform to either gaussian or log-gaussian distributions. Non-conformation to gaussian or log-gaussian distribution was also found in 3 values previously reported to have log-gaussian distribution.

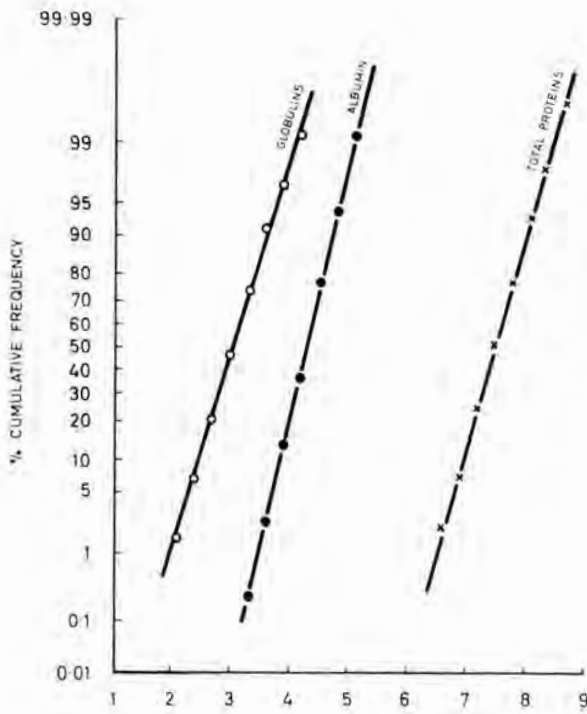


Fig. 1

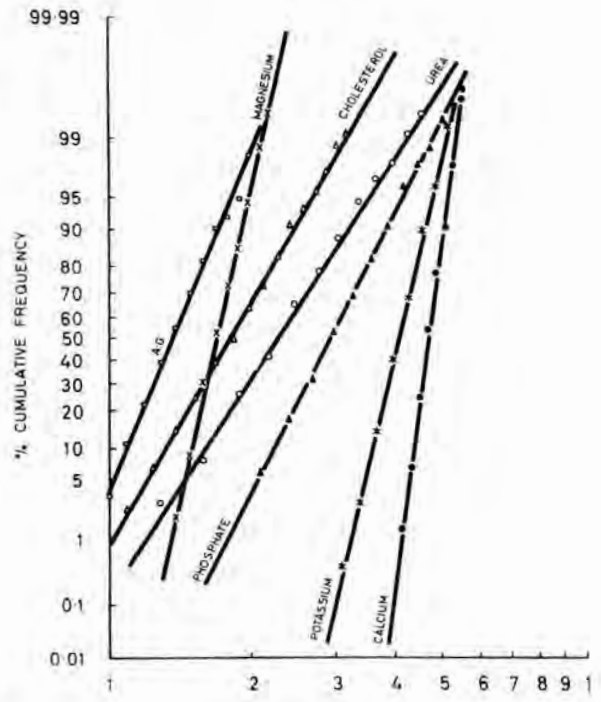


Fig. 2

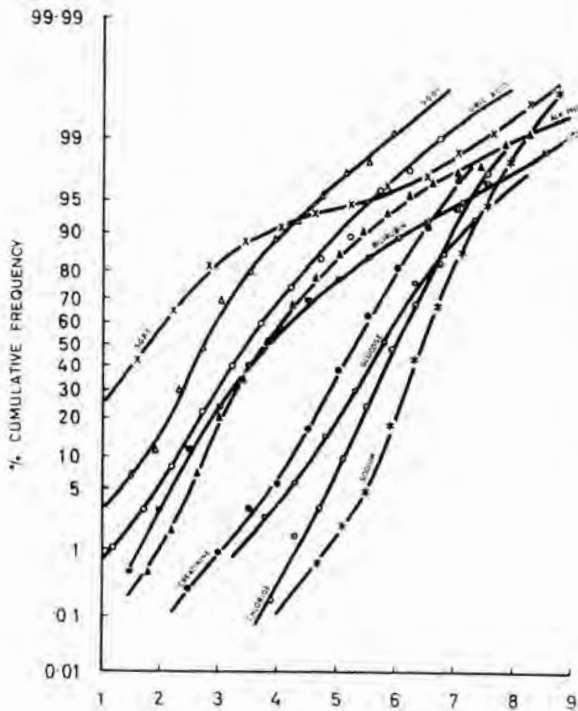


Fig. 3

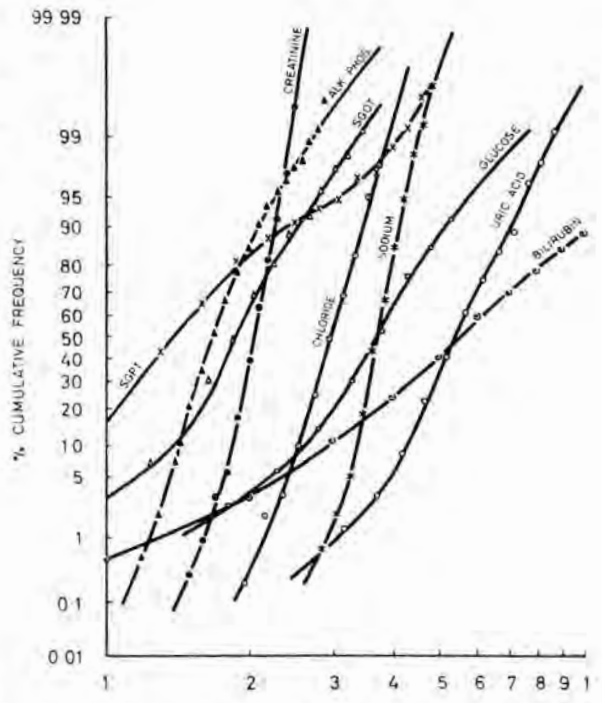


Fig. 4

NORMAL RANGE ESTIMATES OF SERUM VALUES IN ADULT WEST MALAYSIANS

Table IV shows the normal range estimates of the 19 biochemical values for all ethnic groups. No attempts were made to compare the values between sexes as the number of female subjects was small. Only data from male samples were used for calculating the serum uric acid and creatinine values.

No significant ethnic group differences were observed in the normal range of 18 biochemical values. Serum uric acid was the exception, and the values in the 3 main ethnic groups are shown in Table V. Identical lower limits were obtained for all ethnic groups, but the upper limit for Chinese males was significantly higher than for Malay or Indian males ($p < 0.02$).

Table III
Frequency Distribution as reported by:

	Roberts	Wootton	Observed Distribution
Total Proteins	Gaussian	Gaussian	Gaussian
Albumin	Gaussian	Gaussians	Gaussian
Globulins	Gaussian	—	Gaussian
Calcium	Gaussian	Gaussian	Log-Gaussian
Magnesium	Gaussian	Gaussian	Log-Gaussian
Inorganic Phosphate	Gaussian	—	Log-Gaussian
A: G Ratio	—	—	Log-Gaussian
Urea	Log-Gaussian	Log-Gaussian	Log-Gaussian
Potassium	Gaussian	Log-Gaussian	Log-Gaussian
Cholesterol	—	Log-Gaussian	Log-Gaussian
Sodium	Gaussian	Gaussian	Neither
Chloride	Gaussian	Gaussian	Neither
Blood Glucose	—	Gaussian	Neither
Uric Acid	Gaussian	—	Neither
Creatinine	Log-Gaussian	Log-Gaussian	Neither
Total Bilirubin	Log-Gaussian	Log-Gaussian	Neither
Alkaline Phosphatase	Log-Gaussian	Log-Gaussian	Neither
SGOT	—	—	Neither
SGPT	—	—	Neither

Table IV
Normal Values for All Ethnic Groups

	Units	Number Examined	Median	Range
Blood glucose (Fasting)	mg/100ml	280	88	68 - 110
Cholesterol	mg/100ml	460	195	120 - 300
Uric acid (Males)	mg/100ml	453	5.5	3.8 - 8.8
Total proteins	g/100ml	372	7.6	6.7 - 8.5
Albumin	g/100ml	372	4.5	3.7 - 5.1
Globulins	g/100ml	372	3.2	2.3 - 4.1
A : G ratio		372	1.4	1.0 - 2.0
Total bilirubin	mg/100ml	382	0.6	0.2 - 1.4
SGOT	I.U./l	365	10	2 - 22
SGPT	I.U./l	360	6	2 - 27
Alkaline phosphatase	K.A.U./100ml	365	7	4 - 16
Urea	mg/100ml	436	25	14 - 41
Creatinine (Males)	mg/100ml	321	1.1	0.7 - 1.5
Calcium	mEq/l	291	4.8	4.2 - 5.5
Magnesium	mEq/l	189	1.7	1.45 - 2.16
Inorganic phosphate	mgP/100ml	342	3.1	2.0 - 4.4
Sodium	mEq/l	448	138	132 - 145
Potassium	mEq/l	822	4.3	3.5 - 5.1
Chloride	mEq/l	452	101	93 - 108

Table V

Uric Acid Values for Males According to Ethnic Group

	Uric Acid mg/100 ml		
	No. Examined	Median	Range
Chinese	203	5.6	3.8 - 9.2
Malay	123	5.4	3.8 - 8.5
Indian	127	5.6	3.8 - 8.3
All Ethnic Group	453	5.9	3.8 - 8.8

The frequency distributions of serum potassium values obtained from pre-donation and volunteer samples (group 1), and those obtained from post-donation samples (group 2) are shown in Figure 5. A range of 3.5 - 5.1 mEq/l was obtained for group 1, while group 2 gave a range of 3.2 - 4.9 mEq/l. This difference is significant ($p < 0.01$). These two groups did not show significant differences for other biochemical values.

DISTRIBUTION OF SERUM POTASSIUM

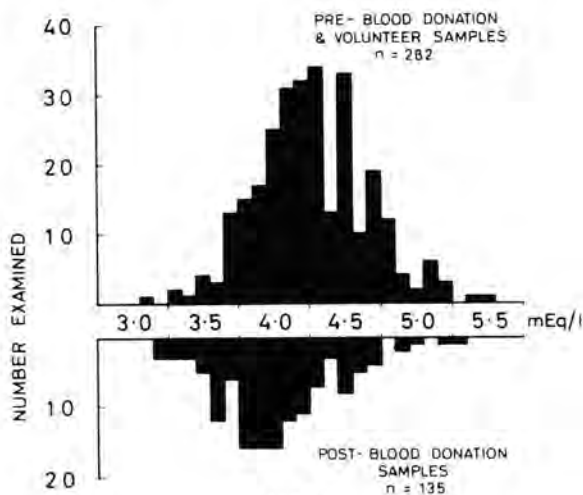


Fig. 5

Discussion

Normal range estimates are commonly derived from the expression, mean + 2 standard deviations, to include approximately 95% of the normal population. This technique, however, is based on the assumption that frequency functions of data are either gaussian or log-gaussian. Reed et al. (14) have pointed out that such an assumption is not true for many biological values. Our finding of 9 of the 19 biochemical values which are neither gaussian nor log-gaussian supports their observation.

They have shown that in such instances the normal range estimates are more accurately derived by non-parametric statistical methods, which do not depend on frequency functions of data, and have recommended the use of percentile estimates together with non-parametric confidence intervals for the true percentile. This method has also been shown to be as accurate as estimates that assume the frequency functions to be gaussian or log-gaussian when the assumptions happen to be true. Non-skewed and skewed distributions are often assumed to be gaussian or log-gaussian respectively, as done by Roberts in his report. However, visual assessment of frequency functions of data is far too inaccurate. Statistical testing of the frequency functions of 7 biochemical values, previously assumed to be gaussian by visual assessment, showed 3 to be log-gaussian and 4 to be neither gaussian nor log-gaussian. Similarly, the frequency functions of 3 biochemical values previously assumed to be log-gaussian, were shown to be neither gaussian nor log-gaussian. Further the frequency distribution of serum potassium found by us and that reported by Wootton did not agree with that reported by Roberts (Table III). Calculation of normal range estimates by parametric statistical methods based on assumed gaussian or log-gaussian distributions could therefore lead to inaccuracies. All these difficulties and uncertainties can easily be avoided by using the non-parametric method recommended by Reed et al.

Variations in the normal range estimates due to ethnic group differences would be expected as the sample population is heterogeneous. However, significant ethnic group difference was observed only for serum uric acid, where Chinese males had a wider range than Malay or Indian males. This is because of the higher upper limit found among Chinese males. Seven values among the Chinese samples exceeded 9.0 mg/100ml. The highest value obtained for Chinese was 10.8 mg/100ml, for Indians 8.9 mg/100ml, and for Malays 9.1 mg/100ml.

Sampling donors at the end of blood donation is the easiest way to obtain samples for normal range studies. Flynn et al (8) have pointed out that this common practice can lead to errors, especially in the case of serum potassium values. The finding of lower serum potassium values in the post-blood donation samples in this study supports their observation. This not only emphasizes the need to exclude post-blood donation samples in the study of normal serum potassium values, but also the need for care when evaluating the serum potassium values of patients after acute haemorrhage.

It is often difficult to compare biochemical results obtained from separate laboratories due to differences in analytical methods. Most of the analytical methods used in this laboratory are well established and universally accepted, especially those adapted to the Technicon AutoAnalyzer. With increasing use of this automated equipment in clinical laboratories in this region, the data presented are applicable not only to the University Hospital, Kuala Lumpur but to all hospitals similarly equipped.

Acknowledgement

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Medical Problems of Young Soccer Players

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Introduction

SPORTS TODAY is no longer a tool of leisure. It has assumed an important role in the embellishment of the National image, and in this context the sports doctor has a very vital role to play. Apart from propounding a scientific basis for the training of competitive teams, doctors accompanying sports teams have often not been able to be effective in the past unless they have been past participants of the particular sport. Hanley (1972) outlined the health measures taken in the Olympic Games. Ryan (1962) has also given us the benefits of his experience in the medical care of athletes. Jegathesan (1973) outlined the patterns of illness and injury in the Malaysian contingent to the Munich Olympic Games. With all this literature, and much more, the sports doctor need no longer rely on his former experience. This study is a small contribution as it has one significant difference. The study is confined to a group of young soccer players competing in a highly competitive tournament where the National image is at stake, and it is hoped that the pattern of injury and illness portrayed and the positive role that the sports doctor can play, will contribute to the advancement of sports in this country.

Materials and Methods

The subjects under study comprised 18 Malaysian youths aged between 18-20 years. The study was conducted over a 11 day period during the 15th Asian Youth Soccer Tournament at Tehran, Iran, in 1973. Observations were derived from ailments treated at the Doctor's Room which was open from 8 p.m. to 10 p.m. every night. Officials accompanying the team were excluded.

