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Editorial

The Human Environment – Are We Committing Suicide?

by Paul C. Y. Chen

IN THE 4th century BC, weather, climate, water supply, eating habits and the mode of life, were taken to be essential considerations by the Hippocratic school of healers for "whoever wishes to investigate medicine properly". Today, these are supplemented by a multiplicity of other environmental factors including the gross pollution of the atmosphere by motor and industrial emissions and by nuclear radiations; pollution of the land by industrial wastes and pesticides; pollution of streams, lakes and seas by sewage, industrial effluent and oil; and the destruction of life support systems such as our forests.

Air Pollution

The major sources of air pollution in Malaysia are emissions of carbon monoxide and hydrocarbons resulting from the incomplete combustion of fuel by the internal combustion engine. The number of vehicles registered in Peninsular Malaysia has increased by 726% from 153,377 vehicles in 1959 to 1,267,119 vehicles in 1975 (Fig. 1) indicating the extent of the problem that is being faced. The day should not be long before air pollution becomes a major health hazard as in the case of the London smog disaster of 1952 when some 4,000 deaths were directly attributed to air pollution.

Smog is so severe in the Los Angeles area that in 1969, a group of academicians advised "anyone who does not have compelling reasons to remain to move out of smoggy portions of Los Angeles, San Bernardino and Riverside counties to avoid chronic respiratory diseases like bronchitis and emphysema" (Ehrlich *et al.*, 1973).

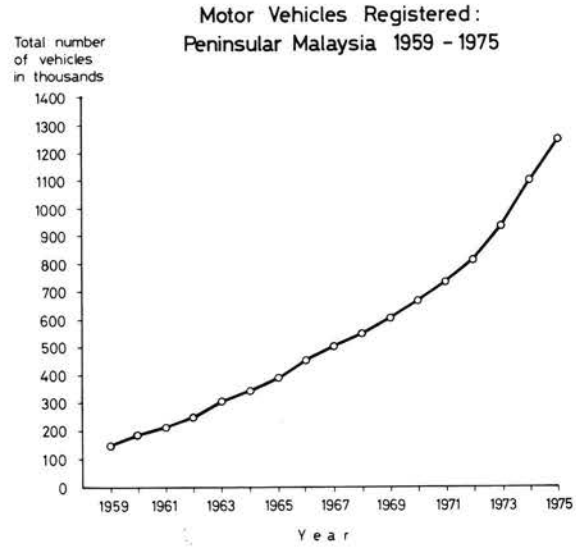

Fig. 1. Number of motor vehicles registered in Peninsular Malaysia, 1959 to 1975, showing that there is a 726% increase during the 17 year period in question.

Water Pollution

In the 1976-77 Economic Report (Ministry of Finance, Malaysia 1976), the Government of Malaysia has noted that pollution of inland waters especially by industrial wastes is an increasing problem. The wastes from the oil palm industry alone is estimated to equal the wastes from a community of 11.8 million people (Sekaran, 1973). On an average each oil palm mill discharges about 2½ tonnes of pollutants

into inland waters each day. Preliminary studies by Government Departments suggest that at least 11 river basins are at present facing water pollution problems of a serious magnitude. Within these river basins 6 rivers are grossly polluted, 8 others are moderately polluted and between 12 to 15 other rivers are facing potential water pollution problems.

A preliminary study conducted by the Ministry of Health on water in Sungai Sekudai in Johore (one of 6 grossly polluted rivers) in 1975 shows that the river has been highly polluted and that this has been due mainly to the discharging of untreated wastes by 30 factories which are responsible for about 72% of the total wastes in the river. The fact that the intake of water supplies of several towns, including Kluang in Johore and Kemaman in Trengganu, are downstream from where factories discharge their effluents poses a serious hazard. It also increases the cost of water purification. Perhaps industries should be required to take their water supplies downstream from where they discharge their effluents.

Water Shortage

Intertwined with the need for fresh water supplies is another resource: forests. Since ancient times man has recognized that deforestation results in heavy soil erosion, floods, and local changes in the climate. The annual floods that have plagued northern China since ancient times are due to deforestation during the early dynasties. Particularly damaging is the practice of "clear cutting" that is the whole sale removal of large tracts of mature forest. The inevitable erosion, flooding and drought follow, accompanied by severe water pollution. It would seem that large parts of Malaysia are presently subjected to alternate periods of flooding and drought, interspersed with periods when water supplies are heavily clouded with colloids brought on by soil erosion.

If we are to preserve the health of our peoples, as well as the heritage of our children, we must surely reverse this trend to commit environmental suicide.

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A study on the prevalence of Soil transmitted helminths among lettuce leaves sold in local markets in Penang, Malaysia

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Introduction

A SURVEY was carried out to determine whether lettuce leaves locally grown and sold in the local markets if eaten raw (as it is usually) plays any role in the transmission of soil transmitted helminths. Many of the local vegetable farmers in Malaysia, and particularly in Penang, use night soil for manuring their plants. Human faeces obtained from village latrines and other sources mixed in urine and water are usually poured on to the plants which helps in their robust growth. The faecal material obviously contain undeveloped helminth eggs such as *Ascaris lumbricoides, Trichuris trichura* and hookworm. When left for some period, it is possible that these eggs will continue to mature and become infective stages and eventually when the lettuce leaves are eaten raw, especially without much of washing, infection of the person with one of these helminths may occur. It is in this context a study was undertaken to see how many of the lettuce leaves sold in the local markets contain eggs or larval stages of some of the common soil transmitted helminths prevalent in Malaysia.

Methods and Materials

Lettuces were bought in various local markets in Penang and the location of growth was traced through the sellers. The lettuces were brought to the laboratory and immediately placed in a large beaker and the leaves carefully separated. At any one time 1 kati* of leaves was used. The separated leaves were then chopped into small pieces and washed in 500 c.c. of 0.95% saline. After washing, the leaves were transferred to a filter funnel. A small beaker was placed under the funnel to collect the running saline solution. This saline solution is added to the saline solution in the beaker and left for about 20 minutes for sedimentation to take place. The top layer of saline solution was discarded and the remaining saline solution with the suspension was centrifuged at 2,000 rpm. for 5 minutes. The supernatant is discarded and the residue carefully collected. The residue was diluted with 25 ml saline 0.95% in a test tube. Examination for eggs of helminths was done by putting a drop of the diluted residue on a clean slide and covered with 22 × 22 mm coverslip.

The egg count was graded as very light (†), light (††), moderate (†††) and heavy (††††).

† = 1 – 2 eggs/slide
†† = 2 – 5 eggs/slide
††† = 5 – 10 eggs/slide
†††† = >10 eggs/slide

Results

The results are shown below in Table 1.

The results show that lettuce collected in every market carried eggs of *Ascaris lumbricoides* and lettuce collected in markets of Glugor, Jelutong, Sungai Dua and Bayan Lepas had hookworms, while Jelutong, Glugor, Penang Road, Sungai Nibong, Bayan Lepas and Teluk Kumbar had *Trichuris trichura*. There were also other eggs especially that of *Toxocara* and some unidentified larvae noted.

Table 1

Showing the market location in Penang where the lettuce was bought, the farming area where it was grown and the intensity of helminth infection on examination.

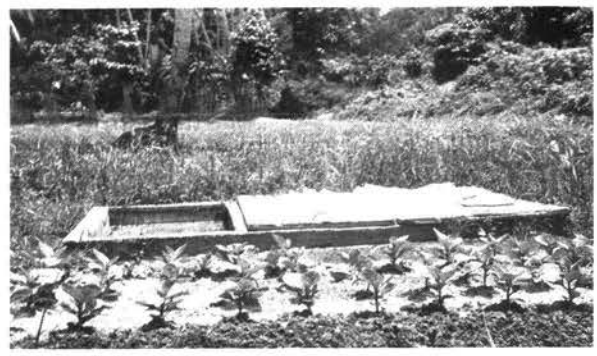
Markets in Penang	Locality grown in Penang	*Ascaris lumbricoides*	Hook worm	*Trichuris trichura*	Others
Jelutong	Batu Uban	††††	†	††	eggs*
Pulau Tikus	¾	†††			larva
Glugor	Batu Uban	††	††	††	larva
Penang Road	¾	†††		†	larva
Tanjong Tokong	Tanjong Tokong	†††			
Tanjong Bunga	Tanjong Tokong	††			
Teluk Bahang	Tanjong Tokong	††			
Sungei Dua	Batu Uban	†	††	††	larva
Sungei Nibong	Sungai Nibong	††††			
Bayan Lepas	Sungai Nibong	†	††	††	
Teluk Kumbar	¾	†††		††	larva
Balik Pulau	Balik Pulau	††			

* eggs of *Toxocara*
¾ not sure where it was grown

Discussion

In Malaysia, the infection rate with *Ascaris lumbricoides, Trichuris trichura* and Hookworm is still extremely high, particularly among children living in farms where night soil is used for growing vegetables (Lie *et al,* 1971). In Malaysia it has been a practice to use human excreta and other animal excreta as manure for the healthy growth of vegetable plants. The farmers, mostly who come from the low economic group, cannot normally afford expensive manures or fertilisers. Thus, in place of such commercially obtainable fertilizers they use human excreta as a manure. There is no doubt that human excreta form an excellent fertilizer culminating in the production of healthy and big size vegetables. The use of human excreta obviously helps in the dissemination of soil transmitted helminths as indicated from the results of the study and it must be clearly understood that this forms one of the many ways by which soil transmitted helminths are acquired by the local populace. Heavy infection with *Ascaris lumbricoides* in lettuce leaves is certainly due to the adhesive nature of the *Ascaris* eggs which are very difficult to be washed off.

Small man-made pool to store water for the plants in the lettuce growing areas.



Specially built tanks to store the night soil temporarily before being used as manure.

Spray can used in spraying the faecal solution on plants.

A farmer in the act of spraying faecal solution on to the plants.

During our investigations we also found many larvae of various species of nematodes. Some of these larvae were of free living nematodes, but yet some we feel were of parasitic nature. Heyneman, D. & Lim Boo Liat (1967) has shown that they were able to obtain infective larvae of *Angiostrongylus cantonensis* from locally grown lettuce and other leafy vegetables. They noted snails and slugs which crawl on these leaves tend to leave behind mucus containing infective larvae of *A. cantonensis*. Again, it is possible that some of the larvae we observed were those of hookworm. Hookworm eggs hatch quite rapidly under tropical conditions and hence they may remain viable in droplets of water on the leaves and is possible, of course, that people may become infected with hookworm through oral penetration of the larvae.

In the present study it was found that 100% of the lettuce samples carried *Ascaris lumbricoides* eggs, 50% carried *Trichuris trichura* eggs and 33.3% hookworm eggs. On a few occasions we also found eggs of *Toxocara canis* on the leaves. These eggs were not infective but every possibility exist that at some stage when the leaves are left too long, the eggs may mature. Dogs in Malaysia are commonly infected with *Toxocara canis*, the causative agent for visceral larval migrans, an important zoonotic infection of man. Although todate only one case of visceral migran due to *Toxocara canis* has been reported from Malaysia (Hong Fang Lee & Danaraj, 1972) there is no doubt that the infection with this parasite is more prevalent than is thought of.

It is clear from our studies that a large number of lettuce leaves grown locally and manured by night soil contain eggs of soil transmitted helminths. People in Malaysia do eat a lot of raw vegetables and they prefer to eat them fresh rather than frozen or stored. In a multi-racial country like Malaysia where the food habits, social habits, cultural habits and agricultural habits vary so much, the transmission of soil transmitted helminths through leafy vegetables obviously is one way of dissemination of the parasite and for its high prevalence in the community particularly in the rural areas. This preliminary study serves us as an indicator to the presence of eggs and larvae in leafy vegetables and also to the extent contamination of vegetables had occurred. Further studies need to be undertaken to seek possibilities of stopping the contamination of vegetables via public health education and the usage of proper agricultural methods. It is possible that the faeces used as manure can be treated before using and also the leafy vegetables washed in chemical solutions which kills the eggs.

Acknowledgement

The Authors wish to express their gratitude to Dr. T.P. Paran and Dr. S.J. Chapman for reading this manuscript. Thanks to Encik Ibrahim Mohamad for his technical assistance. Thanks is also extended to the Education Technology Unit of Universiti Sains Malaysia for producing the pictures, and the School of Biological Sciences, Universiti Sains Malaysia for all the assistance provided.

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Prevalence of protein-calorie malnutrition in a group of Malaysian School Children

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INTRODUCTION

THE EVALUATION OF nutritional status in childhood is of major public health importance in developing countries. However very little is known regarding the prevalence of malnutrition in school children in Malaysia. The purpose of this study is to evaluate the prevalence of malnutrition among primary school children in an urban community in Malaysia, using the common anthropometric indicators of weight and height.

MATERIAL AND METHODS

From February to April 1972, five primary schools (two Malay medium, one Chinese medium, one Tamil medium and one English medium school) in Petaling Jaya and Kuala Lumpur were surveyed. Altogether 2,340 children, aged 6 to 9.9 years, were examined.

The dates of birth of the children were obtained from birth certificates. The household income and occupations of the parents and the number of living siblings were obtained by interviewing parents or from returns of questionnaires and the school registers. Weight, height, left triceps skin-fold, left arm circumference and head circumference were all measured. However, only the results of weights and heights will be presented in this paper.

In general, the methods of measurements used were those suggested by Jelliffe (1966). Children were weighed on an Avery beam balance accurate to an ounce. Each child was lightly clad in a standard thin cotton school uniform. Measurements were read to the last complete ounce. The height was measured by means of the Microtoise. Each child, without shoes, was positioned in the standard manner (Jelliffe 1966) below the Microtoise. The head piece was then brought to rest on top of the head and the reading taken direct at the visor hairline and to the last complete 0.1 cm.

The most commonly used method of assessment of protein-calorie malnutrition is based on deficit in weight for age. The Wellcome Trust Working Party (1970) classified those children who had no oedema and were between 60 – 80 per cent of the expected weight for age (which was taken as the 50th percentile of the Boston standards) as underweight. Those children who were less than 60% were classified as marasmic. Stunting indicates that undernutrition has been present over a long period while wasting indicates current undernutrition. However, since a low weight for age does not distinguish between these two states, other measurements must be utilized.

Waterlow (1972 & 1974), classified children according to the severity of stunting and wasting in each case. He distinguishes 3 grades of deficit in height for age (stunting): grade 1 = 95 – 90%; grade 2 = 90 – 85%; and grade 3 = less than 85% of standard, (the standard being the Boston 50th percentile) and distinguishes 3 grades of deficit in weight for height (wasting): grade 1 = 90 – 80%; grade 2 = 80 – 70%; and grade 3 = less than 70% of standard (Boston 50th percentile).

In this study, in order to detect a significant degree of malnutrition in the school children, the

cut off point in the case of weight for age was taken as 70% while that of height for age as 90% and weight for height as 80%. Classifying these children according to the various degrees of malnutrition was performed with the aid of a computer.

RESULTS

The frequency distribution of children according to ethnic group, income and sex is shown in Table I.

a) Income

Of the three ethnic groups, the Indian were the poorest, the Malays were better off while the Chinese had the highest income. 75% of the Indians, 68% of the Malays and 14% of the Chinese came from families with a total household income of less than M$200/- per month; while 27% of the Indians, 7% of the Malays and 2% of the Chinese came from families with total household income of less than M$100/- per month.

For purposes of comparison the children were divided into two income groups, namely, those with monthly household incomes of M$500 and above and those with less than M$500 per month.

b) Sibling size

71% of the Indian children, 62% of the Malay and 46% of the Chinese children had 4 or more living siblings. These differences are statistically significant.

c) Weight for age, height for age and weight for height

Fig. I shows that, on the whole, the children had more deficit in weight for age and height for age than in weight for height, the percentages being 27%, 25% and 9% respectively. However the Indians had the greatest deficit in weight for age (41%) and weight for height (16%), while the Malays had the greatest deficit in height for age (38%). The Chinese on the other hand had the least deficit in weight for age (14%) and height for age (13%) while the rates for deficit in weight for height was essentially the same for the Malays and the Chinese. The differences in weight for age, height for age and weight for height among the three ethnic groups are statistically significant.

Fig. 2 shows that the lower income children had significantly higher rates of deficit in weight for age, height for age and weight for height compared with the higher income children. Similar findings were seen in those children with larger family size compared with those of smaller family size. Table II shows similar effects of income and family size in respect of deficit in weight for age and height for age within each ethnic group.

DISCUSSION

A quarter of the school children had a significant degree of deficit in weight for age (underweight) and deficit in height for age (stunting) while only 9% had a significant degree of deficit in weight for height (wasting). This indicates that the majority of these children were nutritional dwarfs who had suffered from chronic malnutrition during the preschool period but have recovered from the malnutrition. This finding is supported by previous findings that malnutrition is common among the preschool children in Malaysia (Chong 1972 & Chen 1975).

There are many causes of malnutrition during the preschool period, among which are low income, frequent pregnancies, lack of knowledge of nutritive value of local foods and lack of knowledge of the importance of breast feeding and of a transitional weaning diet for toddlers resulting in a toddler diet that is deficient in quantity and quality. Furthermore poor environmental sanitation results in worm

Table I

Frequency Distribution of School Children by Ethnic Group, Income and Sex

Ethnic Group	Income (M$)						Total
	Less than $500			$500 and above			
	Male	Female	Total	Male	Female	Total	
Malay	303	386	689	41	31	72	761
Chinese	306	310	616	221	183	404	1020
Indian	218	289	507	22	30	52	559
Total	827	985	1812	284	244	528	2340

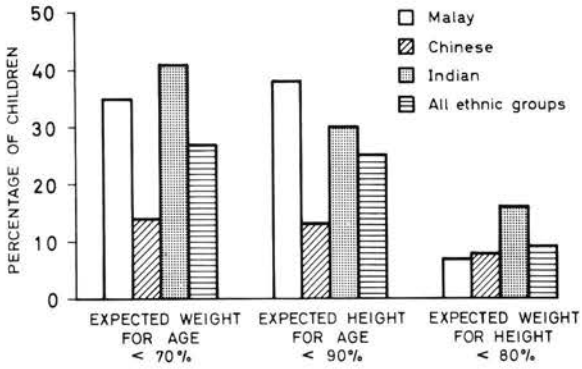

Fig. I
Bar chart showing the distribution in percentage of the school children, according to ethnic groups and deficit in weight for age, height for age and weight for height.

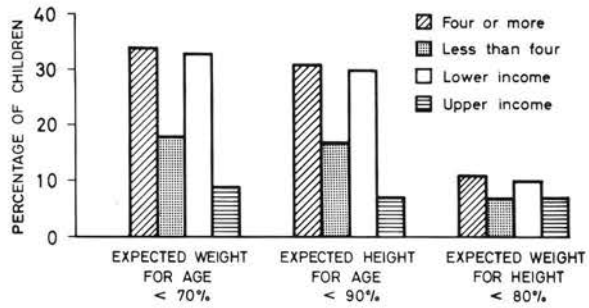

Fig. 2
Bar chart showing the distribution in percentage of the school children according to income, sibling size and deficit in weight for age, height for age and weight for height.

infestation and frequent infections which further compound the malnutrition (Chen 1974).