The Tournament was covered by a Group Practice under Medical Insurance and comprised

a daily clinic at the place of residence of all teams, a downtown Polyclinic staffed by Specialists, and with access to hospitalisation, and Medical stations at the places of competition, somewhat following the pattern as outlined by Hanley (1972).

Physical medical examination and treatment of incidental ailments e.g. dental caries, were carried out on the team during centralised training in Malaysia on a group of 23 subjects. Only data on the final 18 are included in the present paper.

OBSERVATIONS & RESULTS

Coincidental Illnesses

The most outstanding observation was the 100 per cent incidence of cracked lips, chaffed skin and even nose bleeds as a direct result of the dry and cold climate of Tehran in Spring. It is probable that the same factor, coupled with the increased rate of respiration during exercise created by the high altitude of 4,000 ft, were responsible for the high incidence of upper respiratory tract infection. There was some indication that smoking contributed or aggravated the condition. Nine persons showed signs of chronic rhinitis at the medical examination before departure, and of these six who did not smoke, were not affected. Five players were known to be smoking secretly during the tournament, and of these 4 suffered from upper respiratory tract infection. However, there were two severe cases complicated with pyrexia, and they had to be treated with antipyretics and antibiotics. Both had smoked. In addition, two officials increased their smoking load. One developed cough whilst the other contracted severe upper respiratory tract infection with fever. (See Table 1).

All cases of constipation and diarrhoea were mild.

Dental caries

Dental caries was detected in five players at the preliminary physical examination and of these three had treatment. However, one player developed severe toothache during the Tournament and had to be referred to the Dental Specialist to have his wisdom tooth extracted.

Direct Injuries through Participation

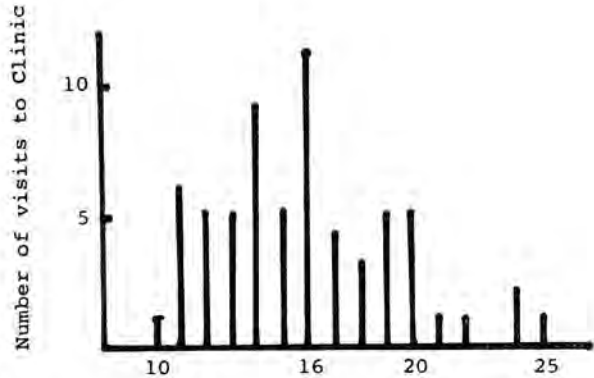
It is interesting to note that the highest incidence of injury sustained during training and participation was that of cramps and spasm of the muscles of the leg (35 visits out of 76) which was almost a daily affair. Treatment by massage seemed to relieve all the cases. This also seems to be the result of the cold temperature. The highest number of such spasms was associated with one training session held where cold winds direct from ice-capped mountains dropped the temperature to 45°F. (ref. Table 2).

It is also interesting to note in Table 2, the vulnerability of strikers, 4 of whom sustained 10 different complaints from direct injury, whilst another 10 injuries were shared by 6 backs. Both mid-field men had one injury each. But if muscle cramps are excluded, of the 14 injuries, 8 were sustained by strikers (knee (4), shoulder, ankle and thigh - 2 each) (see Table 3). This pattern shows some similarity with Hill's (1964) report.

The total number requiring medical attention, excluding officials, was 14 out of 18. Of these, 12 were derived as a result of direct injury and 2 were coincidental. This also does not include ointment for cracked lips. Out of the players receiving treatment for direct injury (12), 7 did not have any coincidental ailments. The total number of visits recorded was 76 during the period between 10th - 25th April, as many of them came for multiple complaints and some for the same on multiple occasions.

Frequency

The frequency of visits to the Doctor's Room is shown in Fig. 1, and is confined to the period of stay in Tehran and the journey back to Kuala Lumpur. The frequency of visits tended to rise with the approach of each match and there was a peak after the game was played due to injuries sustained during the match. However, after the last match only the more severely injured visited the Doctor, and there was a complete withdrawal from treatment as there was no prospect of another match.



DATE in APRIL, 1973
 Fig. 1
 Histogram of Frequency of visits to Doctor's room during the Tournament

Frequency of visits to Doctor during the period of the 15th Asian Youth Tournament, 10-25 April, 1973. Malaysia played two matches, on 16th and on 20th. The Clinic was open from 8 p.m. to 10 p.m. every night.

This is also the pattern reported by Jegathesan (1973) at the Munich Olympic Games of 1972.

Discussion

In a study where a narrow age group is participating in a specific sport certain peculiarities become evident. Recovery time for young athletes between 18 - 20 years is always rapid, and injury seems to be not as severe as when played by older and more experienced players. Discipline was easier to maintain, and thereby controlled the incidence of gastrointestinal upsets common to teams travelling to foreign countries (Hanley, 1972).

The pattern of injury and illness was similar in many respects to that found by Jegathesan (1973) for soccer players. Coincidental illnesses featured upper respiratory tract infection in both studies. This bears out findings by Hanley (1972) that in athletes at their peak, i.e. during competition, the most common diseases are upper respiratory tract infection, gastrointestinal upsets and skin complaints, in that order, and the importance of abstaining from smoking cannot be over-emphasised on the basis of this study as well.

In the incidence of injury directly resulting from participation in the sport, contusions form the highest in the Jegathesan (1973) report, but only the next highest in this report. Here, the highest incidence was muscle cramps, noticeably aggravated by the cold. On cold days, especially one training session where icy winds swept down snow capped mountains right onto the training

Table 1
Coincidental Ailments

Ailment	No. of Visits	Total No. of Players affected	Percentage of Players affected
Upper respiratory tract infections	12	6	34%
Constipation	4	4	22%
Diarrhoea	3	3	17%
Abscess	1	1	6%
Toothache	1	1	6%
Suspected appendicitis	1	1	6%
Cracked lips & skin	continuous	18	100%
*Dental caries		5	28%
*Motion sickness		4	22%
*evidence of chronic rhinitis		9	50%
	— 22		

*Ailments which were discovered at preliminary examination of the team during centralised training and during travel.

Table denotes frequency of visits and numbers of players affected

Table 2
Frequency of Injuries Resulting Directly from the Game

Type of Injury	No. of Visits	Total No. of Complaints	Position of player
<i>Abrasions</i>			
Hip	2	1	striker
Thigh	2	1	striker
<i>Lacerations</i>			
Dorsum	1	1	back
<i>Contusions</i>			
Knee joint	5	1	striker
Ankle joint	1*	1	striker
Quadriceps	5	1	back
<i>Haematoma</i>			
Knee joint	5	1	striker
Deltoid	2	1	striker
<i>Spasm of Muscle</i>			
Quadriceps	11	3	striker midfield back
Hamstrings	8	2	striker & back
Gastrocnemius	16	4	3 backs & striker
Peronei	4	1	striker
<i>Strains (1st degree)</i>			
shoulder	1	1	back
wrist	2	1	striker
knee	2	1	back
<i>Recurrence of old injuries</i>			
Knee (medial meniscus)	4	1	midfield
Ankle (lateral lig.)	5	1	back
Total	76	22	

*did not come for further treatment as three were no more games to be played.

Table 3
Frequency of Injury to various Regions of the Body
 (Not including spasms of muscle)

Region of Body	Total No. of Injuries	Playing striker	Position midfield	back
Shoulder	2	1		1
Wrist	1	1		
Hip	1	1		
Knee	4	2	1	1
Ankle	2	1		1
Thigh	2	1		1
Peroneal region	1	1		
Foot	1	1		
Total	14	8	1	5

pitch, the resultant evening clinic was crowded out. Low temperatures also seem to magnify and aggravate slight injuries. The pattern also seems to fit observations by Hill (1964) and Ryan (1962) where ankle and knee injuries seem to be most serious and took the longest time to mend. Shoulder and wrist injuries seem more common to strikers who seem particularly vulnerable to deliberate fouls, and who are often running at top speed when a fall results in multiple injuries (Table 3). There was one centre back who was suffering from "footballer's ankles" as described by Ryan (1962) and this was subject to constant recurrence. Muscle strains and cramps responded well to treatment by massage after complete rest for from a few hours to 36 hours depending on the severity of the injury (Ryan, 1962).

Perhaps, the most important findings of this report lies in the realisation that the doctor who accompanies any sports team should be "counsellor, health educator, physician, and have an athletic personality with an understanding of the psychological and sociological motivation of his team" (Dolan, 1967). In addition he should have a sound knowledge of the treatment of injury and physiotherapy.

Some other problems have to be considered as well. Hanley (1972) has pointed out some problems for the team doctor. A foreknowledge of the environment of the host city, the fluctuations in climate, altitude, water, food, amenities and sanitary conditions, and endemic diseases, are necessary. In this instance some knowledge of the host city was obtained from the library, and

the first problem encountered was to acclimatise to the change in time which affects circadian rhythm. The time difference of 4 hours and 5 min was adjusted within 24 hours. The next problem encountered was the difficulty in breathing cold, dry air at an altitude of 4,000 ft. This was accomplished by forced training and was corrected within 2 days. This factor, no doubt, contributed to the high incidence of upper respiratory tract infection.

Dietary problems were rather more severe than expected as the question of palatability forced itself to the forefront. Good foresight on the part of the coach solved this problem. He had brought an adequate quantity of canned Malaysian food. This question of dietary preference must always be considered a major issue, as psychologically, its effect on performance can be disastrous. In addition, as food at these type of competitions is always excessively supplied, a daily weight chart of all players was kept to avoid adiposity.

Last of all, a few words on the relationship between the doctor, the officials and the team as a whole. Unity is a must. A knowledge of the game is not mandatory but goes a long way to achieve this goal. The ideal doctor should be physician, physiotherapist, an expert in public health and preventive medicine, counsellor, sports politician and tactician, psychologist, have a good knowledge of the game and be willing to devote all his time to the team.

Summary

The medical problems of a group of soccer players aged between 18-20 years, were studied during the 15th Asian Youth Soccer Tournament at Tehran, Iran, in April, 1973. The patterns of illness and injury concurred with that of other reports. Upper respiratory tract infections form the highest number of coincidental illnesses. In this study, the cold and dry climate, and smoking were found to be contributory factors. The climate also induced a high incidence of spasms of the muscles of the legs which were easily triggered off. This was the main difference between this study and other studies. Again, as in other reports, contusions form the majority of injuries resulting directly from the game. The role of the doctor accompanying the team in terms of treatment of injuries and illnesses, advice on adjustment to time, environment, climate and sanitary and dietary factors, and his dedication to his duties was discussed.

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Combination Cancer Chemotherapy

A Clinical Trial on Outpatients

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CHEMOTHERAPEUTIC AGENTS administered intermittently have been used effectively and with reduced toxicity in the palliative treatment of advanced malignancy. The response rate may be further enhanced without increased toxicity by suitable combinations of drugs (Hurley et al, 1960; Horton et al, 1967; Reitemeier et al, 1967; Israel et al, 1971). In this preliminary report we analyse our experience with a new regime using a combination of 5-Fluorouracil, Cyclophosphamide and Methotrexate administered intermittently to outpatients with a variety of advanced solid tumours.

Materials and Methods

During the twelve-month period from May, 1972 to April, 1973, 51 patients with advanced (massive, recurrent and residual) cancer, proven histologically, were treated in an outpatient Chemotherapy Clinic (Table I). Eleven of these patients had previous irradiation or chemotherapy.

The patients were advised to attend weekly whenever possible, but because of distance and socio-economic problems, many patients could only attend fortnightly. At each visit, the total white cell and the platelet count were done and if the readings exceeded 3,000 per c. mm and 100,000 per c. mm respectively, the patient received an intravenous injection of a combination of 5-Fluorouracil 12 mg per Kg., Cyclophosphamide 12 mg per Kg., and Methotrexate 0.5 mg per Kg. body weight. The injection was deferred if the patient complained of severe or prolonged nausea and vomiting after the previous injection.

Of the 51 patients admitted into the study, 45 patients received an adequate course of therapy (defined as at least three doses) and of these 34 had measurable lesions (Table I). A minimum of six doses was given whenever possible and only discontinued if tumour progression was evident. When response occurred, therapy was continued indefinitely until relapse occurred.

Of the 34 patients with measurable lesions, 16 had the minimum of three doses given weekly. The other 18 patients were considered to be on the fortnightly schedule and included those with less than three initial doses weekly (Table II).

Results

1. Toxicity

Of the 45 patients who received an adequate course of therapy, transitory leucopenia and/or thrombocytopenia occurred in 24 patients. Treatment was omitted on one or more occasions in eight patients with more marked bone marrow depression (white cell count < 3,000 per c. mm., and/or platelets < 100,000 per c. mm.). Interruption of treatment always resulted in bone marrow recovery. Nausea and vomiting was mild or moderate in 18 patients. In seven other patients it was severe and the drugs were omitted on one or more occasions. Alopecia occurred in 16 patients but was mild except in one patient. Other evidence of toxicity included chills and fever (4), diarrhoea (5), stomatitis (1) and sore throat (1).

Table I
Incidence of Tumour Regression in Relation to Tumour Type

Tumour Type	Adequate Therapy			No. of Patients with Non-measurable lesions	No. of Patients with Inadequate Therapy	Total No. of Patients
	Measurable lesions		Subjective Improvement			
	No. of Patients	Objective Improvement				
Carcinoma Stomach	11	1	1	3	3	17
Carcinoma Colo-rectum	4	1	1	5	2	11
Intraoral Carcinoma	7	2	2	3	—	10
Breast Carcinoma	4	2	—	—	—	4
Hepatoma	1	—	—	—	—	1
Hepatic Mesenchymal Sarcoma	1	1	—	—	—	1
Carcinoma Oesophagus	1	—	1	—	1	2
Carcinoma Anus	1	—	—	—	—	1
Bronchogenic Carcinoma	3	—	2	—	—	3
Lymphoma	1	1	—	—	—	1
Total	34	8	7	11	6	51

Table II
Drug Schedule for 34 Patients with Measurable Lesions

Tumours Type	Weekly Regime*		Fortnightly Regime†		Total	
	No.	Response	No.	Response	No.	Response
Carcinoma Stomach	3	1 (1)	8	0 (0)	11	1 (1)
Carcinoma Colo-rectum	1	1 (0)	3	0 (1)	4	1 (1)
Intraoral Carcinoma	4	1 (2)	3	1 (0)	7	2 (2)
Breast Carcinoma	4	2 (0)	—	—	4	2 (0)
Hepatoma	—	—	1	0 (0)	1	0 (0)
Hepatic Mesenchymal Sarcoma	1	1	—	—	1	1
Carcinoma Oesophagus	—	—	1	0 (1)	1	0 (1)
Carcinoma Anus	—	—	1	0	1	0 (0)
Bronchogenic Carcinoma	3	0 (2)	—	—	3	0 (2)
Lymphoma	—	—	1	1	1	1
Total	16	6 (5)	18	2 (2)	34	8 (7)

* At least 3 doses of drugs at weekly intervals initially

† Include those with less than 3 initial doses of drugs at weekly intervals

() Numbers in parenthesis indicates patients with subjective improvement

COMBINATION CANCER CHEMOTHERAPY

2 *Anti-tumour Response*

(a) Objective response (tumour shrinkage of 50% for at least 2 months) occurred in eight of the 34 patients (23.5%) with measurable components of their disease (Table I). Tumour response usually occurred in the first month of treatment and continued for several months (Table III). Seven other patients, (20.5%) had subjective improvement.