Unlike the Chinese and the Malays, 16% of the Indians had a significant degree of wasting i.e. they were still suffering from acute on chronic malnutrition. This is probably due to the fact that the Indians were not only the poorest of the three ethnic groups but also had larger families. The poor families had poor nutrition, bad living conditions,

Table II

Frequency distribution of school children by ethnic group, income, number of living siblings, expected weight for age and expected height for age

Ethnic group	Income and sibling		Expected weight for age (% of standard) Less than 70			Expected height for age (% of standard) Less than 90		
			Number	Percent	"p"	Number	Percent	"p"
Malay	Income	Lower	252	37		281	41	
		Upper	11	15	<.001	8	11	<.001
	Sibling	Less than 4	85	29		95	33	
		4 and above	178	38	.02<P<.05	194	41	.02<P<.05
Chinese	Income	Lower	112	18		100	16	
		Upper	32	8	<.001	29	7	<.001
	Sibling	Less than 4	51	9		50	9	
		4 and above	93	20	<.001	79	17	<.001
Indian	Income	Lower	226	45		170	34	
		Upper	2	4	<.001	0	0	<.001
	Sibling	Less than 4	42	26		26	16	
		4 and above	186	32	<.001	144	36	<.001
All	Income	Lower	590	33		551	30	
		Upper	45	9	<.001	37	7	<.001
	Sibling	Less than 4	178	18		171	17	
		4 and above	457	34	<.001	417	31	<.001

poor hygiene and health care and suffered from poor health. Chen (1972), in a survey of school children in three of the schools included in this study, found that the Indian children suffered from more ill health than the Malays while the Chinese were the healthiest of the three.

What action should be taken at the community level? Since most of the underweight children were nutritional dwarfs action should be taken to improve the nutritional status of preschool children. This can be achieved by improving the general economic level of the poor, raising the general educational level of the people, educating the public on infant and toddler feeding, recognizing the importance of family planning, immunisation and hygiene and providing better environmental sanitation to the people.

However for those children who are wasted, in addition to the community actions mentioned above, school meals should be provided to supplement their poor diet at home and a school health service should be provided.

SUMMARY

The weights and heights of 2,340 Malaysian primary school children aged 6 – 9.9 years, belonging to various ethnic groups in Petaling Jaya and Kuala Lumpur, Malaysia, were measured.

27% of the children showed significant deficit in weight for age (underweight) and 25% in height for age (stunting) while only 9% showed significant deficit in weight for height (wasting). This indicates that most of these children were nutritional dwarfs who had suffered from protein-calorie malnutrition during the preschool age period. The prevalence of a significant degree of underweight was highest in the Indians (41%) and lowest in the Chinese (14%) while the prevalence rate for the Malays was 35%. The Malays however had the highest prevalence of stunting when compared with the Indians and the Chinese, this being 38%, 30% and 13% respectively. 16% of the Indians had a significant degree of wasting when compared with the Malays (7%) and the Chinese (8%). This indicates that a higher proportion of the Indian children were still suffering from acute on chronic malnutrition compared with the Malays and the Chinese. This is probably due to the fact that the Indians were the poorest among the three ethnic groups. Further the Indians came from larger families and suffered from more ill health.

Since most of the underweight children were nutritional dwarfs, community action should be directed predominantly at preschool children. However efforts should, in addition, be directed at improving the nutritional status of those school children who are currently wasted.

ACKNOWLEDGEMENT

I would like to thank the Director of Education, Selangor Education Department for allowing me to examine the children in the schools, Professor M.J. Robinson, Head, Department of Paediatrics, for advice, the staff of the schools for their co-operation, the Department of Medical Illustration, and Mrs. L.L. Mah, Miss M.M. Choong and Mr. K.P. Tan for technical assistance.

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Nutritional Status in a rural estate community

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SYNOPSIS

A survey was carried out to determine the status of nutrition of 518 people of all ages (i.e. 46.6% of the total population) in an Indian estate community in Selangor. The majority of the adults were rubber tappers with a per-capita income of $53/- a month with an average of 5 children per family. Modern facilities such as piped water, pourflush latrines and electricity were provided for these people.

The survey showed only 1 child out of the 41 pre-school children examined had her weight below the 60% Harvard Standard and 20% had their weights-for-age below the 70% Harvard Standard, i.e. significantly malnourished. 13.9% of the males and 11% of the females of the school going age group were significantly malnourished having weights-for-age below the 60% Iowa Standard while 44.5% of males and 20.2% of females suffered an arbitrary 3rd level underweight of between 61 – 70%. The prevalence of anaemia was high among the pre-school children (47.4%), school children (47.2%) and the adult females (68.6%).

Hookworm, roundworm and whipworm infestations were common in all cases of anaemia. 79% of the mothers questioned breast-fed their infants for varying lengths of time. 40.3% of the mothers started solids for their children only at the age of 6 – 11 months while 35.6% started at 1 year. The acceptance of family planning service by this community was poor. Clinical examination for malnutrition showed that xeroderma, follicular hyperkeratosis, xerosis conjunctivae and angular stomatitis were common findings, indicating the possibility of deficiencies of vitamin A and the B group of vitamins. Poor oral hygiene and dental caries were found particularly among the school children and adults. 35% of the pre-school children and 27% of the school children showed low and "at risk" levels of vitamin A. 28.7% of school children and 26.6% of adult females had low levels of serum thiamin.

It is evident from this survey that education of health and nutrition as well as encouragement for the people to accept family planning are necessary to improve the health status of this community.

INTRODUCTION

A survey aimed at studying the status of nutrition in an Indian estate community was carried out by the Division of Rural Health Research of the Institute for Medical Research during the period December 1975 – June 1976. The estate in Selangor had a population of 1,111 people consisting of 508 males and 534 females. 93.8% were Indians, 5.7% Chinese and the rest were Malays. 60.2% of the population were rubber tappers with a per-capita income of $32/- per month. Manual workers, clerical and managerial staff constituted the rest of the working classes. 15.5% of the people were under the age of 7 years. 34.0% between 7 to 18 years and the remaining 50.5% were above 18 years. A total of 518 people (46.6% of the total population) were examined.

MATERIALS AND METHODS

Anthropometry

Weight measurements were taken on pre-school children (0 – 5 years) of both sexes, and children (7+ to 18 years) of both sexes. The children were

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grouped in these two age groups for the convenience of comparing the findings with accepted standards to classify malnutrition. All weight measurements were made on the Physician's Scale (Detecto Medic) based on the lever system.

Clinical Examination

An abbreviated clinical examination was done on 518 persons to look for obvious signs of protein-energy-malnutrition and vitamin deficiencies. The method used were in accordance with those described by Jelliffe (1966). The examination was done on 37.7% of the pre-school children (0 – 7 years), 66.4% of the school-going-age-group children (7+ to 18 years) and 36% of adult males and females (18 years and above) in the estate. School-going-age-group included those who were attending school as well as those not attending. Information was obtained from mothers regarding the current feeding habits of their infants. A brief history of the usual food consumed as well as the frequency of intake was taken from the adults during the clinical examination.

Vitamin A and Thiamin Status

Blood for determination of serum Vitamin A levels and thiamin status was collected from 33.8% of the pre-school children, 36.8% of the children of school going age, 55.8% of adult males and 55.1% of adult females, out of the total number of 518 people who were clinically examined. Vitamin A levels were determined by the microfluorometric procedure of Garry *et al.* (1970) using a silicic acid column to remove contaminating fluoroscence. Transketolase activity was done according to the method of Schouten *et al.* (1964).

Haematology

The haemoglobin level was estimated on venous blood using the cyanmethaemoglobin method on 87.6% of the pre-school children, 98.4% of the children of the school going age group, 90.6% of adult males, and 90.5% of adult females, out of the total of 518 people examined clinically. Peripheral blood films were stained with Leishman's stain.

Parasitology

Specimens of stools were collected from 81.5% of pre-school children, 66.9% of children of school-going-age-group, 84.8% of adult males and 68.9% of adult females out of the total of 518 people examined clinically. The stools were examined for intestinal helminths by the direct smear method followed by the formal ether concentration technique.

RESULTS AND DISCUSSION

Anthropometry

Pre-school-children – Anthropometric assessment on the weights of 41 pre-school children which included the infants (0 – 12 months) as well as the toddlers up to the age of 60 months of both sexes, showed that only one child (2.5%) had her weight for age below the 60% Harvard Standard, indicative of 4th level under-weight as proposed by Jelliffe (1966). The child, a 16 month old female did not show any clinical evidence of protein-energy-malnutrition (PEM) except for her low weight for age, and thus could not be classified as clinical marasmus, marasmic kwashiorkor or even kwashiorkor although it may be termed as "marasmus" according to the Wellcome Trust Working Party Classification. 8 of them (20%) had weights below the 70% Harvard Standard or 3rd degree under-weight, which is the same as the findings in Kuala Trengganu, but higher than the Kuala Langat findings. These children were comparatively better off than those in Ulu Trengganu (Chong and Lim 1975). Table 1 shows the prevalence of significant malnutrition in the four areas.

Table 1

Prevalence of significant malnutrition by achievement of weight for age in four areas

	No. of Children	Percentage of children classified as "significantly malnourished" <70% of Harvard Standard
Kuala Langat	475	10
Kuala Trengganu	278	20
Ulu Trengganu	209	32
The Study Area	41	20

It should be noted that the population sampled in the other areas were much larger. 15 children (36.6%) had weight-for-age within the 71 – 80% Standard or suffered 2nd level under weight while the remaining 18 children (43.9%) achieved satisfactory weight-for-age of more than 80% Standard. The Harvard Standard or "Standard" used here for all comparisons was based on the 50th percentile of the Harvard or Boston distribution plotted for the tables given by Nelson *et al.* (1969), or directly from the table by W.H.O. (1972).