(b) The anti-tumour response in relation to the weekly and fortnightly regime is analysed in Table II. Sixteen patients had three to fourteen weekly doses, before subsequently changing to fortnightly injections. Of these, six had objective response, 37.5% and another five had subjective response.

Table III
Case Histories of 8 patients with Objective Response to Chemotherapy

No.	Initial	Age	Sex	Race	Primary	Secondaries	Surgery	Previous Chemotherapy	Previous Radiotherapy	Duration of Response (months)	Survival (months)
1.	Y	61	F	Ch.	Ca Stomach	Liver, gall bladder, pancreas	Gastro-jejunosomy for gastric-outlet Obstruction 4 months before	F F.U.	—	4	6
2.	T	55	F	Ch.	Ca Sigmoid Colon	Colo-vesical fistula	Colostomy	—	—	4	7
3.	C	64	F	Ch.	—	Liver, spine, metastasis from Ca breast	Rt. radical mastectomy 2 yrs. before	5 F.U.	—	9 (to date)	Alive and well to date
4.	S	45	F	M	—	Rt. Supra-clavicular node 8cm x 6cm metastasis from breast	Rt. radical mastectomy 6/12 before	Testosterone oophorectomy	—	6 (to date)	Alive and well to date
5.	M	67	M	I	Recurrent Ca Cheek	—	Rt. Com-mando operation 3 years before	—	Yes	6	Lost to Follow up
6.	R	52	F	I	Ca Rt. Cheek	Cervical nodes mandible	—	—	—	3 (Rt. Com-mando Opn.)	Alive and well to date
7.	K	13	M	M	—	Peritoneal metastasis ascites	Rt. Hepatectomy for mesenchymal sarcoma 1 yrs. before	—	—	3	7
8.	L	53	F	Ch.	Reticulum cell sarcoma cervical nodes	Colorectum	—	—	—	2	Second remission to vincristine and prednisolone Loss to Follow Up subsequently

In contrast, in 18 patients on fortnightly regime, there was an objective response in only two patients (11.1%) and subjective improvement in another two.

(c) The case histories of the eight patients who had objective response are summarised in Table III.

Patient C presented with hepatomegaly, the left lobe of the liver extending to the level of the umbilicus due to metastatic breast cancer. She failed to respond to stilboesterol, but the liver shrunk dramatically on the weekly regime. She has been in good health for the past 10 months and the left lobe of the liver has remained inpalpable. Patient S had a rapidly growing right supraclavicular node from a metastatic breast cancer, causing dysphagia (Figure 1). The lesion shrunk after the first dose, disappeared within 2 months and has been in remission for the past seven months (Figure 2).



Fig. 1
Patient S. Metastatic breast cancer in right supraclavicular node.



Fig. 2
Patient S. Note disappearance of right supraclavicular node after chemotherapy.

Two patients with advanced cheek cancer had good response. Patient R presented with a lesion on the right cheek involving the lower alveolus and mandible and encroaching the upper alveolus and the anterior faucial pillar so that she was inoperable when first seen (Figure 3). After three months of treatment the lesion had receded from the upper alveolus and the anterior faucial pillar permitting a sufficient margin for a radical excision (Figure 4). Postoperative wound healing was good.

Patient L (Figure 5) had subacute intestinal obstruction from colorectal reticulum cell sarcoma with cervical lymphadenopathy. She had a two-month remission (Figure 6).

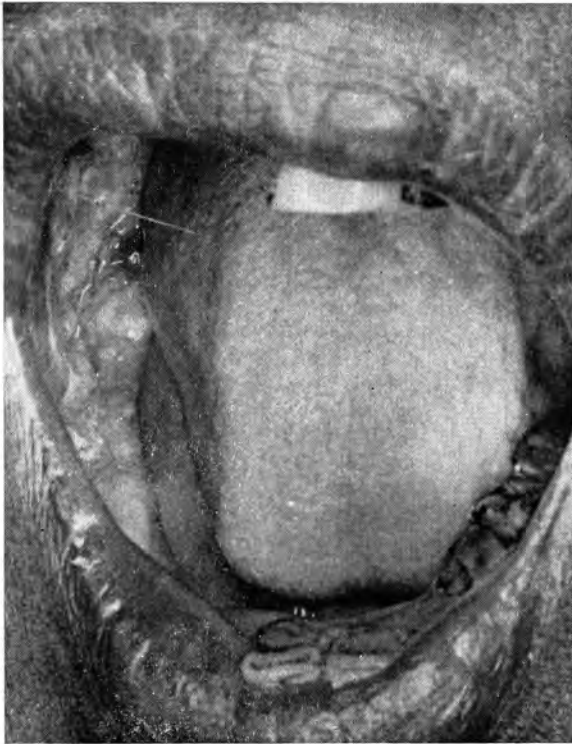


Fig. 3
Patient R. Cancer cheek involving anterior faucial pillar.

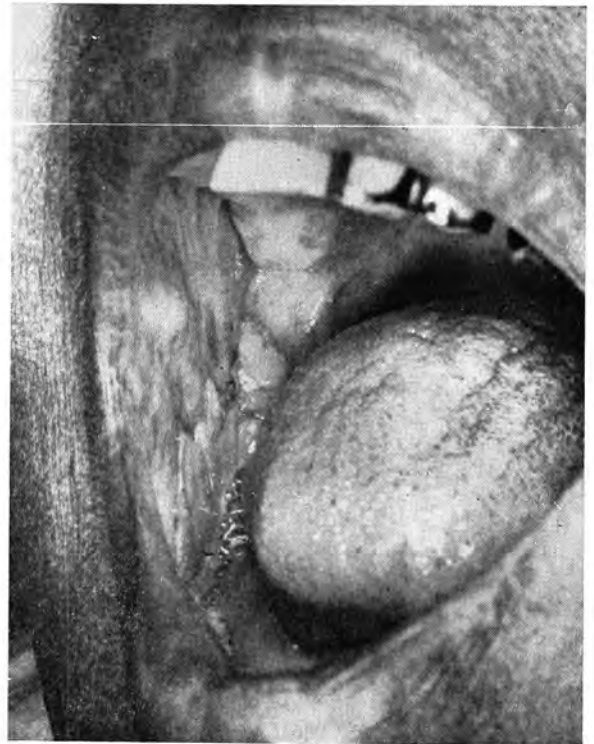


Fig. 4
Patient R. Note cancer cheek has receded from anterior faucial pillar after Chemotherapy.



Fig. 5
Patient L. Reticulum cell sarcoma with cervical lymphadenopathy.



Fig. 6
Patient L. Note shrinkage of cervical nodes after Chemotherapy.

Discussion

An overall objective response rate of 23.5% for a mixed group of solid tumours appears to be acceptable. Although lack of randomisation makes comparison difficult, analysis of the results in Table II suggests that the schedule of weekly injections, particularly at the initial stages of treatment is superior to the fortnightly regime.

The excellent results obtained in the two patients with advanced lymphatic and hepatic metastatic breast cancer have been particularly gratifying. Encouraging results have also been obtained from the treatment of advanced intraoral carcinoma, an all too common problem in this country. The successful management of patient R suggests the possibility of the wider use of preoperative combination chemotherapy with our regime in patients with intraoral carcinoma too extensive for excision when first seen. This would overcome the problems associated with preoperative radiotherapy i.e. avascularity leading to a higher rate of wound infection and breakdown (Sivaloganathan, 1971).

The response rate in carcinoma of the large intestine appeared satisfactory. Carcinoma of the stomach responded poorly, the rapid downhill course of these patients progressing relentlessly.

Bone marrow depression has been mild. From the patient's point of view, a main source of dissatisfaction was nausea and vomiting (56%), but fortunately this usually lasted one to two days and was rarely severe and incapacitating.

The relatively low toxicity and acceptable effectiveness of our regimen allows treatment to be conducted on an outpatient basis. One of the reasons why patients with advanced cancer are often

not offered the possible benefits of chemotherapy, especially in a developing country like Malaysia, is hospital bed shortage. Suitable regimens of intermittent chemotherapy on an outpatient basis would alleviate this problem.

Summary

A clinical trial using intermittent weekly and/or fortnightly intravenous injections of a combination of 5-Fluorouracil 12 mg/Kg., Cyclophosphamide 12 mg/Kg., and Methotrexate 0.5 mg/Kg. body weight has been carried out on 51 outpatients with advanced cancer over a one year period. Of 45 patients who received an adequate course of therapy, (defined as more than three doses), 34 had measurable lesions. Objective response (tumour shrinkage of 50% for 2 months) occurred in 8 of 34 cases, 23.5%. Seven other patients 20.5% had subjective improvement. Particularly encouraging results have been obtained in breast and intraoral cancer. This regime is well tolerated and can be safely administered on an outpatient basis.

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Ectopic Pregnancy – A Study of 77 Cases

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ECTOPIC PREGNANCY includes all extrauterine pregnancies, the commonest being tubal pregnancy. It can mimic almost any acute intra-abdominal condition and is one of diagnostic surprises, as the clinical picture is so varied. On the one hand, the diagnosis is obvious, while on the other, it may only be diagnosed at an exploratory laparotomy. In spite of considerable emphasis, it is often ignored in the differential diagnosis of abdominal pain. However, those who are orientated to look out for this condition in a woman of child-bearing age, will rarely fail to diagnose it when it exists.

The material presented in this study was derived from the records of 77 consecutive cases of ectopic pregnancy admitted to the University Hospital Medical Centre during the period from March 1968 to December 1971.

Incidence

During the same period of 3 $\frac{3}{4}$ years, there were 8,592 deliveries, giving an incidence of 1 case of ectopic pregnancy to 112 deliveries. Beacham et al (1956) quoted a ratio of 1 case to 139 deliveries and Chan (1965) 1 in 98 deliveries.

There were no maternal deaths in this series.

Age

55.8% of the cases in this series were in the 20-29 years age group and 42.9% were over the age of 30 years. This is similar to the 51.1% and 45.6% respectively quoted by Sandmire and Randall (1959).

Parity

In this study, 58 (75.3%) were multiparous and 19 (24.7%) nulliparous. Among these patients, there was a history of relative infertility. 72.4% of the multiparous patients had a time interval of 2 or more years between the last pregnancy and the ectopic pregnancy. In many cases this was as long as 6-7 years. In the nulliparous patients, an interval of 2 or more years between marriage and ectopic pregnancy was present in 44.4% of the cases.

Aetiology

Pelvic infection was the most important aetiological factor in this series and was usually puerperal or post-abortal. In 15 cases (19.5%) a history of sepsis was present, 7 puerperal, 4 post-abortal and 3 pelvic inflammatory disease. In 1 case, genital tuberculosis was discovered during investigation of infertility prior to the ectopic pregnancy. A further 10 cases had evidence of previous pelvic infection at operation though a history of sepsis was not available.

There were 2 cases of pelvic endometriosis, 1 involving the fallopian tube. Haralek and Bilek (1957) emphasized the frequency of pelvic endometriosis in cases of ectopic pregnancy. In 3 cases, an ovarian cyst was found on the side of the ectopic pregnancy and in 2 cases, there were associated uterine myoma. One patient had a tubal ligation by the Pomeroy's method 5 years previously. Another patient had an intrauterine device (IUD) in situ at the time of ectopic pregnancy. Hans Lehfeldt et al (1970) reported an incidence of 1 ectopic pregnancy to every 23 pregnancies with an IUD in situ.

Previous Ectopic Pregnancy

There were 9 previous tubal pregnancies in this study. Eight of the initial tubal pregnancies occurred in the left tube with 7 of the repeat tubal pregnancies in the opposite tube and 1 in the same tube.

Symptoms

The main symptoms are listed in Table I and are compared with other series in the order of frequency.

Table I

Symptoms	Present Series	Chan (1965)	Armstrong (1969)
Abdominal Pain	75(97.4%)	97.6%	96.4%
Amenorrhoea	71(92.2%)	96.0%	—
Vaginal Bleeding	57(74.0%)	78.6%	87.9%
Vomiting/Nausea	16(20.8%)	36.4%	—
Fainting	15(19.5%)	23.8%	37.8%
Shoulder Pain	7(9.1%)	1.8%	—
Passage of Tissue	6(7.8%)	11.1%	—

Table II

	Present series	Chan (1965)	Armstrong (1959)
Bleeding preceding pain	32(56.1%)	42.8%	34.0%
Bleeding with pain	14(24.6%)	29.6%	27.0%
Bleeding following pain	11(19.3%)	27.6%	31.0%

Abdominal pain was the commonest and most constant symptom, being present in 97.4% of the cases. This was also the finding of Armstrong et al (1959), Chan (1965) and Sandmire and Randall (1959). One must therefore consider ectopic pregnancy in any woman in the child-bearing age who presents with an abdominal pain. In 69 cases (92.0%) the abdominal pain was confined to the lower abdomen. Of these, unilateral pain or pain being more severe on one side than the other was present in 26 patients (34.6%). It was felt on the same side of the ectopic pregnancy in 22 cases (84.6%) and on the other side in 4 cases (15.4%). Unilateral pain is a useful guide in differentiating from acute salpingitis which tends to be bilateral. In 6 patients (8.0%) the abdominal pain extended to the hypogastrium or was confined to the upper abdomen. In these cases, an initial diagnosis of acute gastritis or acute pancreatitis was often made by the Accident & Emergency doctor.

Amenorrhoea was the next commonest and was present in 71 cases (92.2%). The period of amenorrhoea was less than 8 weeks in 66.2% and less than 12 weeks in 90.1% of the cases. It was extremely useful symptom in that it drew the attention of the examining doctor to the possibility of a pregnancy state. However, in 6 patients (7.8%) no history of amenorrhoea was obtained despite retrospective questioning.

Vaginal bleeding was seen in 74.0% of the cases. It was usually scanty and prolonged. In some cases the bleeding was continuous and in others intermittent. But the bleeding can be severe with clots. Contrary to the teaching of most gynaecological text-books, pain had been preceded by vaginal bleeding in 56.1% of the cases, occurring at the same time as bleeding in 24.6% and followed by bleeding in only 19.3%.

Other symptoms like fainting and shoulder pain were useful in diagnosing ectopic pregnancy. Shoulder pain was present in 7 patients (9.1%) and in all these patients, blood loss into the peritoneal cavity exceeded 1 litre. Vomiting and nausea was present in 20.8% of the patients and was due to tubal colic and intra-peritoneal haemorrhage. It should be differentiated from the vomiting and morning sickness of early pregnancy. The history of passage of tissue was often misleading but fortunately was present in only 7.8% of the cases.

Signs

The main physical signs are listed in Table III.

Table III

Sign	No. of cases	Percentage
Temperature:	Above 100°F	1 1.3%
	Above 99°F.	8 10.4%
	Afebrile	68 88.3%
Systolic B.P.:	Below 60 mmHg.	1 1.3%
	Below 80 mmHg.	6 7.8%
	Below 100 mmHg.	18 23.6%
	100 mmHg. & above	52 67.3%
Pulse Rate:	120/min. or more	6 7.8%
	100/min or more	25 32.5%
	Below 100/min	46 59.7%
Abdominal Examination	Tenderness	72 94.7%
	Shifting Dullness	28 36.4%
	Abdominal mass	8 10.4%
Vaginal Examination	Tender Fornix	58 75.3%
	Mass in Fornix	47 61.4%
	Tender Cervix	36 46.8%
	Enlarged Uterus	30 38.9%

Table IV

	No.	Percentage
Ectopic Pregnancy correctly diagnosed	71	92.2%
Incorrect Diagnosis:	6	7.8%
Ovarian cyst	4	
Appendicitis	1	
Myoma	1	

On examination, half of the patients looked pale and one-third had a tachycardia. When this was associated with hypotension, there was usually blood loss of at least 1 litre. Seven patients were admitted in shock despite the fact that in 19 patients, blood loss was more than 2 litres. This is not surprising as the general condition of the patient, the blood pressure and the pulse rate did not depend on the amount of blood loss alone but on the rate of blood loss and the previous haemoglobin level of the patient. Love (1962) had drawn attention to the unreliability of the pulse rate and blood pressure as an indication of the degree of shock present.

Only 1 patient had a temperature higher than 100°F. This was found to be quite useful in differentiating between ectopic pregnancy and pelvic infection.

Abdominal tenderness was the commonest and most constant sign, being present in 94.7% of the cases. When it was localised to the right iliac fossa, it may be misdiagnosed as acute appendicitis. However, syncope is absent in acute appendicitis and the patient is usually flushed rather than pale. In this series, 1 patient was diagnosed as acute appendicitis but on laparotomy an ectopic pregnancy was found. On the other hand, no cases of appendicitis were seen when laparotomy was performed for ectopic pregnancy.

Shifting dullness was demonstrated in 28 patients (36.4%). When the amount of blood in the peritoneal cavity was less than 500 ml., it was only occasionally present, but was almost invariably present when the amount exceeded 1.5 litres.

In acute cases, the most helpful pelvic findings were tenderness in the fornix and pain on rocking the cervix. In other cases, the finding of a tender adnexal mass or a pelvic haematocoele was also helpful. Sometimes, difficulty may arise in differentiating between ectopic pregnancy and haemorrhage into or rupture of a follicular cyst. A useful guide is that in the case of a follicular cyst, there is no period of amenorrhoea, the cervix is firm and there is no enlargement of the uterus.

Accessory Aids to Diagnosis

1. Laboratory Investigations

Haemoglobin: In 46.8% of the patients in this series, the haemoglobin was less than 10 gm. per cent.

Total White Count: A leucocytosis of more than 10,000/ul was present in 48.0% of the patients.

Gravindex: In the 31 patients in whom a pregnancy test was performed, 18 (58.1%) was positive. This is of little diagnostic value.

2. Colpocentesis

This was performed in 8 cases in this series. In all the cases, blood was obtained. Characteristically, the blood did not clot on standing.

3. Examination under anaesthesia

It revealed or confirmed the presence of a mass in the pelvis which could not be definitely palpated before the patient was put under anaesthesia.

4. Curettage

Curettage was of limited value as decidual reaction was only occasionally found and then also the diagnosis was inconclusive.

5. Laparoscopy

Laparoscopy was performed in 4 cases and was found to be a useful diagnostic aid. The tubal pregnancy or pelvic haematocoele was easily visualised and ectopic pregnancy confirmed or excluded.

Diagnosis

In the present series, 71 patients (92.2%) were correctly diagnosed as ectopic pregnancy prior to surgery. Most of the cases were diagnosed early on admission, however there was a delay in 5 cases. Three cases were initially admitted as threatened abortion, but on reviewing them the following day, a diagnosis of ectopic pregnancy was made. One patient was admitted to the Medical wards and investigated as a case of anaemia with ascites. Abdominal paracentesis revealed frank blood and the patient referred for a gynaecological opinion when the diagnosis of ectopic pregnancy was made. The other patient was admitted to the Surgical wards with the diagnosis of bleeding haemorrhoids. When the bleeding was found to arise from higher up on proctoscopy, a sigmoidoscopy was performed. The rectal wall was seen to be eroded by what the

surgeon felt was the placenta. Abdominal examination revealed a 28 weeks' size abdominal mass and a secondary abdominal pregnancy was confirmed at laparotomy.

The other 6 cases were wrongly diagnosed and ectopic pregnancy was only apparent at laparotomy.

Management

1. Resuscitation

In the acute cases, prompt resuscitation of the patient is essential. Blood loss should be replaced by blood transfusion. In most centres, Blood-Bank blood is readily available and in the time taken between diagnosis and surgery, the blood can be grouped, cross-matched and transfusion begun. Williams and Corbit (1944) in analysing 101 deaths from ectopic pregnancy found that blood was given in only a little more than 55% of the patients.

When donor blood is not readily available, (Pathak and Stewart, 1970) auto-transfusion is a useful method of restoring blood volume during an emergency. The blood in the peritoneal cavity must not only appear fresh but should be free of clots before it is used. In the present series, auto-transfusion was given in 3 patients. All of them made an uneventful recovery.

2. Surgical Procedure

The surgical procedures are summarised in Table V.

Table V

Surgical Procedures	No.	Percentage
<i>Primary Operation:</i>		
Salpingectomy	58	75.3%
Salpingo-oophorectomy	9	11.7%
Preservation of affected tube	4	5.2%
Hysterectomy	6	7.8%
<i>Incidental Operation:</i>		
Removal of other tube/ tubal ligation	15	
Salpingolysis	2	
Ovarian cystectomy	2	
Colostomy	1	

Salpingectomy was by far the most common surgical procedure. It is a safe, simple and effective means of controlling bleeding and

removing the tubal pregnancy. Total salpingectomy was usually performed unless conservative procedures had been decided upon.

Salpingo-oophorectomy was performed when there was associated ovarian pathology or if the surgeon felt that he was unable to conserve the ovary. It was also performed in one case of tubo-ovarian ectopic pregnancy. In general, the ovary should be conserved as removal of a healthy ovary is unnecessary. However, Jeffcoate (1955) and Bender (1956) advocated salpingo-oophorectomy so that all subsequent ova originated from the ovary adjacent to the fallopian tube left behind and thus increasing the chances of conception.

Hysterectomy was performed in 6 cases in this series. All the patients were multiparous with one or more children. In 2 patients, hysterectomy was performed for rupture of an interstitial ectopic pregnancy. Two other patients had hysterectomy because of a clinical suspicion of choriocarcinoma at operation. One of the two patients turned out to be a ruptured interstitial pregnancy and the other a secondary abdominal pregnancy in the posterior vaginal wall. The last case was the patient who had a 28 week secondary abdominal pregnancy. The uterus had ruptured posteriorly and the placenta implanted in the pouch of Douglas and the rectum. The uterus and the foetus were removed and a temporary colostomy performed.

In 50% of ectopic pregnancy, the patient is anaemic and cannot stand prolonged anaesthesia and surgery. Therefore, the fundamental principle is to control bleeding by the simplest, safest and most effective method possible. Elaborate surgical procedures should be confined to those patients who are fit or in whom no other alternative is possible.

Operative Finding:

These are summarised in Table VI and are self-explanatory. The commonest site of ectopic pregnancy is in the fallopian tube. There is an equal chance of the right or left tube being the site of the ectopic pregnancy. The commonest sites of tubal pregnancy are in the ampulla, the isthmus and the fimbrial end, in a descending order of frequency. In 66.2% of the cases, the other tube was normal. The corpus luteum was noted in 12 cases and in 50% of them it was on the opposite side of the tubal pregnancy.

Table VI

Operative findings		No.	Percentage
Tubal Pregnancy:			
Side:	Right	39	52.0%
	Left	36	48.0%
Site:	Ampulla	36	48.0%
	Isthmus	18	24.0%
	Fimbrial	16	21.3%
	Interstitial	3	4.0%
	Tubo-ovarian	2	2.7%
Other Sites: Abdominal (secondary) 2			
Condition of other Tube:			
	Normal	51	66.2%
	Chronic Salpingitis	14	
	Hydrosalpinx	3	
	Tube absent	8	
	Tube partly removed	1	
	Evidence of ligation	1	
Pelvic Pathology:			
	Ovarian cyst	3	
	Endometriosis	2	
	Uterine myoma	2	
Corpus Luteum			
	Same side as ectopic	6	
	Other side	6	
	Not stated	60	

Summary

An acute sense of suspicion of ectopic pregnancy will help a great deal in arriving at an early diagnosis of this condition. Accurate history and physical examination are the most important considerations. The patient who presents with shock, abdominal pain, bulging cul-de sac and tender pelvic mass should be easily diagnosed and quickly treated. When the history is atypical and physical examination inconclusive, colpocentesis, examination under anaesthesia and laparoscopy will often provide the answer.

A small number of patients will still require exploratory laparotomy before the diagnosis is apparent. These are usually in whom laparotomy would in any case be indicated because of an intra-abdominal mass or intra-peritoneal haemorrhage.

Prompt resuscitation and judicious surgical intervention will practically eliminate death as a result of ectopic pregnancy. The importance of blood transfusion is stressed. Where donor blood is not available or is insufficient auto-transfusion is a safe and life-saving measure. Operative measures should be aimed at controlling bleeding by the simplest, safest and most effective method. Incidental operative procedures should not be performed if the patient is in a poor condition or if there is a large quantity of free blood in the abdomen.

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Urine Blood Alcohol Ratios

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DR. MORGAN (1965)¹ has examined the relationship of a blood alcohol concentration derived by calculation from a random sample of urine and the actual concentration of alcohol in the blood by examining 224 "drunk-in-charge" cases in which simultaneous samples of blood and urine were taken in the medical examination and referred to the laboratory for analysis. He came to the conclusion that it is an unsatisfactory procedure to calculate the alcohol content of the blood from a random sample of urine as there is a possibility of the calculated result being prejudicial to the defendant.

Drs. Dunnet & Kimber (1968)² considered 151 cases and their conclusions were in agreement with those of the British Medical Association that the ratio of 1.33 : 1 is fair and no injustice has been caused by converting urine-alcohol to blood alcohol.

Since the views expressed by the 2 groups of workers were contradictory further investigations to ascertain whether the ratio is valid or not were carried out. In this case local subjects were studied under controlled conditions and the results were compared with that of routine case figures of samples submitted by the Police and Medical Authorities to this laboratory for analysis.

In routine cases, when a man is apprehended by the police, he is taken to the nearest general or district hospital and the medical officer examines him. If the medical officer feels that a chemical analysis is necessary (which is almost always so in routine cases) then he takes samples of blood and urine if available. The blood samples are collected

in oxalated bottles prepared and supplied by our Department to the various hospitals but the urine samples have no preservative in them or their containers. The samples are sealed and sent to us by police escort. In the laboratory they are stored in a refrigerator. Routine analysis in this laboratory (so far) has always been done by the Kozelka and Hine method. The results of the alcohol analysis are sent to the police and the medical officer.

There is no law in this country as yet whereby a driver of a motor vehicle is obliged to give a sample of his blood or urine for testing, and he can refuse to give any sample if he wishes. Recently there has been a suggestion in the press that the breath alcohol test be applied as a screening test and then the blood alcohol be determined. The law may have to be amended to make it obligatory for the driver of a motor vehicle to give samples of blood and urine for alcohol tests. A 'fixed' alcohol figure may be introduced beyond which it will be an offence to drive a vehicle.

With this in view a paper was published in the Malayan Medical Journal (June 1968)³ where observations of Alcohol Intoxication in local subjects, who were given fixed amounts of alcohol to drink and underwent clinical tests and also submitted blood and urine samples at various intervals of time after consumption of the drink. The conclusion was that if and when a 'fixed blood alcohol figure' is adopted for this country it should be 50 mgs/100 mls of blood. This conclusion was based on the fact that the symptoms of intoxication were observed even in the regular drinkers at around the 50 mgs/100 ml range. Further since temperate countries

like United Kingdom has fixed 80 mgs/100 ml and the populace there are more regular drinkers of alcohol than here, principally because the former drink to keep themselves warm. Furthermore their diet contains more meat (for warmth), it was thought that 50 mg/100 ml was fair for this country. With the possibility of this new law being introduced we now investigated the urine-blood alcohol ratios on the results of the investigations carried out earlier on and compared them with routine case figures of samples where a blood and urine were submitted to the laboratory. In those cases where the blood sample would not be available for one reason or another, and only a urine sample was available, we could have two alternatives:-

- (i) Convert the urine alcohol figure to blood alcohol using 1.33
- or (ii) A "urine alcohol figure" incorporated in the legislation in addition to a fixed blood alcohol figure. It has been reported that in the United Kingdom some problems arose where the suspected drinker driver refused to give a venous sample of blood and only allowed a finger prick or ear-lobe prick. It is recommended that if a blood sample is necessary then a venous sample be obtained.

Procedure adopted

Twenty-five (25) volunteers were invited to drink (after the bladder had been emptied) known amounts of alcohol in a specified time (usually 20-30 minutes). Samples of venous blood were collected every one (1) hour starting from the first hour after the drink had been consumed, and the urine samples were collected every half-hour ($\frac{1}{2}$) hour starting from the same time as the first blood sample. Altogether for one volunteer two (2) blood samples and four (4) urine samples were collected. All the volunteers had approximately the same amount of food in the stomach. Drinking started at about 8.30 a.m. and each person had two slices of bread and two cups of coffee/tea for breakfast which was taken approximately one hour earlier. The volunteers included all the various races in this country (i.e. Malays, Chinese, Indians and Eurasians). The alcoholic beverages used were those locally consumed viz. Beer, Brandy, Whiskey, Vodka and Chinese samsoo.