School children – Of the 137 males and 109 females between the ages of 7 – 18 years, 13.9% and 11% of them respectively, had body weights less than 60% of the Iowa Standard. The Iowa Standard was derived by Nelson *et al.* (1969) from the 50th percentile of a distribution of weights-for-age on a study on Iowa children by the Iowa Child Welfare

Research Station, the State University of Iowa. A similar study in Ulu Jempol showed that 8% males and 7% females suffered weight deficit of less than 60% Standard whereas severe protein energy malnutrition (PEM) among school children based on less than 60% weight-for-age was not observed in the school children in Ulu Rening (to be published). An arbitrary 3rd level under-weight of between 61 – 70% of the Iowa Standard affected 44.5% males and 31.2% females in the estate, whereas there were more females (41.3%) than males (30.7%) within the 71 – 80% Standard, showing a probable 2nd level underweight. 29% males and 26% females in Ulu Jempol and 35% of children of both sexes in Ulu Rening had their weights between 61 – 70% of the Iowa Standard suggesting moderate protein-energy-malnutrition. Table 2 gives a comparison of the anthropometric findings in the three areas. It is evident from these results that the children of the estate were nutritionally worse off than those in the State Land Development Scheme of Ulu Rening or in the Mukim of Ulu Jempol.

Clinical and Biochemical Assessment

Clinical examination was done on 65 pre-school children, 251 children of the school going age group, 86 adult males and 116 adult females. Table 3 gives the various clinical signs found in the different age group.

Signs of Vitamin A deficiency such as xerosis conjunctivae, xeroderma and follicular hyperkeratosis were commonly seen especially among the children of the school going age group. Bitot's spots were seen only in a few cases. 49% of the children of the school going age group, 17.8% adults and 4.6% pre-school children examined had one or more signs of vitamin A deficiency. The frequency of occurrence of the signs of Vitamin A deficiency in children is much less when compared to the findings in Kuala Trengganu (Chen, 1972).

Serum Vitamin A determination showed that 32% of pre-school children and 27% of school children examined had serum vitamin A levels of less than 20 μg/dl. None of the pre-school children had serum vitamin A levels of less than 10 μg/dl, but 3.7% had serum vitamin A levels of 10 μg/dl. 4.2% of the adult males and 9.4% of the females had levels of less than 20 μg/dl. Vitamin A deficiency may be considered a serious nutritional problem in any population group when 15% or more of the subjects surveyed, have serum Vitamin A levels of less than 20 μg/dl as shown by Chopra (1970). Thus we see that this is a serious problem among the children in this estate.

Classical dry or wet beri-beri was not seen, but 2 male children displayed some features which could be indicative of early thiamin deficiency. These were malaise associated with anorexia, sensation of pins and needles over legs, besides general weakness and numbness of both the lower extremities. One of the children complained of pain in calf muscles after exertion.

Laboratory determination of TPP effect revealed a much higher percentage of thiamin deficiency. 13.6% of the pre-school children, 28.7% of school children, 16.6% adult males and 26.6% adult females had TPP effects of greater than 25%. Brin *et al.* (1965) have proposed that a TPP effect of greater than 25% indicates severe thiamin deficiency. The adult females and the school children were affected to a greater extent, compared to the pre-school children and adult males.

Angular stomatitis in children of school-going-age group and adults, as well as increased vascularity of the eyes with photophobia and excessive lacry-

Table 2

Anthropometric assessment of the nutritional status of children (7 – 18 years) according to their weight for age achievements in 3 different areas

Survey Areas	<60% Iowa Std.		61 – 70% Iowa Std.		71 – 80% Iowa Std.		<80% Iowa Std.	
	% Males	% Females	% Males	% Females	% Males	% Females	% Males	% Females
The Study Area (x = 137, y = 109)	13.9	11.0	44.5	31.2	30.7	41.3	10.9	16.5
Ulu Jempol (x = 265, y = 243)	8	7	29	26	39	32	24	35
Ulu Rening (z = 74)	0		35		46		19	

Where x = No. of males examined.
y = No. of females examined.
z = No. of males and females examined.

Table 3

Clinical evaluation indicating probable vitamin deficiencies among various age-groups in the study area

	0 – 7 yrs. n = 65		7+ – 18 yrs. n = 251		18+ yrs. n = 202	
	No. of toddlers with various clinical signs	% toddlers with one or more clinical signs	No. of children with various clinical signs	% of children with one or more clinical signs	No. of adults with various clinical signs	% adults with one or more clinical signs
Vitamin A deficiency						
Xerosis conjunctivae	1		25		5	
Bitot's spots	–		2		6	
Night blindness	–	4.6	–	49	5	17.8
Xeroderma	–		51		1	
Follicular hyperkeratosis	2		45		19	
Riboflavine deficiency						
Increased vascularity of eyes	–		2		14	
Photophobia and excessive lacrymation	–		7		14	
Angular Stomatitis	6	12.3	24	15.1	17	25.2
Cheilosis	1		2		2	
Glossitis	1		2		4	
Vitamin C deficiency						
Scorbutic gingivitis	–	–	7	2.8	1	0.5
Vitamin D deficiency						
Rickety Rosaries	2		–		–	
Bow legs	3	7.7	1	0.4	3	1.5

n = Total number of people examined.

mation among adults were commonly seen than glositis and cheilosis, suggestive of riboflavin deficiency. 25.2% of adults, 15.1% of children of school age and 12.3% of pre-school children had one or more signs suggestive of riboflavin deficiency. Characteristic scorbutic gingivitis cyanotic in appearance, with or without "scorbutic buds" and the fendency to bleed was found in 2.8% of the children ot school age, and 0.5% of the adults.

Rickety rosary and bow legs were seen in 7.7% of pre-school children, 0.4% school children and 1.5% adults. It was not established whether these cases were nutritional or renal in origin. Gingivitis apart from the recognized scorbutic gingivitis was seen in 31.5% of school children and 47.5% of the adults. Ingestion of soft foods rich in carbohydrates aggravated by poor dental hygiene may enhance the chances of gingivitis and gum infection especially among those already on a low vitamin C intake.

23.0% of the pre-school children, 37.1% children of the school-going-age-group and 40.6% adults had dental caries (one or more decayed, missed of filled teeth). The incidence of dental caries and nonspecific gingivitis in the school going age group was lower than those found among the Indian school children in West Malaysia. (Ministry of Health, 1972).

Obvious signs of kwashiorkor or marasmus werr not seen. The incidence of malnutrition in thie community for all age groups was slightly highes than the findings of the ICNND survey (1962).

Feeding Habits

A majority (42.1%) of the 64 mothers interviewed in this study said that solid foods were introduced only between the ages of 6 to 11 months. Table 4 shows the age at which solid food was started.

Table 4

Age at which solid feeding was started

Age in months	No. of infants	Percentage
3 – 5 mths.	9	14.0
6 – 11 mths.	27	42.1
1 yr.	24	37.5
1% yrs.	1	1.6
2 yrs.	1	1.6
3 yrs.	2	3.2

The child was fed entirely on a milk diet before this period. This findings was very similar to the findings of Selinus (1972). 79% of the mothers had given the infants rice porridge with or without eggs, fish or vegetables, depending on the family budget. as the first solid food. 70% of the mothers interviewed breast fed their infants, but the duration of breast feeding was not obtained. The breast feeding rate is midway between the rates of Malay and Chinese mothers in Perlis as found by Teoh (1972). The powdered milk usually given was Dutch Baby (26%), Dumex (26%), condensed milk (14.9%) while the rest gave various other brands of milk powder.

64.2% of the mothers interviewed admitted that they were not influenced by others on their feeding habits of their infants. 16.4% of them were advised by their own mothers. Mothers-in-law, bidans, health nurses, grandmothers, creche staff and others exerted little influence on their choice of feeding.

Family Planning

The average number of children per family in this estate was 5, with a range of 1 – 11 children per family. Discussions with the Family Planning Board staff who visited the estate once a week revealed that the response for acceptance of contraception was very poor. The number of females between the ages 15+ to 44 years in this community was 284. The number of known acceptors of contraception was only 17.

Haematology

47.4% of 57 pre-school children, 37.2% of 247 children of the school going age group, 25.6% of 78 adult males, and 68.6% of 105 adult females were classified as anaemic according to the criteria of the World Health Organisation (WHO 1968). On examination of the peripheral blood films, the majority of the anaemic persons appeared to have iron deficiency anaemia, but it was not possible to substantiate this observation as no further investigations were done. Prevalence of anaemia in pre-school children in this area was high when compared to army children as shown by the Interdepartmental Committee on Nutrition for National Defence (1962) and children in the SLDA Scheme of Ulu Rening (to be published), but this prevalence was somewhat similar to the rates found in the Mukim of Ulu Jempol (in press) and Sungai Selisek (IMR Annual Report 1971). Anaemias in school children and mothers were very much higher than those found in Ulu Jempol and Ulu Rening.

Parasitology

A total of 374 stool specimens collected from 53 pre-school children, 168 children of school going age, 73 adult males, and 80 adult females were examined for intestinal helminths. Prevalence of infection is summarised in Table 5.

Whipworm infestation seemed to be the commonest infection in the community. The school children had the highest percentage of roundworms (43.45%) and whipworms (45.83%). The adult females had the highest prevalence of hookworm infestation (21.5%), and this may contribute to the high prevalence of anaemias in the adult females. The prevalence of intestinal helminthiasis appeared to be lower than that found in Ampang and Bernam by Lie *et al.* (1971) but is higher than the rates found in Ulu Jempol. It was seen that worm infestation was common in all cases of anaemia where stools were examined for ova as shown in Table 6.

Table 5

Anaemias and worm infestation found in the different age-groups in the Study Area

	No. of cases done	Anaemias	Total No. with ova	(%)	No. with Ascaris	(%)	No. with Hook-worm	(%)	No. with Trichuris	(%)
Pre-School Children 0 – 7 yrs.	57	27	9	(33.3)	5	(18.5)	3	(11.1)	4	(14.8)
Children of school going age 7+ to 18 yrs.	247	92	38	(41.3)	26	(28.3)	7	(7.6)	28	(30.4)
Adult Males <18 yrs.	78	20	3	(15)	2	(10)	2	(10)	–	–
Adult Females	105	72	24	(33.3)	10	(13.9)	15	(20.8)	12	(16.6)

Infestation with worms was common in all cases of anaemias where stools were examined for ova.

Table 6

Worm Infestation

	No. Examined	Ascaris		Hookworm		Trichuris	
		n	(%)	n	(%)	n	(%)
Pre-school children	53	12	(22.64)	6	(11.32)	15	(28.3)
School children	168	73	(43.45)	23	(13.69)	79	(47.02)
Adult males	73	2	(2.73)	7	(9.58)	5	(6.84)
Adult Females	80	9	(11.25)	17	(21.2)	19	(23.75)
Total:	374	96	(25.66)	53	(14.17)	116	(31.01)

n = Number of positive cases.

Housing

The living quarters of the labour force were in the form of labour blocks made of plank and zinc each consisting of an average of 6 units per block. 60% of the units are two-roomed, 30% single-roomed and the others had either 3 or 4 rooms. The average number of persons living per unit was 5 which could be classified as over-crowding especially in the single and two-roomed units. There were a total of 8 common latrines of the pourflush type which consisted of 120 individual private sections for both sexes. This means that 9 people shared one latrine which was a reasonably good facility. Piped water was available to all the labour fronts, but the taps were all located at the back of the houses for common use. Electricity was available to all.

SUMMARY AND CONCLUSIONS

From this study it was seen that a variety of nutritional deficiencies exist in this estate population. Protein-energy-malnutrition was common among the children of the school-going age group and pre-school children. Vitamin A deficiency was a common disorder in this community where the intake of dairy products, fish, liver etc. were practically nil, and where dahl was eaten more often than green leafy vegetables. It is not surprising that since meat, milk, eggs and other expensive items were beyond the means of a large family with low income, riboflavine and thiamin deficiencies were also seen in this community. The intake of fresh fruits were also very limited and infrequent, and with the already low intake of fresh green vegetables, vitamin C deficiency was also another common nutritional problem. Gingivitis due to gum infection and ascorbic acid deficiency, or the synergistic effect of both was not infrequent. Dental health was also poor resulting in either caries or missing teeth. Anaemias were high in the pre-school and school going age groups and mothers. Worm infestation was commonly seen in all cases of anaemias. Majority of the people are in the low income group. Thus poverty with the other contributory factors, such as lack of education, large families, lack of knowledge regarding preventive medicine and nutrition, and the lack of motivation seem to be responsible for the prevalence of nutritional disorders. Inspite of the modern facilities provided, such as piped water and pourflush latrines, people allowed their children to use the open drains for sanitary purposes. Their indifferent attitude towards family planning needs to be changed through intensive education. Our observation seemed to suggest that some of the residents spent the little money they earned on 'samsu' and entertainment rather than on food and clothing. The objective of the health authorities should be to help the people to help themselves in the prevention of malnutrition through public action and individual responsibility.

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The prevelance of solicosis among granite quarry workers, of the government sector, in Peninsular Malaysia

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Introduction:

SILICOSIS is widespread throughout the world and has been known for many years, to be caused by exposure to silicon dioxide ($Si\ O_2$) or free silica dust[3]. In Malaysia, the special problem of silicosis among quarry workers has been strongly suspected to exist[2]. However, the extent of this problem has not been known.

The present study was carried out in 1976, with the objective of trying to determine the prevalence of silicosis among granite quarry workers. These data could then be used to generate codes of practice and legislation, for the control of dust in quarries. It could also form the base-line for future comparative studies and for establishing trends.

Methodology:

A questionnaire was designed to acquire preliminary information from the quarry workers such as their working history, chest symptoms and smoking habits. These questionnaires were completed through interviews, conducted by the author and his assistant. The information received was used to classify workers into two major categories: a low risk and a high risk group.

The high risk group was further examined radiologically. Each of the workers in the group had a large P.A. chest film taken, which was read with a special view to diagnose silicosis.

Material:

After a brief pilot investigation, it was decided that it would be more practical to only study the Government quarries. The Public Works Department has centralised quarries in most of the states of Peninsular Malaysia. Only 2 states, Perlis and Malacca, did not have central quarries. 2 more states, Kedah and Selangor, have central quarries which deal with limestone. All the other 7 States have granite central quarries. These have stable populations with longstanding service. Their managements are well organised and being government employees it was easier to arrange for x-rays.

Some constraints were faced with the x-rays as they were taken by different radiographers, in different hospitals and hence the lack of consistency in terms of exposure. However, to narrow down the limits of variability, readings of all x-rays were centralised in Kuala Lumpur. Some quarries are occasionally motivated to x-ray their employees but the films taken usually are the mass miniature radiographs. These, for all practical purposes, are not appropriate for diagnosing silicosis.

All films were read by 3 doctors, of whom one was a Radiologist and one a W.H.O. Consultant. The classification of the radiographs was based on the short classification of the I.L.O. international classification of radiographs, of pneucmoonioses, 1971. It has four categories of 0, 1, 2, and 3 referring to small opacities below 10 mm in size. The cases of increased interstitial fibrosis in this study are included under the category O (no nodules); the suspected silicosis cases under the categories 0 and 1; the positive or definite cases of silicosis under the categories 2 and 3.

As opposed to the government quarry population, the private quarries are generally employing small numbers of workers with a rapid turnover. Accordingly, the majority of the workers have had short exposures. Furthermore, the co-operation with regard to information, examination etc. is less forthcoming from the private sector. Hence, the restriction to the government sector for this study.

The population under study is divided up into two main groups (Table I). There are a total of 707 workers on the payroll of the 7 central granite quarries. Of these 481 belong to group I, the low risk category. Group I includes a number of sub-categories. As an example there is the "spreading gang", spreading pre-mix on road surfaces throughout the state. They only come to the quarry occasionally to collect their wages. Similarly there are lorry drivers who shunt the pre-mix between the quarry and the roads, under repair. Exposure to dust here is virtually nil. These two sub-categories may consist of up to 1/3 or more of the workers, on the quarry payroll. Inter-transfers of any employees from the above, to the quarry or vice versa, are rare. The remaining bulk of the employees in Group I, forming almost another 1/3 of the workers, work within the quarry premises. Here again there are those not actively engaged in production e.g. the office staff, the workshop section, watchmen and general labourers for compound or office cleaning. Hence, their exposure to dust is minimal. Also included in Group I are workers in the quarries with less than 5 years exposure, as based on previous experience from elsewhere[1] these workers would generally have not developed signs of silicosis.

Table I

Total population studied

Group	No. of workers	Percent
I	481	68
II	226	32
Total	707	100

The remaining group of workers form group II, the high risk category. They have been exposed, to free silica dust, for more than 5 years. They are engaged in the direct quarrying or the productive sections, which are very dusty. These include, drilling, blasting, earth moving; the primary, secondary and tertiary crushers; the grading bunker and premix plants. Two of the quarries had their own drillers and blasters. The rest of them engaged private labour to do this job and it was a problem to persuade many of them to participate in this study.

The total number of workers in group II was 226, all of whom were examined radiologically. All the workers were males. Speaking of race, in the East Coast States of Kelantan and Trengganu, they are all Malays. In the other States there is a mixture of all 3 races i.e. Malays, Indians and Chinese. Certain occupations, like the contract drilling and blasting and repair jobs in workshops, are predominantly carried out by the Chinese. The workers working in the crusher or premix houses, as labourers or machine operators, are mainly Indians and to a lesser extent Malays.

The Environment:

The main hygienic problem, in the environment of the quarry, is the fine rock dust. The Department of Chemistry carried out an analysis of a sample of quarry dust, to size the particles. In the different crusher houses, the screening and premix areas, an average of 98 percent (range 96.5 – 100) of the particles were respirable dust (0.5 – 10 microns).

The Geology Department analysed granite quarry rocks from 2 different parts of the country and found that the silica content, was approximately 76 percent. As opposed to this, the limestone rock had a silica content of less than one percent.

The other big problem is the occurrence of accidents. In most of the quarries the workers, climbing the quarry face, and drilling and blasting were ignoring basic safety precautions like the use of harnesses or safety belts, safety goggles, boots, helmets, and hearing protection. Machinery safeguarding also was unsatisfactory. In general, the safety aspects showed a great need to be reinforced and improved.

Results:

Table II shows the findings, of the radiological study, on the 226 workers in the high risk category. The workers are divided into categories according to the duration of exposures. 57 cases (25 percent) were diagnosed as positive or having silicosis. Another 17 (8 percent) were found to have suspected silicosis. The rest, 152 x-rays (67 percent), were negative or normal.

Table III shows the cases of silicosis in relation to the duration of exposure and the age, of the workers. The cases of silicosis and suspected silicosis are combined, which gives a prevalence of 32.7 percent (74 cases). Only 4 cases of silicosis occurred in the 5 – 9 years group (11 percent). In the 10 – 14 years exposure group there were 26 cases of silicosis (27 percent). In the group with 15 – 19

years exposure, 17 had silicosis (46 percent). In the group with more than 20 years exposure, 27 workers had silicosis (48 percent).