Results obtained

Table I shows the results obtained from blood and urine taken at the same time i.e. within approxi-

mately 10-15 minutes of each other. Altogether 49 samples of blood and 49 samples of urine figures are reported. The average urine-blood alcohol ratio is 1.28.

Table I

Blood & Urine Samples taken under Controlled Conditions

No.	Blood Alcohol (mg/100 ml.)	Urine Alcohol (mg/100 ml.)	Urine Alcohol/ Blood Alcohol
1.	55	73	1.32
2.	34	44	1.29
3.	48	51	1.06
4.	103	124	1.20
5.	103	139	1.35
6.	89	102	1.15
7.	89	92	1.03
8.	33	39	1.18
9.	18	27	1.50
10.	55	66	1.20
11.	43	63	1.46
12.	106	149	1.41
13.	91	127	1.39
14.	91	100	1.09
15.	91	109	1.19
16.	50	74	1.48
17.	59	71	1.20
18.	114	176	1.54
19.	127	158	1.24
20.	127	152	1.19
21.	127	138	1.09
22.	25	28	1.12
23.	22	28	1.27
24.	51	81	1.58
25.	51	71	1.39
26.	100	143	1.43
27.	119	124	1.04
28.	119	143	1.20
29.	119	161	1.35
30.	94	118	1.25
31.	94	150	1.38
32.	85	115	1.35
33.	73	94	1.29
34.	97	131	1.35
35.	97	137	1.41
36.	85	92	1.43
37.	82	127	1.54
38.	99	130	1.37
39.	99	127	1.28
40.	99	106	1.07
41.	44	53	1.20
42.	59	86	1.45
43.	59	75	1.27
44.	62	71	1.14
45.	55	76	1.38
46.	55	59	1.07
47.	103	136	1.32
48.	103	117	1.35
49.	37	46	1.24

Table II shows 120 routine cases submitted to this laboratory where both blood and urine samples were sent, both having stated to have been taken at the same time. The average urine-blood alcohol ratio is 1.29.

Table II

Routine Cases with one Blood and one Urine Sample submitted to the Laboratory.

(Blood, Urine stated to have been taken at same time i.e. within 10 - 15 mins of each other)

No.	Blood Alcohol (mg/100 ml.)	Urine Alcohol (mg/100 ml.)	Urine Alcohol/Blood Alcohol
1.	127	154	1.21
2.	29	40	1.38
3.	133	180	1.35
4.	107	137	1.28
5.	218	277	1.27
6.	261	296	1.13
7.	224	308	1.38
8.	210	313	1.49
9.	223	278	1.25
10.	184	235	1.28
11.	272	336	1.24
12.	110	151	1.37
13.	87	110	1.26
14.	143	197	1.38
15.	136	187	1.38
16.	318	427	1.34
17.	257	333	1.29
18.	178	212	1.19
19.	157	184	1.17
20.	244	317	1.30
21.	150	206	1.37
22.	315	463	1.47
23.	195	275	1.14
24.	184	253	1.37
25.	204	275	1.35
26.	136	194	1.43
27.	132	178	1.35
28.	214	289	1.35
29.	217	226	1.04
30.	208	291	1.40
31.	62	77	1.24
32.	170	224	1.32
33.	132	187	1.42
34.	239	325	1.36
35.	187	233	1.25
36.	138	181	1.31
37.	164	198	1.21
38.	190	236	1.24
39.	269	359	1.34
40.	173	235	1.36
41.	217	299	1.38
42.	198	250	1.26
43.	319	427	1.34
44.	139	158	1.14
45.	204	270	1.32
46.	83	109	1.13
47.	167	204	1.22
48.	109	129	1.18
49.	177	238	1.35
50.	186	232	1.25
51.	146	193	1.32
52.	212	294	1.39
53.	138	192	1.39
54.	187	223	1.19
55.	221	299	1.35
56.	195	261	1.34
57.	51	71	1.39
58.	192	232	1.21
59.	133	163	1.23
60.	232	319	1.38
61.	477	575	1.121

62.	150	215	1.43
63.	255	336	1.32
64.	135	181	1.34
65.	170	241	1.42
66.	198	283	1.43
67.	178	241	1.35
68.	281	333	1.19
69.	73	107	1.47
70.	167	196	1.17
71.	131	173	1.32
72.	101	117	1.16
73.	69	89	1.29
74.	129	144	1.12
75.	75	100	1.33
76.	143	204	1.43
77.	85	110	1.29
78.	142	184	1.30
79.	217	292	1.35
80.	109	121	1.11
81.	235	257	1.09
82.	265	315	1.19
83.	146	188	1.29
84.	235	294	1.25
85.	217	261	1.20
86.	287	427	1.49
87.	157	222	1.41
88.	86	106	1.23
89.	340	420	1.26
90.	309	342	1.11
91.	297	400	1.35
92.	212	274	1.29
93.	209	257	1.23
94.	153	190	1.24
95.	206	248	1.20
96.	384	418	1.09
97.	347	454	1.31
98.	64	90	1.41
99.	357	446	1.25
100.	84	123	1.46
101.	115	147	1.28
102.	153	214	1.40
103.	265	333	1.26
104.	281	361	1.28
105.	258	346	1.29
106.	104	119	1.14
107.	168	217	1.29
108.	326	396	1.21
109.	260	316	1.22
110.	297	341	1.15
111.	153	205	1.34
112.	176	235	1.34
113.	81	105	1.30
114.	136	187	1.37
115.	105	141	1.34
116.	80	94	1.18
117.	105	144	1.37
118.	239	260	1.09
119.	271	324	1.20
120.	199	239	1.20

Discussion of Results

In any alcohol and driving law it should be an indisputable right of the defendant to give either blood or urine whichever he pleases and in addition to any fixed blood-alcohol figure there should also be a fixed urine-alcohol figure and the method of test should be specified. The breath alcohol test should only serve as a means of screening for subsequent blood or urine alcohol determination.

It is our opinion that since the conversion of 1.33 refers only in cases where the 'peak' of alcohol in urine has been reached which is slightly after the 'peak' of alcohol in blood (provided drinking has ceased), in practise, this may not be applicable in all cases, because a driver may be apprehended soon after consumption of drink. The literature shows that the average values of blood-urine alcohol ratios according to various authors varies considerably from 1.25 to 1.35. In our local conditions it has been found to be 1.28 for controlled samples and 1.29 in actual cases submitted. Because the ratio varies considerably between various authors it is recommended that if and when a 'fixed' blood alcohol figure is introduced in this country, in addition a 'fixed' urine alcohol figure should also be legislated.

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Problems and Usefulness of Serum Enzyme Measurement in the Diagnosis of Diseases

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Kuala Lumpur.

THE USEFULNESS OF serum enzyme measurement as an aid in diagnosis is well established. In our laboratory during the past five years (1968-1972) the number of requests for some of the clinically important enzymes is shown in the figure.

As from 1968 and earlier, requests for enzyme assays sent to our laboratory showed a steady increase except in 1970 when there was a slight decline (Curve A). If we consider Curve B which represents those enzymes which we measure and which are also measured in major hospitals in Malaysia (e.g. the transaminases and phosphatases), there was a decline in the number of requests as from 1970. This was because more and more hospital laboratories throughout Malaysia are expanding their services to include enzyme assays in addition to the other important laboratory tests. A better reflection of the increasing requests for enzyme assay is shown by Curve C which represents those enzymes which we assay but which are not assayed at State hospital laboratories (e.g. lactate dehydrogenase and creatine kinase). From 1970 there was an increase of about 20% per annum for such enzyme tests and this increase reflects more or less the workload which most hospitals are currently experiencing.

We come now to the important question: namely which enzymes should a hospital laboratory assay? To answer this one must first take into account such factors as the availability of qualified staff, fine chemicals and good instrumentation. The enzymes to be offered under routine should be practical and useful. Sometimes the selection will depend to some extent on local interests. An attempt is now made to outline the usefulness of some clinical enzy-

mes both from the methodological and diagnostic aspect in the light of current knowledge.

Organ-specific Enzymes and Isoenzymes

The ultimate goal in diagnostic enzymology is the discovery of a specific enzyme not only for an organ but also for a particular disease of that organ. Unfortunately this has not yet been achieved satisfactorily. Interest in organ-specific isoenzymes was initiated by Hodson and co-workers (1962) who were able to distinguish the principal bone, liver and intestinal fractions of alkaline phosphatase using starch-gel electrophoresis. This technique was particularly helpful in the differential diagnosis of bone and liver diseases under conditions of raised total alkaline phosphatase activity.

When the heterogeneity of lactate dehydrogenase (LD) was worked out, the diagnostic application of the isoenzyme pattern after electrophoresis showed promise. In myocardial infarction the serum is found to contain an excess of the faster moving isoenzyme fractions (LD-1 and LD-2), while in most cases of infective hepatitis the serum is especially rich in the slowest moving (LD-5) fraction.

Isoenzyme electrophoresis technique is not altogether a convenient tool for the hospital laboratory. Chemical assays are generally preferred whenever possible. Such measurements as the hydroxybutyrate dehydrogenase activity, the heat stability tests for lactate dehydrogenase and alkaline phosphatase and the urea-inhibition LD test were developed and favoured with the enthusiastic advocacy of their originators. Some of these tests

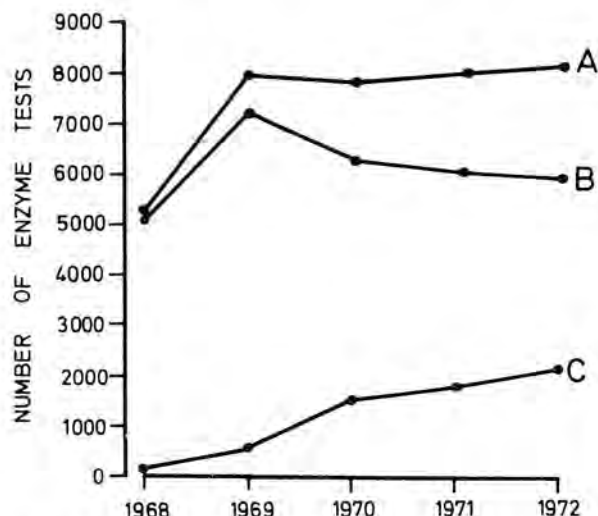


Fig. in "Problems and usefulness of serum enzyme measurement in the diagnosis of diseases."

Enzyme tests done over 5 years. A: Total enzymes. B: Enzymes which are also measured in other hospital laboratories.

C: Enzymes not measured in other hospital laboratories.

are of proven value only in a limited number of circumstances and will be mentioned again later under the appropriate sections.

Methods of Enzyme assay

Almost all clinically important enzymes are assayed using the fixed-time or two-point assay principles (e.g. alkaline phosphatase) in hospital laboratories throughout Malaysia. From the practical aspect this method of assay is convenient and suitable for large batch analyses. Unfortunately two-point assays are not altogether ideal especially for some enzymes (e.g. aspartate transaminase), where factors such as the accumulation of inhibitory products, high enzyme concentration, etc., may contribute to errors in measurement. Nevertheless two-point assays are universally accepted and will continue to be used until such time when the availability of suitable recording spectrophotometers will favour their replacement by the more accurate kinetic procedures.

Problems in Enzyme assay

Many factors affect the measurement of enzyme activity and these include purity of the reagents, presence of inhibitors, proper control of pH and concentration of buffer and substrate, strict temperature adherence and instability of the enzyme and reagents can cause varying results. The quality control in enzyme measurement is a perplexing problem that has no easy solution. Commercially

available control sera used as standards and for quality control in enzyme assay are not to be advocated (Moss, 1970) unless the activity of the enzyme in question has been checked by a reliable primary method which is often a kinetic method. In practice this is seldom done and laboratories accept the manufacturer's values and assume (or hope) that the control serum enzymes have not deteriorated.

Enzyme activity

The expression of enzyme activity has been rather confusing especially for the physicians. Laboratories sometimes report enzyme activities in International Units following the recommendations of the International Union of Biochemistry. As such enzyme activity should be expressed in International Units/liter (IU/l) and along with the result the normal range by the same method should be included. This is important, for depending on the method of assay for a particular enzyme the normal range can vary. For instance, if serum alkaline phosphatase was assayed by the modified method of King & Armstrong (described in King & Wootton, 1956) as is done here and mostly in Europe, the normal range expressed in International Units is 25 - 92 IU/l. By the Bessey, Lowry & Brock method (1946) the normal range is 13 - 38 IU/l, while the Bodansky method (1933) gives the normal range as 8 - 22 IU/l. Anyone familiar with the normal range of one of these methods could be initially misled when results by another assay method are presented without the inclusion of the normal range. As most of our methods are fixed-time assays, the enzyme activities are usually defined by the originators of the methods e.g. King & Armstrong or Reitman & Frankel, and normal values expressed in such units fortunately do not vary much from one laboratory to another.

Heart

The clinically important enzymes that are found in the heart tissue in high concentrations are lactate dehydrogenase, aspartate transaminase (formerly GOT) and creatine kinase (CK). (The enzyme abbreviations follow the recommendations of Baron *et al.* (1971).) These enzymes are not necessarily equally important in myocardial infarction, as they are released at different rates from the damaged tissue. The activity of creatine kinase in blood can be increased as early as 6 h after an episode of myocardial infarction and the peak value is reached after 12 - 48 h. Aspartate transaminase (AST) reaches a peak after 24 h and can remain elevated up to 5 days, while the elevation of total lactate dehydrogenase activity which is less pronounced remains raised for about 10 days or more.

The elevation of LD in myocardial infarction is principally in the fast moving isoenzyme fraction (LD-1) which is found in high concentration in heart tissue. LD-1 has been shown to preferentially reduce 2-oxobutyrate (Elliot & Wilkinson, 1961), and is referred to as hydroxybutyrate dehydrogenase (HBD). While some laboratories measure HBD activity, its advantage over total LD was questioned by McQueen *et al.* (1972) who showed that the activities of HBD and LD parallel each other in patients with a definite diagnosis of myocardial infarction. When they expressed the enzyme activities in arbitrary units, taking unity as the upper limit of normal, CK, AST and LD showed the greatest elevations respectively. Considering that CK activity declines more rapidly and that the measurement of CK is technically more demanding, AST and LD measurement is more usually done, of this, AST is preferred as (a) it is more specific as a "heart" enzyme and (b) the result is not invalidated for specimens moderately haemolysed. Elevation of alanine transaminase (formerly GPT) in myocardial infarction is slight and this test is unnecessary when AST is measured.

Liver

The liver tissue is principally rich in LD, AST and alanine transaminase (ALT). Alkaline phosphatase (ALP) is also found in the liver, although not as abundant as the above enzymes, its diagnostic importance in liver disease is well established. Raised serum ALP especially above 35 King-Armstrong Units per 100 ml is suggestive of extrahepatic or intrahepatic cholestasis, while in acute hepatitis the serum level though raised, is usually about 30 KA/100 ml or less. The reason for the higher serum elevation of ALP during cholestasis is generally believed to be the result of failure of the liver to excrete the enzyme into the bile (retention theory). Recent findings by Kaplan & Righetti (1969) seem to suggest that the elevation in serum ALP during biliary obstruction is due to the increased pressure in the bile canaliculi which exert some effect on the cell membrane to induce synthesis of the enzyme.

Alkaline phosphatase exists in multiple molecular forms which can be distinguished by electrophoresis as bone, liver, intestine and placental isoenzymes. The placental ALP is heat stable and many workers have demonstrated a rise of this fraction with advancing pregnancy, while in placental dysfunction it is associated with a fall of its activity in serum. Fishman *et al.* (1972) have recently suggested an optimal method for the measurement of placental ALP for normal pregnancies. The normal values which they reported and those of Bean & Stott (1972) show such a wide range that it becomes difficult to confirm the diagnosis of placental dysfunction in individual cases on the basis of the heat stable ALP values.

The measurement of total ALP to investigate liver disease in adolescents or in patients with concurrent bone disease is sometimes difficult. Both liver and bone disorders show raised serum ALP, thus making the differential diagnosis difficult or uncertain. Isoenzyme separation to distinguish liver and bone ALP is technically difficult and not practical for a busy routine laboratory. Some laboratories measure 5'-nucleotidase which is increased in hepatobiliary disorder as is also ALP, but its activity is unaltered in bone disease. Besides these enzymes, leucine aminopeptidase and gamma-glutamyltranspeptidase have also been shown to rise in hepatobiliary obstruction. We are ourselves still undecided which one of these three enzymes to choose from as the back-up for elevated ALP in a clinically uncertain situation. Alkaline phosphatase is perhaps the only important enzyme for investigating bone disease and together with its usefulness in liver disease, the measurement of this enzyme is a must.

Damage of the parenchymal cells of the liver can be investigated by measuring the serum transaminase activity. The activity starts to rise during the prodromal illness and peak values coincide with the onset of clinical icterus. Unless the illness resolves itself, there is a persistent raised level which suggests an unfavourable prognosis. Alanine transaminase has been associated as principally a liver enzyme. In acute hepatitis for instance, the serum alanine transaminase is highly elevated together with aspartate transaminase. In some cases alanine transaminase levels exceed that of aspartate transaminase, more so when both enzymes are measured by the kinetic method. When both these enzymes are assayed by the colorimetric method (e.g. Reitman & Frankel method) as is done in all hospitals in Malaysia, their usefulness when expressed as their activity ratio is questionable because of the lack of sensitivity and precision of the method (Goldberg, 1971). At best the colorimetric method measures the elevations in transaminase levels and as such there is little advantage in measuring both the transaminases. As most laboratories would have set up the aspartate transaminase assay for cardiological investigation, this enzyme becomes the obvious and practical choice for the assessment of liver cell damage as well.

The serum LD activity is often markedly raised in the early stages of viral hepatitis, moderately raised in toxic jaundice, while in obstructive jaundice and in cirrhosis variable LD activities are found (Wilkinson, 1962). Hepatocellular damage releases the liver-rich LD isoenzyme fraction, that is the LD-5, which can be seen from the serum LD isoenzyme pattern. This isoenzyme separation techni-

que, though not difficult to perform (Baron & Buttery 1972) is seldom done routinely. The chemical measurement of this isoenzyme as the heat-labile or urea-sensitive fraction has been advocated but has gained little acceptance generally. Perhaps due to the rather broad normal ranges and the difficulties encountered in methodology to ensure proper optimal and exacting conditions of assay, results have not been discriminating enough to distinguish normal values from pathological values.

Two other "liver-specific" enzymes need mention, namely sorbitol dehydrogenase (SD) and ornithine carbamoyltransferase (OCT). Serum SD is markedly raised in acute liver cell necrosis and OCT raised in viral hepatitis. Sorbitol dehydrogenase is a very labile enzyme and the preferred method of assay is the kinetic method. Both these factors do not favour SD as an enzyme to be measured under routine condition. Ornithine carbamoyltransferase measurement is technically laborious and care must be taken to choose a method that is not in error (Buttery & Baron, 1972). Despite the claims of these two enzymes to be "liver-specific", few laboratories measure their activities as AST can often supply the diagnostic information required.

Other clinically useful enzymes

Some of the other useful enzymes which we assay are acid phosphatase, amylase, trypsin, creatine kinase, cholinesterase and caeruloplasmin (copper oxidase).

Of the many enzymes assayed for the investigation of malignancy, acid phosphatase is one of the most specific and raised serum levels are found in carcinoma of the prostate. This enzyme, unfortunately is also found in erythrocytes, liver and bone. Raised prostatic acid phosphatase should be confirmed by the tartrate-labile acid phosphatase test where this enzyme is inhibited by L (+) tartrate.

Raised serum amylase activity is found during acute pancreatitis and any form of parotitis. Serum lipase is sometimes done as it is more specific and remains elevated longer than amylase. Lipase assay however, is more difficult and takes longer to do than amylase and in practice is not popular with clinical laboratories. In assessing pancreatic function serum enzymes measurement alone is not reliable. Stimulation test of the pancreas with either secretin or pancreozymin and duodenal aspirate measurement of pancreatic enzymes (e.g. trypsin, amylase) yield better information.

Creatine kinase has superseded aldolase as the enzyme of choice in the investigation of diseases of muscle as it is more sensitive and specific. Marked

increases in the serum level are observed in most cases of muscular dystrophy especially in the Duchenne-type muscular dystrophy. Moderate increases are noted in a number of clinical situations but generally they have little importance in diagnosis.

Requests for the measurement of serum cholinesterase entertained in this laboratory have usually been for people who are engaged in using organophosphorus compounds. Excessive exposure to these compounds would depress serum enzyme level. The normal range of the enzyme is rather large so that slight intoxication is often difficult to determine on the basis of a single estimation, more so if the basal value prior to intoxication is not known. Some authorities use the serum enzyme activity to determine the extent of liver cell damage as this enzyme is formed principally in the liver. The more usual request is to ask for total proteins or albumin as these tests are much easier to perform.

Sometime we measure the inhibition of serum cholinesterase with dibucaine in individuals who show prolonged apnoea after succinylcholine administration. This prolonged muscle paralysis may be due to cholinesterase deficiency as in liver disease or due to an atypical enzyme variant resulting from an inborn error of metabolism. Normal cholinesterase is 80% inhibited by dibucaine (Dibucaine Number 80) while the homozygote for the atypical enzyme has Dibucaine Number 20.

Serum caeruloplasmin (copper oxidase) level is reduced in patients with Wilson's disease. This disease is characterised by gross deposition of copper in tissues, increased urinary excretion of copper resulting in low serum copper and low caeruloplasmin concentration. In nephrotic syndrome where there is increased urinary excretion of caeruloplasmin, its level in serum is also low. The measurement of this enzyme for the diagnosis of other diseases is seldom done.

Conclusions

The importance of serum enzymes in diagnosis is well established. For a laboratory with adequate staff, chemicals and instruments it is possible to offer a fairly comprehensive range of clinically useful enzymes. For the small laboratory there is still a place for enzyme measurement. Such enzymes as amylase, acid and alkaline phosphatase and aspartate transaminase are not only clinically useful but are relatively easy to do. It is much better for a laboratory with limited facilities to do a small range accurately.

Acknowledgements

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The Manley Ventilator: Slipped Toggle Switch (Click Mechanism)

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THE AUTOMATIC Manley Ventilator (Manley, 1961) is a constant pressure generator. It is portable and is powered by compressed gas such as from the anaesthetic machine and used mainly for intermittent positive pressure ventilation on a non-rebreathing circuit during anaesthesia.

The ventilator is easy to use with simple controls and visible bellow distension. This bellow carries an arm with a moveable tidal-volume limiting bar. As seen on the outside, the ventilator is cycled on a toggle system or click mechanism.

The expiratory phase is operated by a click mechanism as follows: when the outside concertina bag expands, it lifts the top-plate with its moveable weight and its arm until the adjustable stop (limiting tidal volume) strikes the lever arm of the click. This reverses the click mechanism and the inspiratory stroke follows.

The ventilator fails to cycle when the toggle switch slips from the tidal volume bar-stop of the arm of the bellows. The bellow therefore continues to fill with compressed gases and stops only when fully distended with the top-plate almost at the vertical position (Figure 1) or when the tube connection to the anesthetic volume blows off.

The paralysed patient thus will suffer from the effect of machine failure, especially when the anaesthetist is occupied elsewhere with the patient.

This slip can occur when the right-angled arm is bowed outwards, for example, as a result of repeated knocking when the ventilator is carried



Fig. 1. Manley Ventilator in the failed position, when the arm has slipped from the toggle switch.



Fig. 2. The toggle switch with a tube extension.

from theatre to theatre; or when the rubber on the toggle arm is worn out.

This can be prevented by beinding in the arm of the bellows; or by extension of the rubber tube of toggle arm (Figure 2) or by soldering a vertical bar on to the toggle arm.

In the failed position, the anaesthetist cannot empty the bellow by hand compression in the automatic position. It can be decompressed gradually in the manual position and by lifting the toggle arm.

Acknowledgement

I am grateful to the Medical Illustration Department, University of Malaya, Kuala Lumpur for the photography.

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Summary

The Manley Ventilator occasionally fails to cycle when the arm of the bellows slips from the toggle switch.

Caudal Block Analgesia in Labouring Women

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Introduction

ANIMAL STUDIES BY Henn and Brattsand (1966) showed that bupivacaine has a potency and toxicity of about four times that of lignocaine and mepivacaine. Widman (1964) has shown the same result using bupivacaine intravenously in mice. However, the longer lasting action of bupivacaine in caudal block analgesia (Kuah & Yates 1968) makes it the local anaesthetic of choice.

This double-blind trial compares the analgesic effects of bupivacaine hydrochloride 0.25 percent with 1 : 400,000 adrenaline and lignocaine hydrochloride 1.0 percent with 1 : 400,000 adrenaline. This study is designed to compare the two analgesic agents in concentrations when they are of equal potency and equal toxicity.

Material & Method

This trial studied 59 labouring women who were given caudal block analgesia to relieve labour pain. All the patients were in the first stage of labour with a cervical dilation of 3 cm or more. Technical failures and cases with inadequate records were excluded from the final analysis.

A standard programme of observation was carried out in assessing the results. A standard form is completed for each patient as the trial progresses. Before the anesthetic solution is injected into the extradural space, and with the patient lying on her back, the blood pressure and fetal heart rate were recorded. These observations were repeated every 30 minutes thereafter. Analgesic effect was assessed subjectively by the patient, and its duration

recorded as the time interval between the first painless contraction and the return of painful contractions. Any untoward side effects were noted.

The study was started in the Nuffield Department of Obstetrics and Gynaecology, Oxford University, and continued in the University Hospital, Kuala Lumpur.

Anaesthetic Agents

The two test solutions are:-

1. Lignocaine 1 percent with adrenaline 1 : 400,000. A dose of 17 ml (170 mgm) was administered to each patient. There were 23 patients in this group.
2. Bupivacaine 0.25 percent with adrenaline 1 : 400,000. A dose of 17 mls (42.5 mgm) was used. There were 36 patients in this group.

It will be noted that in each case the dosage administered was well within the recommended limits for safety. The two solutions are packed in identical ampoules and these are numbered serially.

These ampoules are randomly allocated to the patients taking part in the trial. The code to the ampoule is not broken unless an emergency arises.

Table I shows the average age of the patients taking part in this study.

Table I
Patients and their Average age.

	Bupivacaine	Lignocaine
No. of Patients	36	23
Average Age	26	24

Results

Duration of Labour

These results are shown in Table II. There is no significant difference between the two groups of patients. The average duration of the first and second stages of labour are: 1196 minutes for the bupivacaine group and 1065 minutes for the lignocaine group.

Table II
Duration of the three stages of Labour

	Bupivacaine	Lignocaine
1st stage labour	1177 mins.	1928 mins.
2nd stage labour	19 mins.	37 mins.
3rd stage labour	6 mins.	5 mins.

Latency Period

There was no significant difference between the latency periods for the two groups of patients. (See Table III). The average latency period for the bupivacaine group is 5.56 minutes and that for the lignocaine group is 5.09 minutes.

Table III
Latency period for the two groups of patients.

	Bupivacaine	Lignocaine
1st Injection	6.3 mins.	6.0 mins.
2nd Injection	4.4 mins.	4.8 mins.
3rd Injection	6.0 mins.	4.5 mins.
Average	5.56 mins.	5.09 mins.

Duration of Analgesia

The duration of action of the two anesthetic agents studied are shown in Table IV.

This study shows that bupivacaine 0.25 percent with adrenaline 1 : 400,000 has a longer effect than lignocaine 1.0 percent with adrenaline 1 : 400,000. The difference is statistically significant.

Table IV
Duration of action of bupivacaine and lignocaine in caudal block analgesia.

	Bupivacaine	Lignocaine	Significant Difference
1st Injection	192 mins.	121 mins.	P < .001
2nd Injection	161 mins.	99 mins.	P < .01
3rd Injection	184 mins.	108 mins.	P < .01

Blood Pressure, Pulse Rate and Fetal Heart Rate

Variations of these are shown in Table V. In none of these is there any significant difference between the bupivacaine group and the lignocaine group.

In the first injection, the fall in the systolic and the diastolic blood pressure in both the groups is statistically significant (P < .001).

It is interesting to note that the fall in blood pressure is not statistically significant for the second and the third injections. The fall in the systolic blood pressure for patients receiving the second injection of lignocaine is an exception, (P < .01).

Although there is a constant increase in the fetal heart rate, the increase is statistically not significant. The increase in the fetal heart rate following the third injection in the bupivacaine group is statistically significant (P < .001).

There is no significant variation in the maternal pulse rate.

Discussion

Lignocaine hydrochloride 1% and bupivacaine hydrochloride 0.25% are of comparable potency and toxicity in animal studies (Widman 1964; Henn and Brattsand 1966). Lignocaine hydrochloride (Lidocaine) 1 percent in a dosage of 200 mg. is reported to be a very satisfactory agent for continuous caudal analgesia in obstetrics (Ellis and DeVita 1962). Since its introduction, bupivacaine (LAC 43, marcaine) has stimulated a great deal of excitement because of its long lasting action (Kuah and Yates 1968; Moore et al 1970),

The present study shows that bupivacaine 0.25 per cent with adrenaline 1 : 400,000 consistently has a longer lasting action than lignocaine 1.0 per cent. On the average, the analgesia produced by bupivacaine lasts 75 minutes longer than lignocaine. (71 minutes, 60 minutes and 84 minutes for the 3 injections). This is statistically significant.