There were no workers below the age of 20 years. Only 5 workers belonged to the 20 – 29 years age-group, and they did not have silicosis. In the 30 – 39 years group, there were 10 cases (17 percent). In the 40 – 49 years age-group there were 34 cases of silicosis (37 percent). Among the workers older than 50 years, 30 (46 percent) had silicosis.

Table IV shows cases of other radiological findings, besides silicosis. These include 13 cases (6 percent) with shadows suggestive of pulmonary tuberculosis, most of them being old sequelae. Another 12 cases (5 percent) had signs of combined silico – tuberculosis. 18 cases (8 percent) had increased interstitial fibrosis, suggestive of damage to the normal lung tissue, most likely due to deposition of silica dust. There was also evidence of emphysematice changes.

Table II

Cases of silicosis among group II workers; Radiological diagnosis by period of exposure

Duration of exposure in years	No. of workers exposed	Diagnosis of silicosis					
		Negative		Suspected		Positive	
		No.	Percent	No.	Percent	No.	Percent
5 – 9	35	31	88	1	3	3	9
10 – 14	98	72	73	1	1	25	26
15 – 19	36	19	53	6	17	11	30
20 +	57	30	52	9	16	18	32
Total	226	152	67	17	8	57	25

Table III

Prevelance of silicosis (confirmed + suspected) in relation to duration of exposure and age: W = workers; S = silicosis

Duration of exposure in years	Age in years											
	20		20 – 29		30 – 39		40 – 49		50		Total	
	W	S	W	S	W	S	W	S	W	S	W	S
5 – 9	Nil	Nil	4	Nil	16	1	12	2	4	1	36	4 (11%)
10 – 14	Nil	Nil	1	Nil	34	6	36	9	26	11	97	26 (27%)
15 – 19	Nil	Nil	Nil	Nil	8	2	22	9	7	6	37	17 (46%)
20+	Nil	Nil	Nil	Nil	3	1	25	14	28	12	56	27 (48%)
Total	Nil	Nil	5	Nil	61	10 (17%)	95	34 (37%)	65	30 (46%)	226	74 (33%)

Table IV

Other radiological findings

Total No. of workers X-Rayed	Evidence of Pulmonary Tuberculosis		Silico-Tuberculosis		Increased Interstitial Fibrosis	
	No.	Percent	No.	Percent	No.	Percent
226	13	6%	12	5%	18	8%

Discussion:

A very high prevelance of silicosis (32.7 percent), was found among the quarry workers, who had been exposed to free silica dust for more than 5 years. It should be pointed out that additional cases of silicosis in the low risk group cannot be completely ruled out. The present rates therefore are minimum figures.

The prevelance of silicosis is seen to increase, with the duration of exposure, being the highest in those exposed the longest. 70 out of 74 cases of silicosis (96 percent) occurred among workers with more than 10 years exposure.

97 percent of the workers belonged to the over 30 years' age-groups. The prevelance of silicosis cases was noted to increase among the older age groups.

The prevalence of tuberculosis, among the quarry workers, was increased as compared to the general population. When the 13 cases of silico-tuberculosis are combined, an overall prevalence of 11 percent is obtained, for tuberculosis. The National Prevelance Survey of 1970[5] indicated a prevelance of 5.02 percent, for radiological shadows suggestive of tuberculosis, in the general population above an age of 15 years. Though this study was carried out in 1970, according to the authorities concerned, the picture is unchanged. Hence, the present study shows the rate of pulmonary tuberculosis among granite quarry workers to be more than twice as high as that of the general population. In the study on silico – tuberculosis in Singapore[4], it is stated that silicosis is particularly liable to be complicated by tuberculosis infection. Cases diagnosed as pure tuberculosis on clinical and radiological grounds, with a history of high dust exposure, were proved to be tuberculo – silicosis on necropsy in 50 percent of the cases.

Cases with radiological lesions, suggestive of tuberculosis activity were referred to the respective states for further investigation. Also, one case of a nodular shadow and another of hilar enlargement were referred to the Physicians, for further investigation of the aetiology.

Conclusion:

A cross-sectional survey, on silicosis was done on all 7 central, government granite quarries in Peninsular Malaysia. 226 workers were in the high risk group and all were males. 57 (25 percent) were diagnosed, radiologically, as silicosis cases and 17 (8 percent) as suspected silicosis. The overall prevalence rate was 32.7 percent. Cases of tuberculosis and silico-tuberculosis combined showed a prevalence of 11 percent. This is more than twice the national prevalence rate (5.02 percent). 96 percent of the silicosis cases have occurred among workers, with more than 10 years exposure. 97 percent of the workers, were over 30 years of age. The prevelance figures show a clear trend of silicosis increasing with the duration of exposure and the age. It is not possible to establish time trends but a future survey may be able to contribute to this.

Silicosis among quarry workers is evidently a serious and frequent hazard. A formation of the codes of practice, and continuous surveillance of workers is clearly indicated, for the quarrying industries.

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The management of attempted suicide – reflections of a physician*

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THREE ASPECTS OF attempted suicide will be considered in this paper:

I. The old adage "prevention is better than cure" is as true in this subject as in many others.

II. Patients with this complaint are deserving of optimal medical care.

III. The presentation of an attempted suicide to the Emergency and Accident Department is a dual emergency, firstly medical, and secondly, just as important, a psychosocial emergency.

I. PREVENTION OF ATTEMPTED SUICIDE

This can be two-fold, firstly prevention in terms of a higher mode of medical care, and secondly changing the techniques of attempted suicide by making common means of suicide more difficult to perform.

1. MEDICAL PREVENTION

A. The diagnosis of hidden depression[3]

Not all patients presenting with suicidal attempts are depressed. Patients presenting with the following three complaints often have some psychological or social pathology which is within the power of the doctor to treat:

(i) *Frequent attenders* – These patients repeatedly visit the doctors' surgery, often more than once a month with relatively trivial complaints, often of a variety of symptoms, and usually complaints for which no organic basis can be found.

(ii) *Insomnia* – Patients presenting to the physician with insomnia often have some underlying social or emotional problem and sometimes an underlying depressive syndrome. A careful history of the type of insomnia and all the things that they think about whilst they are lying awake at night may often give a clue.

(iii) *Headache* – Headache is an extremely common complaint for which there may be no clear organic cause. Often a careful family and social history will give rise to some clue as to the cause of the headache.

B. Drug-induced depressive illness

The following drugs may predispose to depressive illness and when symptoms are present, drugs should be changed whenever possible: alpha methyl dopa, reserpine, L dopa, the contraceptive pill, and steroid preparations.

C. Puerpural depression

This diagnosis should always be borne in mind during the puerpurium and if in doubt the patient can be referred for a psychiatric assessment.

* (Based on a presentation at a seminar on Attempted Suicide, University of Malaya Medical Centre – 7.4.76)

D. **High risk groups**[3]

(i) *Prolonged illness* – Patients who have a prolonged medical condition, particularly those for which there is no definitive cure, and often exacerbated by chronic pain, may develop insidiously a depressive syndrome which responds to anti-depressant therapy.

(ii) Patients who are dependent upon alcohol or other drugs.

(iii) University students.

(iv) Doctors and their wives.

(v) Impulsive character disorders.

(vi) Repetitive self-damagers.

The latter two groups will most often be looked after by our psychiatric colleagues. It is important to remember that, at a time when the student intake to our universities is rapidly expanding, we should expect the incidence of adjustment and emotional problems to increase. We also have to remember that doctors and their wives may suffer from inadequate medical care particularly if the doctor feels that there is stigma attached to an "emotional" disorder, or they may suffer from the problem of too much care.

E. **Epidemiological clues**

Whilst the following factors have been found to be true in western society, there is some evidence from Singapore[2] that the pattern of suicidal attempts, particularly in the manner in which the attempt was made, is growing more similar to the pattern of suicidal attempts made in the West. No distinction is made between the type of persons likely to succeed in their suicide and those who do not want to succeed and who are only making a suicidal gesture.

(i) Older women

(ii) Persons living alone

(iii) History of suicidal attempts

(iv) Unmarried people.

There is an extremely good correlation with successful suicide for the groups of people who are living alone and who have a history of a previous suicidal attempt.

N.B. SIXTY FIVE TO SEVENTY FIVE PER CENT OF PATIENTS WHO HAVE EITHER COMMITTED SUICIDE, OR ELSE PERFORMED A SUICIDAL ATTEMPT HAVE SEEN (IN THE WEST) A DOCTOR IN THE PREVIOUS ONE MONTH PRIOR TO THE SUICIDAL ATTEMPT.[3]

It therefore has to be said that as a profession we are manifestly unsuccessful in predicting those patients who are in need of urgent psychiatric or supportive therapy.

2. PHYSICAL PREVENTION

It has been shown on many occasions that the mode of suicidal attempt reflects the availability of materials to perform the suicidal attempt. Thus the removal of carbon monoxide from the gas supplied to domestic gas cookers in Europe speedily reduced the attempted suicide by this mode.

(i) Drugs are not locked up. If we consider the manner in which we keep tablets in our own homes, often lying around in bathroom cupboards or shelves, with our education and knowledge of disease, how much more likely are members of the general public to keep their tablets so that they may be readily taken either accidently or deliberately.

(ii) Drugs looking like sweets. It is now accepted that the production of tablets with bright colours looking like sweets is a cause for increased accidental ingestion of tablets by children. This is often compounded by well meaning parents who, when having to give medicine to their children, ask the child to have a "sweetie".

(iii) Poisonous substances kept in low cupboards. The ready availability of weed-killers and insecticides accounts for the fact that this remains a common form of presentation of a suicidal attempt in this country. It is particularly dangerous to keep these on the floor or in low cupboards where they can be easily obtained by children. The situation is made worse when the poisonous substances are stored in bottles labelled "Cocacola" or "Seven-up".