Table V
Variations in blood pressure, pulse rate and fetal heart rate.
Blood pressure (BP), Pulse Rate (PR), Fetal Heart Rate (FHR)
 (B.P. - mm Hg. P.R. & F.H.R. - per min.)

Mean difference between measurements taken at injection time and measurements taken post injection.

		Bupivacaine	Significance of difference	Lignocaine	Significance of difference
1st I N J E C T I O N	B.P. (SYST)	14.7 decrease	P < 0.01	14.3 decrease	P < 0.01
	B.P. (DIAST)	8.5 decrease	P < .001	9.0 decrease	P < .001
	P.R.	2.0 increase	Not significant	1.5 decrease	Not significant
	F.H.R.	0.4 increase	Not significant	4.7 increase	Not significant
2nd I N J E C T I O N	B.P. (SYST)	8.8 decrease	Not significant	11.2 decrease	P < .001
	B.P. (DIAST)	3.3 decrease	Not significant	6.0 decrease	Not significant
	P.R.	4.7 decrease	Not significant	2.3 decrease	Not significant
	F.H.R.	3.4 increase	Not significant	1.4 increase	Not significant
3rd I N J E C T I O N	B.P. (SYST)	4.3 decrease	Not significant	4.9 decrease	Not significant
	B.P. (DIAST)	7.8 decrease	Not significant	4.1 decrease	Not significant
	P.R.	2.3 increase	Not significant	2.3 decrease	Not significant
	F.H.R.	6 increase	P < .001	38 increase	Not significant

The other finding of this study is that there is a significant fall in blood pressure (systolic and diastolic) following the initiation of caudal block. This has been observed before, Ellis and DeVita 1962; Kuah and Yates (1968); Dawkins (1969); Moore et al (1971); Kuah (1974). This fall in blood pressure is significant for the bupivacaine as well as the lignocaine group. The fall in blood pressure following the top-up doses (second and third injections) was not significant.

The degree of motor blockade was not studied in this trial. Moore et al 1971 reported that with 0.25 and 0.5 per cent bupivacaine, adequate motor blockade of the perineal musculature but only varying degrees of motor blockade of the muscles of the abdomen and lower extremities was produced.

The dosage of the drugs used in the present trial is very low, viz. lignocaine 170 mgm in 17 mls and bupivacaine 42.5 mgm in 17 mls. The dose

recommended by the manufacturer for bupivacaine 0.25 per cent in caudal block is 37.5 mg to 100 mg (15 ml - 40 ml). Moore et al 1971, using a dosage of 23.8 ± 2.3 mls of 0.25 per cent bupivacaine with adrenaline were able to maintain analgesia for 219.3 ± 73.4 minutes. On the other hand, Ellis and DeVita (1962) used 200 mg - 300 mg of lignocaine 1.0 per cent reported the duration of action to be 30 minutes to 60 minutes.

Peak levels of bupivacaine hydrochloride in the blood was reached in 15 - 30 minutes. The venous whole blood level was 0.45 to 1.01 ug/ml., and the arterial whole blood was 20 per cent to 40 per cent higher following injection of 125 mg or 150 mg in a caudal block (Moore et al 1971). The same workers also showed that blood from the umbilical vein and artery (93 - 315 minutes following injection) contained 0.06 to 0.24 ug/ml of bupivacaine hydrochloride. The umbilical-maternal bupivacaine hydrochloride concentration ratios

(0.2 to 0.4) at delivery were significantly lower than the corresponding ratios (0.5 to 0.7) for lignocaine hydrochloride and mepivacaine hydrochloride reported by Tucker et al 1970. The same workers are of the opinion that this difference may, in part, be due to the difference in the plasma-binding of the agents. The risk of fetal intoxication may be lower following bupivacaine hydrochloride when compared with lignocaine hydrochloride.

Intravenous infusion studies in man showed that the convulsive arterial plasma level of bupivacaine hydrochloride is about 4 ug/ml (approximately equivalent to 2 ug/ml whole blood) or higher (Jorfeldt et al 1968). Hence the peak arterial, venous and umbilical vessels levels reported by Moore et al (1971) are well within the safety level. The present study using 42.5 mg bupivacaine hydrochloride is even lower than that used in that study, viz. 125 mg to 150 mg bupivacaine hydrochloride.

There was no significant difference in the latency period between the two anaesthetic agents used.

Summary

A double-blind technique is used to study bupivacaine 0.25 per cent with 1 : 400,000 adrenaline and lignocaine 1.0 per cent with 1 : 400,000 adrenaline in caudal block analgesia. These concentrations are chosen because they are of comparable toxicity and potency.

Bupivacaine 0.25 per cent has a significantly longer lasting action than lignocaine 1.0 per cent. There was no other significant difference between the two test anaesthetic agents.

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Salbutamol in Premature Labour – a preliminary Report

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ONE OF the most important causes of fetal wastage is prematurity. Attempts at stopping premature labour so that the fetus can reach an age when its chances of surviving are better have only been effective to a limited degree, and the search for better methods continues. Among the drugs that have been used in recent years are intravenous alcohol (Fuchs et al., 1967), Orciprenaline (Baillie et al., 1970), Ritodrine (Wesselius-de Casparis et al., 1971) and Fenoterol (Baillie et al., 1972).

Intravenous alcohol is not often successful when the cervix is dilated more than four centimetres (Fuchs et al. 1967). Orciprenaline shows a rapid tachyphylaxis so that within 30 to 60 minutes of continuous administration further use of the drug is ineffective (Ziliani et al., 1971). Furthermore there are side effects mainly on the cardio-vascular system which limit the use of the drug.

The advent of Salbutamol (Ventolin, Glaxo), a B²-adrenergic stimulant with selective action on B² endings and reports of its use in asthmatics without causing significant cardiovascular side effects prompted the clinical trial of the drug in inhibiting uterine contractions in patients with premature labour.

This paper is a preliminary report outlining our experiences with the first 10 cases of premature labour. The purpose of this part of the study is to look specifically at immediate effectiveness, side-effects, and safety, so as to determine the feasibility of more prolonged and thorough study of its use in the management of this important problem.

Materials and methods

The patients were selected to include only cases in uncomplicated premature labour between 30 and 35 weeks' gestation, selected at random from cases admitted during 1972 into the labour unit of the department of Obstetrics, University Hospital, University of Malaya, Kuala Lumpur. Cases associated with premature rupture of membranes, pre-eclamptic toxæmia, antepartum hæmorrhage or essential hypertension were not included in the series.

Because of difficulty in ascertaining whether premature onset of labour or false labour is present, only cases where regular palpable uterine contractions associated with pain, and with a cervical dilatation of more than 3 cm were accepted for the study. Thus patients were only selected where they were known to be less than 36 weeks pregnant, and had no obstetric complications apart from the premature onset of labour. External tocography was used to monitor cases wherever possible.

Tables I to IV show the distribution of age, parity, and period of gestation at which treatment was started in these patients, and the degree of cervical dilatation at the onset of treatment.

Table I
Age distribution of patients on Salbutamol therapy.

Age in years	No. of cases
15 to 20	2
21 to 25	4
26 to 30	3
31 to 35	1
Total	10

Table II

Parity distribution of patients on Salbutamol therapy.

Para	No. of cases
0	3
1	2
2	3
3	0
4	1
4+	1
Total	10

Table III

Period of gestation at which Salbutamol was administered.

Period of gestation in weeks	No. of cases
32	2
33	1
34	4
35	3
36	0
Total	10

Table IV

Cervical dilatation at onset of therapy.

Cervical dilatation in cm	No. of cases
0 - 3	0
3 - 4	6
4 - 5	3
5 -	1
Total	10

After the preliminary examination, an intravenous drip was set up with 25 mg of Salbutamol in 500 ml of 5% dextrose solution. The drip was started at an initial rate of 10 drops a minute, and stepped up after every 10 minutes by 10 drops per minute till maintenance doses were reached. The drip rate was kept constant when (a) the uterine contractions ceased, (b) a maximum of 40 drops per minute was reached, or (c) the pulse rate reached 140 per minute, whichever end-point was reached earlier. The above regime gave an approximate initial dosage of 8.9 ug per minute and maintenance of 38.9 ug per minute.

The patient was watched, the following being noted: pulse rate, blood pressure, uterine contractions, and side-effects. After uterine contractions had ceased for 4 hours, the infusion was discontinued.

Results

Tables V to VII show the effectiveness of the drug in stopping uterine contractions, the duration of effectiveness after a single administration of the drug by intravenous infusion, and the side-effects encountered.

Table V
Effectiveness of Salbutamol in Stopping uterine contractions.

Contractions	No. of cases
stopped	6
continued	4
Total	10

Table VI
Duration of uterine quiescence after single infusion of Salbutamol. (Ventolin).

Contractions ceased	No. of cases
0 - 12 hrs.	5
12 - 24 hrs.	2
24 hrs. - 6 days	2
over 7 days	1
Total	10

It will be seen (Table V) that in 6 out of 10 cases uterine quiescence was obtained while the patient was on Salbutamol drip. This compares with the results of Fuchs et al. (1967) using alcohol. However, Liggins et al. (1973) using Salbutamol have better results than the present series in so far as 85% of their patients obtained uterine quiescence for over 24 hours. However, cervical dilatation was less than 3 cm in about 65% of their cases. As has been pointed out by them, comparison between series has been difficult as criteria for case selection and judgement of success have been different in the various groups investigated.

In our series, contractions started again within 24 hours in 7 out of 10 cases. The implications of this will be considered later. In the one patient whose cervical dilatation was more than 5 cm, labour continued unabated despite the Salbutamol drip. In one case when definite uterine contractions subsided, labour was arrested for over a week. In 2 cases the uterine contractions ceased for periods of 4 and 6 days respectively.

Side-effects were present in 9 out of the 10 patients. In 4 of these this consisted only of tachycardia upto 120 per minute. This was not considered sufficiently severe to stop the administration of the drug.

In 5 patients the pulse rate rose to over 120 beats per minute. Three of these complained of palpitations, and in these the drip rate had to be slowed down. There were no cases of precordial pains, nor of muscular twitchings, though these latter have been described by Liggins et al. (1973).

Changes in blood pressure consisted of either a transient rise of systolic blood pressure by 10 mm Hg., or what was far more common, a drop of diastolic blood pressure to about 70 mm Hg. One patient had a major drop in blood pressure to 80/40 mm Hg. This was treated by discontinuing the drip and replacing the Salbutamol with a rapid infusion of 5% dextrose solution, a total of 600 ml of fluid having been run in before the blood pressure stabilised at 110/80 mm Hg. On review it was found that the patient had been given pethidine and sparine 2 hours prior to the setting up of the drip, and as all cases who had been put on sedation were not selected for study, this patient was removed from the series and does not show up in the analyses, except in Table VII.

Table VII
Side effects of therapy.

Tachycardia upto 120 per min.	4
" 120 - 140 per min.	5
Palpitations	3
Hypotension	1
Precordial pain	0

Discussion

The test to which the drug was submitted is a severe one as it has been shown that results are poor with all drugs once the cervical dilatation has reached 3 cm (Liggins et al., 1973).

It was felt that though the criteria would necessarily have to be widened in clinical practice, the initial test should be a severe one. It appears from our experience and those of Liggins et al. (1973) that the effectiveness bears comparison with that of intravenous alcohol. Whether it is superior to alcohol requires a carefully controlled trial. The workers previously mentioned suggest that it is superior to alcohol in cases where membranes have been ruptured.

It is also possible that one of the drugs will work where the other will not, and that Salbutamol and Ethanol may be most effective when used as

complementary to each other rather than in competition. This is undergoing study at the present moment.

The relatively short duration of action of the drug used intravenously means that it must be continued to be administered, possibly orally (Dellenbach et al., 1972) after the initial effect of stopping the uterine contractions has been obtained by intravenous infusion. The alternative use of Salbutamol in prematured labour may well be that suggested by Liggins et al. (1972); i.e. the use of continuous infusion to stay the onset of labour for 24 to 48 hours until antepartum glucocorticoid therapy is established for a sufficiently long period to significantly reduce the chances of the fetus developing respiratory distress syndrome.

It will be seen that there is sufficient indication of the effectiveness and utility of Salbutamol to warrant extension of clinical trials along the lines suggested and along the lines already being followed up by other workers. The final outcome of these will establish the definitive place of this drug in the armamentarium of the obstetrician.

Acknowledgement

Our thanks are due to Professor T. A. Sinnathuray for his encouragement, Dr. J. Goulton and Mr. P. F. James of Glaxo Holdings Limited for their unstinting supply of Salbutamol (Ventolin), literature and help, and to the medical and nursing staff of the University Hospital, University of Malaya, for their cooperation.

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Treatment of Urinary Infection with Co-Trimoxazole (Trimethoprim-Sulphamethoxazole)

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CO-TRIMOXAZOLE IS a new anti-infective agent. It is a combination of sulphamethoxazole and trimethoprim (5:1). This combination of drugs exerts a synergistic effect and is bactericidal (Darrell et al, 1968). The antibacterial action is due to blockage of successive steps in biosynthesis of folic acid in bacteria. It possesses wide antibacterial spectrum and attains therapeutic tissue and urine concentration (B.M.J., 1969).

Toxic effects are few and trivial (Gruneberg and Kolbe, 1969; Csonka, 1969).

It has been used effectively in treating septicaemia, bacterial endocarditis, respiratory infection and gonorrhoea. Reeves et al (1969) and Grunneberg et al (1969) reported good clinical results with it in the therapy of urinary infection.

However, no comparative study of the effectiveness of co-trimoxazole has been reported from this country where the pattern and antibiotic sensitivity of the infective organisms may be different and cost of therapy is important. The present study compares the relative effectiveness of co-trimoxazole, ampicillin and sulphadimidine in the treatment of urinary infection.

Methods

Diagnosis of Infection:

The sole criterion of infection was the presence of significant bacteriuria which was defined as a bacterial count exceeding 10^5 bacteria per ml of urine in two consecutive specimens and showing the same bacterial flora on both occasions.

Presence of urinary symptoms or pyuria was considered as supportive evidence.

Bacteriological Techniques:

Urine specimen was collected early in the morning by a clean catch method in the female and in the male midstream urine was used.

Urine was cultured as soon as possible and not exceeding one hour after collection. Organisms were identified by standard techniques. Antibacterial sensitivity testing was performed by the disc diffusion method.