(iv) Over-prescribing. I regret that I am unable to join in the general condemnation of the medical profession for over-prescribing of mild tranquillisers. There is no doubt that the use of these drugs has transformed the care of many millions of patients throughout the world. In addition to that, the increasing incidence of suicidal attempts with such drugs as nitrazepan, chlordiazepozide and diazepan is beneficial in that death associated with the ingestion of these drugs is rare. Where the medical professional is at fault, how-

ever, is in the failure to realise that the prescription of transquillisers cannot be a substitute for a careful family and personal history which may give the clue to the psychosocial problem precipitating the emotional illness. In this regard the present system used in some of the clinics in this country when a patient is seen by different doctors at each visit should be condemned. It is only by the development of a doctor-patient relationship that the patient will confide to the doctor those things which are precipitating the symptoms[1].

II. OUR ATTITUDE TO THE SUICIDAL ATTEMPTS

As doctors, we have to admit that we are no more perfect than our lay-colleagues and if we are honest with ourselves we will admit that there are times in which we consider suicidal patients as a rather tedious form of patient to look after. If we compare our attitude to the management of patient with septicaemic shock and compare that with our attitude to the management of a patient who has twice taken a drug overdosage, can we honestly say that we feel that they both are equally deserving of our medical attention?

How many times in casualty or accident departments throughout the world have I heard the sentiment expressed that a washout in a conscious patient is a very good thing as it is an effective punishment for the attempted suicide and a disincentive to the patient to do the same thing again. Bearing in mind these thoughts which certainly I have had from time to time in my professional career we should remember the following points:

(i) Suicide in Great Britain is the cause of one-third of the total number od deaths in University students[3].

(ii) Ten per cent of all deaths for the age group 25 – 34 are caused by suicides[3].

(iii) Most reports of recurring suicidal attempts are only in the order of up to 4% of patients and the greatest recorded one is 15%[2].

(iv) Only 16% of 112 cases of suicide in Singapore had a history of previous admission to a mental hospital[5]. This suggests that the majority of suicides are not related to severe or irreversible mental illness.

It is therefore clear that the majority of suicides occur in young people and that the chances of severe recurring illness are remote. It should also be clear that the successful treatment of these patients should be as professionally satisfying as the successful treatment of any other patient.

III. EMERGENCY CARE

We are all familiar with questions to be asked by doctors faced with the medical emergency of a drug overdosage or ingestion of toxic materials[4]. They are as follows:

(i) What are the general supportive measures needed in the care of this medical emergency?

(ii) What drug was taken, when was it taken, and how successfully?

(iii) Is a stomach washout indicated or not?

(iv) Is there any antidote for this substance?

(v) Can we successfully increase the elimination of this substance from the body?

I believe that at the same time as these questions are being asked and answered there should be a parallel treatment of the psychosocial emergency.

(i) Why was this substance ingested?

(ii) If it followed a quarrel why was there a quarrel and was it a once only affair or was it part of a prolonged family disagreement?

(iii) What are the social, family, emotional, or personality problems which have precipitated this suicidal gesture?

I believe that the plan of management of the psychosocial emergency should be as follows:

(i) We should always give explanations to the patient in a sympathetic and humane manner explaining to them why they need injections, stomach washout, etc. It is not always easy to know whether a patient is fully conscious or just rather drowsy. In addition, it is often not known whether the patient understands the language which is spoken in the emergency room, and we must remember that in Malaysia many people can understand a language which is being spoken even though they cannot speak this language themselves.

(ii) We must avoid making any comments which, if heard and understood by the patient, will reinforce in the patient their pre-existing conviction that the world may be against them.

(iii) We must avoid reporting the suicidal attempt to the police within the patients hearing. Surely this only increase the fears of patients by helping them to realise that they have compounded their problems by committing an offence. This may make the patient even more determined to take his own life.

(iv) We must alleviate extra problems – The result of the attempted suicide may be to further disrupt social and family relationships, e.g. if a husband and wife quarrel, the husband may go off to get drunk. At the same time the wife may swallow an overdose of tablets. This may lead to a young family uncared for, as the night progresses. In addition, speedy contact with the patient's employer informing him that the patient has been taken ill, but that she should be well enough to return to work over a certain period of time, may be enough to persuade the employer to keep her job open for her. This may, in itself, help to alleviate some of the patient's worries.

(v) Relatives of patients admitted with attempted suicide should be kept behind after a patient has been resuscitated in the Emergency and Accident Department to enable the physician to interview the relatives to obtain the important family and social history that will often give a clue as to why the patient has attempted suicide.

(vi) We must create a peaceful atmosphere. Accident departments are usually noisy, hectic and unrestful. I believe that it is vital that, even if the patient is in the Accident and Emergency Department for only a few minutes, if conscious, the hustle and bustle should cease, and the doctor should have the opportunity to talk to the patient in quiet. The doctor can then assess the patient's view of their problems, arrive at a psychosocial diagnosis, and reassure the patient that, whilst they are in hospital, everything will be done to help them through the difficulties and problems which are the causes (and also possible results) of their suicidal attempt.

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Suicidal attempt – psychodynamic factors*

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Over the last three years, the bulk of the in-patients referred for Psychiatric Consultation, are those that have attempted suicide. The commonest mode of the suicidal act is by self-poisoning. The writer in an attempt to analyse the dynamic motivational factors in fifty cases of attempted suicide at the University Hospital, Kuala Lumpur, finds similar factors uniting some of the patients, and distinguishing them from other groupings. This conception is a necessary springboard for research into problems of suicide and in dealing with such clinical aspects as the intensity and duration of depression and the degree of suicidal intent in the different groups of psychiatric patients who attempt suicide.

THERE ARE many theories with regard to suicide. Like many other problems in psychiatry, these theories are invoked to explain demonstrable clinical phenomena. And since problems in psychiatry are often complex with multiple facets and factors, there is bound to be disagreement in resultant theories. Aggression either directed at oneself or at the human environment does evoke tremendous anxiety in many people including those in the medical profession. It was hence felt necessary to look into about fifty cases of attempted suicide which were studied by the writer at the University Teaching Hospital, Kuala Lumpur, to deal primarily with such clinical problems as the intensity and duration of depression and the degree of suicidal intention in the different groups of psychiatric patients who attempt suicide.

The intention of this study is an attempt to assess dynamic motivational factors in suicidal patients, with an aim towards comprehending different motivational groups. No quantitative scales were set up to evaluate more objectively these factors involved. The attempt is based mainly on a detailed clinical analysis of the fifty cases and also upon further cases of attempted suicide, seen subsequently with a view to checking tentative conclusions.

This study shows that even if all suicidal patients cannot be understood as one, there are similar dynamic motivational factors uniting some of the patients, and distinguishing them from other groupings. The following groups were elicited.

A. To inflict emotional pain and to force attention or affection

These two factors are usually seen as co-existent and complementary motivations. At times one may be dominant, but evidence of the other will invariably be present. When both these factors are present and dominant, it is important to note that the degree of suicidal intent is in most instances minimal.

A good example where these motivational factors are uniformally exhibited is in a young adult where the suicidal attempt is part of a "family quarrel" or a "lover's quarrel". During the quarrel, the young person usually a young lady, suddenly swallows a few sleeping pills or a mouthful of washing detergent and then "fall faint". These patients are usually classified in the Reactive Depressive group, since their other general behaviour is not characterized by sufficient anxiety, with resultant symptoms or inhibitions in activity, for them to be termed

* (Based on a presentation at a seminar on Attempted Suicide, University of Malaya Medical Centre – 7.4.76)

neurotic. Even with the clear-cut neurotics who attempt suicide with the desire to spite or to force affection as motivational factors, the intent is usually low. In the reactive depressive group, the most characteristic feature is emotional immaturity.

Patients with personality disorders also exhibit these primary motivations in their suicidal attempts, sometimes under the influence of alcohol or other addictive agents. These patients are often manipulative, almost wholly wrapped-up in themselves and are unable to form strong attachment with others. This ability to form strong human relationship by this group of patients is an important differentiating factor when compared with the neurotic patients who attempt suicide.

B. **Loss OR threatened-loss of LOVED OBJECT**

A majority of the neurotic patients examined attempt suicide after or during the breaking of strong love-object attachments. Usually it is their own neurotic behaviour that contributes to the termination of these relationships. Since they are in great need to establish similar relationship and if unable to do so, they repeat the attempt, often of a more serious nature, within the next few months or years. In some cases, the patients were passive figures during the relationship; and in others, they played more active role. But in all these cases, a great part of the patients' problems centered in difficulties involving the expression of anger more realistically. With the termination of a relationship and the unsuccessful attempt to establish a similar one, they seem to direct "on the self", those aggressive impulses involved in the object relationship.

The contract here between this group and the first group is that in the former, the suicidal attempt is a manipulative gesture to achieve the end. The key to the neurotic group is the breaking down of a strong human bond, and eventually a kind of loss of hope, with regards to finding another love-object as an outlet for dependency-needs and the release of neurotic aggressive drives.

A relatively small group of patients in the older age-group usually in the fifties who have always been "passive" and "dependent" come under this group, following the loss of a person they were dependent upon – mother, wife, husband, etc. in past years. They usually struggled along for a year or more, making little attempt to form new attachments, and made a suicidal attempt in response to relatively small situational disturbances.