Criterion of Cure:

Eradication of the original organism was considered to be a cure. Urine specimens were examined and cultured on the third day of treatment and one week after completion of treatment.

Other Investigations:

These were urine for microscopy, glucose and protein; erythrocyte sedimentation rate, haemoglobin, total white cell count and differential; blood urea and liver function tests. They were done before and one week after completion of treatment.

Where indicated intravenous pyelogram and other investigations relevant to urinary infection were done.

The Trial

All patients were admitted and treated in hospital. Patients were only excluded in the following conditions; past history of drug hypersensitivity,

blood dyscrasias, hepatic and renal failure. When infective organism was found to be resistant to the drug initially allocated, a random reallocation to one of the other two remaining drugs was done.

Randomisation was achieved by drawing from sealed envelopes containing the name of drug to be used.

The dosage of co-trimoxazole (Bactrim) was two tablets twice daily (total of 320 mgm trimethoprim plus 1600 mg sulphamethoxazole), ampicillin 500 mgm 8 hourly and sulphadimidine 2 gm stat and 1 gm 6 hourly. The duration of therapy was seven days.

Results

Forty patients were admitted to and completed the trial. The groups were reasonably homogenous with respect to the age composition, sex and clinical presentation (Table I). The comparatively smaller number included in two of the three treatment groups was due to higher incidence of resistance of the infecting organisms (Table II) to sulphadimidine and ampicillin (Table III) thereby resulting in reallocation to the co-trimoxazole group.

Among the cases thus allocated, cure rate was 88.8% with co-trimoxazole, 100% with ampicillin and 33.3% with sulphadimidine. The difference observed between co-trimoxazole and sulphadimidine was statistically significant ($p < 0.05$) but not between co-trimoxazole and ampicillin.

No incidence of side-effects was reported during the trial and no significant alteration in haematological, renal and liver functions (Table IV).

Table I
Clinical Features of Patients Admitted to the Trial

	Co-trimoxazole No	Ampicillin No	Sulphadimidine No
No. of patients completing study	27	7	6
Age: 10 - 40 years	10	2	3
40 - 60 years	6	3	2
60 years	11	2	1
Females	26	7	5
Patients with urinary symptoms	13	3	5
Past history of urinary infection	14	2	1
Recognisable predisposing cause	5	2	3

Table II
Comparison of Infecting Organisms in the Three Treatment Group

Organisms	Co-trimoxazole	Ampicillin	Sulphadimidine	Total
E. Coli	7	3	1	11
Coliform	18	3	5	26
Proteus	0	1	0	1
Staph. Pyogenes	1	0	0	1
Pseudomonas	1	0	0	1
Total	27	7	6	40

Table III
Antibiotic Sensitivity of all Infecting Organisms on Initial Isolation

	No. of Organisms Tested	% Sensitivity
Ampicillin	40	57.5
Co-trimoxazole	40	90.5
Sulphadimidine	40	40.0
Nitrofurantoin	37	97.3
Kanamycin	19	68.4
Cephaloridine	15	66.7

Discussion

The overall results show that in the treatment of urinary infection due to susceptible organisms, co-trimoxazole and ampicillin were superior to sulphadimidine. These findings are in agreement with those of Reeves *et al* (1964) and Gruneberg *et al* (1969).

The three cases of failure to respond to co-trimoxazole were due to organisms acquiring resistance during therapy. However Brumfitt *et al* (1972) found no evidence that trimethoprim caused resistance of the organism responsible for the urinary infection.

No toxic effect occurred during the trial. The incidence of toxic effects of co-trimoxazole reported were few and these were rashes (Reeves *et al*, 1969), thrombocytopenia (Hanley, 1969), aplastic anaemia (Allison *et al*, 1969), and poor response to specific haematinic therapy in patients with megaloblastic anaemia (Chanarin *et al*, 1972). Therefore, the use of the drug is contraindicated in megaloblastic anaemia, aplastic anaemia and thrombocytopenic purpura.

Table IV
Haematological and Biochemical Data
(mean values)

	Bacterium			Ampicillin			Sulphadimidine		
	No.	Before	After	No.	Before	After	No.	Before	After
ESR	17	58.7 ± 7.4	69.4 ± 8.3	6	63.2 ± 17.7	65.0 ± 16.7	2	*	*
Haemoglobin	23	11.4 ± 0.84	11.7 ± 0.42	6	10.9 ± 0.8	11.3 ± 1.34	2	12.65	13.3
Total white cells	24	10,189.5 ± 965	8,462.5 ± 474	6	8,566.7 ± 3,909	9,050 ± 2,836.3	2	13450	7550
Blood Urea	20	49.2 ± 7.6	63.2 ± 14.4	5	38 ± 7.7	39.4 ± 5.4		*	*
Bilirubin	18	0.98 ± 0.3	0.53 ± 0.05	5	0.92 ± 0.5	0.8 ± 0.4		*	*
SGPT	16	14.6 ± 7.6	8.75 ± 2.1	5	6.0 ± 1.3	7.8 ± 2.3		*	*
SGOT	17	13.5 ± 2.1	18.9 ± 3.0	5	12.8 ± 1.4	16.2 ± 2.3		*	*

*not done

V
Results of Treatment

	Cured		Failed		Total
	No.	%	No.	%	
Co-trimoxazole	24	88.9	3	11.1	27
Ampicillin	7	100.0	0	0	7
Sulphadimidine	2	33.3	4	66.7	6
Total	33	82.5	7	17.5	40

In view of the high incidence of infecting organisms in urinary infections resistant to sulphadimidine (56%) in this country, the place of sulphonamide as the drug of first choice in treatment of urinary infection (Today's Drugs, B.M.J. 1970) should be reappraised.

Both co-trimoxazole and ampicillin achieved highly acceptable cure rates among susceptible organisms. The advantage of the former apparently lies in this that more organisms are sensitive to it - an important consideration to the practitioner who has limited access to sensitivity testing. Co-trimoxazole is also less expensive per unit course of treatment.

Summary

The therapeutic efficiency of co-trimoxazole used in the treatment of urinary infection was evaluated by comparing it with ampicillin and sulphadimidine.

Forty patients entered the trial. The sole criterion of infection was a bacterial count exceeding 10⁵ bacteria per ml of urine in two consecutive specimens. Allocation to treatment group was at random. The duration of chemotherapy was seven days.

The cure rate effected by co-trimoxazole and ampicillin was comparable and superior to sulphadimidine. No toxic effects were reported in the trial.

Acknowledgement

We are grateful to Dr. H. O. Wong, Department of Medicine, University Hospital, for allowing us to study the patients under her care. We also wish to thank Messrs F. Hoffman-La Roche Ltd. for their supply of co-trimoxazole (Bactrim) used in this study and Miss Y. K. Pavee for typing the manuscript.

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Correspondence

30th December, 1973

The Editor,
The Medical Journal of Malaysia,
Kuala Lumpur.

Dear Sir,

I was interested to read the report of an extraordinary case of "Rubber Cast of Stomach produced by Latex Ingestion" by M. Yusof Said and Goh Tin Kay (1973). Such a cast formed in the stomach of a living subject provides a rare opportunity for studying the gross gastric morphology and would be of considerable interest to anatomists, surgeons, gastro-enterologists and radiologists.

It is perhaps worthwhile noting that a similar case was presented by Dr. Yeoh Bok Choon, then the State Surgeon of Johore at a clinico-pathological meeting held at the Johore Bahru General Hospital in 1957, 1958 or 1959. The patient was a young female rubber tapper. She was reported, if I remember correctly, as being mentally normal but she took sips of latex whenever she felt thirsty. She was successfully operated by Dr. Yeoh who delivered the rubber cast through a gastrostomy incision. The specimen was shown at the meeting.

The clinico-pathological meetings held at the J.B. General Hospital in those more leisurely years were popular with Singapore doctors as they provided an opportunity to meet the Johore colleagues in discussion and to enjoy their lavish hospitality after the meetings.

Yours sincerely,

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Book Reviews

FOOD COMPOSITION TABLE FOR USE IN EAST ASIA. Compiled by FAO and U.S. Dept. Hlth. Educ. Welfare. Dec. 1972. 334pp..

This compilation, dedicated to the Memory of Dr. K.K.P.N. Rao, Chief of Food Consumption and Planning Branch, Nutrition Division of FAO, is in two parts and follows the pattern of similar tables for Latin America and Africa published earlier.

This regional food composition table is the most comprehensive and up-to-date Asian food composition table yet published. No less than 1629 items have been included and Part I includes the data of proximate composition, mineral and vitamin contents while Part II deals with amino acids, fatty acids, other B-vitamins and trace elements.

It is noted that many indigenous foods, sometimes not wisely used, are rich not only in certain essential nutrients, but also practical and economical for menu planning consistent with local eating habits. It is recommended that such foods should be advocated for greater daily use.

AN INTRODUCTION TO HUMAN PHYSIOLOGY by J. H. Green. Oxford Univ. Press Lond. 3rd Edn. 1972 p.p. 232 Paperback \$2.20 net.

This book has been specially written for the medical student and provides an up-to-date introduction to human physiology. In the preparation of this new edition the present move towards more integrated teaching in many medical schools has been kept in mind. Much new material has been incorporated including a chapter on the dietary requirements of water and mineral salts, fluid compartments and fluid replacement. An appendix gives details of the S.I. Unit system and includes conversion tables.

The original objective of integrating the practical class experiments with the theory has been preserved and the subject matter which is presented in a clear and concise manner makes the publication a very suitable text book for medical, dental and physiotherapy students.

SYMPOSIUM PREVENTIVE MEDICINE. Edited by A. T. Proudfoot. Roy. Coll. Physicians of Edin. Publ. No. 43. p.p. 164 \$2.20.

This is a compilation of the fourteen papers that were presented at a Symposium on Preventive Medicine held on 30th Nov. and 1st Dec. 1972 in the Hall of the Royal College of Physicians of Edinburgh. These papers are of a very high order and cover a wide range of subjects such as Population Control in the 1970's, Preventive Medicine in Developing Countries, Presentday Role of Immunisation, Aspects of Preventive Psychiatry, the Future of Preventive Medicine etc. dealt with by eminent authorities in their fields.

It makes stimulating reading and is recommended to all health workers and general medical practitioners.

MEDICAL JURISPRUDENCE AND TOXICOLOGY. Dr. Rajinder S. Grewal, Scientific Book Agency, 22, Raja Woodmunt Street, Calcutta-1, p.p. 383 Rs. 20.

THIS BOOK is intended as a guide for medical students and doctors and also as a simplified, easy-reference manual for the legal profession. The author has had considerable experience both as a medico-legalist and teacher in forensic medicine in this part of the world. This book is the culmination of his extensive experience.

The contents are no different from that in standard works in Forensic Medicine and includes a section on Toxicology. Unfortunately, topics of current interest such as "The moment of death", "Alcoholic Intoxication and driving" and "Tissue Transplantation", are not discussed. Another topic of great practical interest "The cooling of the dead body" could have been discussed in greater detail especially with relevance to the tropics.

The author states in his preface that he has attempted to simplify the language in his book so that the contents may be easily understood by both doctors as well as members of the legal profession. Accordingly, attempts have been made to give examples whenever possible. These examples would have been more interesting and informative, if actual cases within the author's experience were cited rather than using hypothetical cases as in his book. Further, the language used is at times somewhat tedious and a little difficult to follow. There are also one or two errors of fact (e.g. "each gene has a corresponding antigen" in para 2 page 191

BOOK REVIEWS

and "Woman who menstruates regularly irrespective of age is younger than one who has passed the age of menopause" in para 1 page 42). The sections on "Poisoning", "Gunshot wounds", "Seminal and Blood Stains" are reasonably well written, but ideas on treatment of barbiturate poisoning appear to be outdated. The photographs used as illustrations could have been clearer.

The book also does not include a bibliography. On the other hand, the author has based much of his work on his personal experience, so that this may not be necessary in a volume of this type.

This book should serve as a little handbook mainly for quick reference for medical students and busy lawyers.

J. Eravally



OBITUARY NOTICE

Professor J. RALPH AUDY

1914 - 1974

The report of the death of Professor J. Ralph Audy in San Francisco on March 1974 brought sorrow to his colleagues and friends in Malaysia, including many who are members of the Malaysian Medical Association. At the time of his death Professor Audy was Director of the George Williams Hooper Foundation and Chairman of the Department of International Health in the School of Medicine of the University of California, San Francisco. He was also Director of the University of California International Center for Medical Research (UC ICMR), a programme that has supported more than 70 scientists over the years since 1960 in collaborative research at the Institute for Medical Research in Kuala Lumpur, and in the Faculties of Medicine of the University of Malaya and University of Singapore.

Professor Audy was born on December 24th, 1914 in Lancashire, England and spent nine years of his boyhood in Poona, India. He received his M.B.B.S. degree in 1939 from Guy's Hospital Medical School, London, and his Ph.D. and M.D. degrees in 1951 and 1971 respectively from the University of London. In the later stages of World War II while in the Royal Army Medical Corps he served as head of the Scrub Typhus Research Laboratory at Imphal, on the Indo-Burma border. Following the war, from 1947 to 1950 he headed the British Colonial Office Scrub Typhus Research Unit and from 1951 to 1959 the Division of Medical Zoology and Virus Research in the Institute for Medical Research, Kuala Lumpur. With his wife Kay and daughter Helen (whose birthplace was Kuala Lumpur) Professor Audy moved to San Francisco in 1959 to take up his new faculty appointment in the University of California. Thereafter he retained strong ties with those engaged in medical research and education in Malaysia, especially through his successful efforts to create and develop the UC ICMR programme.

Professor Audy's early research work in the epidemiology and medical ecology of scrub typhus led him also into pioneering studies in a new discipline, now known as medical geography. His contributions to the science of parasitology, and particularly to medical acarology, were also immense. His interests in medical ecology, medical geography, and parasitology were to continue throughout his career and to lead him, in his later years, into highly original exploration and synthesis in the emerging field of human ecology. Throughout his research years Professor Audy remained a profound humanist and an exciting and concerned medical educator. During his career he held many distinguished appointments and received many honours, including in 1959 the Chalmers Memorial Medal of the Royal Society of Tropical Medicine and Hygiene. He felt deeply the honour afforded him in 1971 by the unveiling of a commemorative plaque at the Institute for Medical Research, in appreciation of his years of service and support of the Institute and its programmes. His visit to Malaysia on that happy occasion was to be his last.

Professor Audy is no longer with us, but the power of his imagination and the stimulus of his scientific and philosophical thought will long continue as a beneficent influence on those who follow him — including so many of us here in Malaysia.

F.L.D.