C. **Guilt**

A sizeable group of patients who attempt suicide by swallowing their full supply of medications are the schizophrenic patients whose illness have remitted but who are prone to periods of depression. Guilt seems to be a painful motivational factor towards their suicidal attempts especially when they exhibited overt hostility to parental figures and felt rejected in an ambivalent relationship. Suicidal attempt as a reaction to powerful guilt, bound to unexpressed sexual feelings or perversive sexual behaviour can escape notice when the guilt is projected into a hallucination, and the patient states that the suicidal attempt was a response to voices that reproached him for his misconduct. Sometimes this guilt would be expressed in a delusion of punishment and the suicidal attempt was a conformation of this state of mind. Usually these patients were resistant to any understanding of the dynamic motivational factors, unless special efforts were made to establish a closer relationship over a long period of time.

Discussion

Psychodynamics, the science of the unconscious mental forces has its roots in Freud's analysis of the human mind. The word connotes the interplay of underlying forces which influences behaviour in its broadest sense. Perception, thoughts, feelings, and actions are all caught up in this vast network of influence, and only when the forces themselves are laid open to scrutiny, can the accompanying behaviour be fully understood. Such scrutiny is difficult at best because the process often takes place at an unconscious level, where detection is possible only by inference. Many unconscious forces come into action when a person makes a direct attempt on his life. A clear idea as to the motivation for the attempt is a very essential part of the management of the distressed person. The foregoing considerations may helps us in understanding some of the factors influencing suicidal behaviour. There may be many more.

In Freud's "Mourning and Melancholia", he considers suicide in great depth. Here he stresses the significance of the mechanisms of "identification" and "incorporation" of an abandoned love-object, with the ego lunching on itself the animosity related to the object. In the cases studied here, where the loss of a loved object played a prominent role, we are dealing primarily with neurotic patients. Clinical depression of any great extent was often absent here despite a high degree of suicidal intent. Thus the use of antidepressant therapy alone was ineffective and in some instances even facilitated more serious suicidal attempts. These patients had problems connected with expression of anger right from the start in their object relationship. Their object attachments were, thus, neurotic solutions or outlets. With the termination of relationship, there was evidence of diffuse expression of this anger; and,

with the consequent inability to establish satisfactory substitutes, the anger and the aggression became self-directed. In the character disorder, where the intent is minimal, the fact that strong object relationships have not been made is, in a sense, a protecting factor. More serious suicidal intentions emerge not uncommonly in these patients when they are subjected to intense psychotherapy and strong object relationships begin to develop in a psychotherapeutic encounter.

Summary

An attempt has been made to group suicidal patients on the basis of similarities in clinical and psychodynamic findings. The main groups are:

A. Those whose dominant motives are to inflict emotional pain and force attention – they are usually labelled as suffering from reactive depression or personality disorder. Their suicidal intent is minimal and they attempt to manipulate the environment by their behaviour.

B. Loss of loved-object – predominantly they form the neurotic group unsuccessfully seeking re-establishment of object attachment. Their suicidal intent is of a higher degree although their depressive state is clinically very minimal. Their main problem is connected with expression of anger.

C. Guilt – predominantly they make up the schizophrenic group whose psychotic illness has remitted. But they are subjected to depression and alienation. A psycho-dynamic understanding of their behaviour is even more difficult as they tend to resist interpretation and insight.

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Serum immunoglobulin levels in the Semai

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Introduction

THE SEMAI are a tribe of aborigines (orang asli) found in West Malaysia. They are jungle dwellers and still lead a comparatively primitive way of life. They number approximately 15,000 (Chander, 1970). To our knowledge, no comprehensive study of the immunoglobulin levels of West Malaysian aborigines has been reported. In this study the levels of serum IgG, IgA and IgM of the Semai were measured for purposes of documentation and comparison with other populations. This study forms part of a detailed analysis of the immunological status of the aborigines of West Malaysia.

Materials and Methods

Sera were collected from 108 apparently healthy subjects whose ages ranged from 1 to 55 years. There were 41 males and 67 females of whom 14 were pregnant (above 34th week gestation). 14 cord blood samples were also collected. Sera were obtained from visitors accompanying patients at the Aboriginal Hospital in Gombak, 12 miles east of the Malaysian capital, Kuala Lumpur, as well as from inhabitants of two Semai villages in the state of Perak, about 120 miles north of Kuala Lumpur. All subjects were screened for hepatosplenomegaly and malarial parasites in the blood. Subjects with hepatosplenomegaly or a positive malarial blood film were excluded from the study.

The levels of IgG, IgA and IgM in the sera were measured by the Mancini radial immunodiffusion method using antisera and immunoglobulin standards provided by Professor K.J. Lindqvist (Nantulya and Lindqvist, 1973).

Results

The mean values of IgG, IgA and IgM by age and sex are shown in Table 1. The difference in levels of IgA and IgG between sexes were not found to be significant except in females of the 13 – 20 years age group where the mean level of IgA in females was higher. The mean level of IgM in females was significantly higher than in males in all age groups.

The mean levels of IgG, IgA and IgM among adult Semais (21 years and above) were significantly higher than corresponding levels in adult urban non-aboriginal Malaysians (Table 2).

In 7 mother-child pairs there was no significant difference in IgG levels which were measured by a double blind technique (Table 3). Also, no significant difference was found in the mean immunoglobulin levels between the 14 pregnant subjects and 18 randomly selected non-pregnant women in the reproductive age group (16 – 40 years) (Table 4).

Discussion

Immunoglobulin levels in persons living in tropical areas have been found to be higher than in persons living in temperate areas (McFarlane, 1973). However, immunoglobulin levels in the urban Malaysian population were found to be similar to those reported in temperate areas (Shah and Yadav, 1973). In our study we have found the immunoglobulin levels in the adult Semai to be significantly higher than those of the urban non-aboriginal Malaysian population. This may be attributed to the fact that the Semai are more exposed to infections of blood

Table 1

Mean serum immunoglobulin levels of the Semai by age and sex (1976) (mg/100 ml)

Age (years)	IgG			IgA			IgM		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Cord serum	–	–	1201 ± 458 (14)**	–	–	tltr†	–	–	tltr†
1 – 4	1086 ± 225 (3)	1283 ± 335 (10)	1238 ± 320 (13)	117 ± 58 (3)	118 ± 62 (10)	117 ± 59 (13)	208 ± 43 (3)	305 ± 133 (10)	282 ± 124* (13)
5 – 12	1612 ± 281 (17)	1563 ± 263 (15)	1589 ± 280 (32)	150 ± 30 (17)	155 ± 44 (15)	152 ± 40 (32)	267 ± 77 (17)	305 ± 117 (15)	274 ± 101* (32)
13 – 20	1505 ± 187 (10)	1567 ± 301 (19)	1546 ± 265 (29)	151 ± 30 (10)	206 ± 105 (19)	187 ± 89* (29)	269 ± 124 (10)	393 ± 181 (19)	350 ± 170* (29)
21 and above	1523 ± 297 (11)	1475 ± 522 (23)	1490 ± 461 (34)	269 ± 86 (11)	284 ± 156 (23)	279 ± 145 (34)	357 ± 367 (11)	403 ± 226 (23)	387 ± 276* (34)

* Significant difference between sexes ($p < 0.01$).
** Figures in brackets denote size of sample.
tltr† too low to read.

Table 2

Comparison of mean immunoglobulin levels of adult Semai with adult urban non-aboriginal Malaysians* (levels in mg/100 ml)

Population	IgG			IgA			IgM		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Semai (Present study)	1523 ± 297 (11)	1475 ± 522 (23)	1490 ± 461 (34)	269 ± 86 (11)	284 ± 156 (23)	279 ± 145 (34)	357 ± 367 (11)	403 ± 226 (23)	387 ± 276 (34)
Urban non-aboriginal Malaysians (Shah and Yadav, 1973)	1081 ± 444 (90)	1164 ± 358 (27)	1100 ± 427 (117)	170 ± 80 (88)	186 ± 105 (28)	174 ± 89 (116)	143 ± 89 (95)	258 ± 104 (26)	167 ± 104 (121)

* Significant difference ($p < 0.01$).

Table 3

IgG levels in Semai mother-infant pairs (mg/100 ml)

Pair No.	Cord Serum	Mother's Serum
1	1290	1000
2	1100	1250
3	900	1140
4	250	1100
5	2000	2200
6	1700	2000
7	450	1000
Mean	1100 ± 631	1380 ± 513*

* No significant difference ($p > 0.05$).

as well as intestinal parasites. Routine screening of aboriginal patients and relatives accompanying these patients at the Aboriginal Hospital in Gombak revealed that approximately 70% of the population harbour intestinal helminths and approximately 8% have a positive blood film for malaria (Khoo, 1976: Personal Communication). These figures give a fair representation of the "normal" aboriginal population as it is customary for each patient to be accompanied by a large number of his relatives (Bolton, 1973). A comparison between the immunoglobulin levels in Semai children and adolescents with non-aboriginal Malaysians is not possible as no data on the latter group are available.

Immunoglobulin levels in the Semai generally resemble those observed in other indigenous populations in the tropics (McFarlane, 1973; McFarlane and Voller, 1966; Turner and Voller, 1966; Wells, 1968). In a study of the Bantu and Pygmy (Simbeye, 1970) the mean values of IgG were found to be 3220 mg/100 ml and 2780 mg/100 ml respectively. These are higher than that in the Semai (1490 mg/100 ml). In the Bantu and Pygmy study however subjects with hepatosplenomegaly and blood parasites were not excluded; this factor may contribute to the difference.

Our results show that Semai children attain adult IgG levels by the 5th year of age. This contrasts sharply with the pattern observed in an urban North American population where adult IgG levels are only reached by the 16th year (Stiehm and Fudenberg, 1966). It is possible that this discrepancy arises from the early exposure of Semai children to a wide range of bacterial, mycotic, parasitic and viral diseases. A similar developmental pattern of IgG levels has been reported in a Gambian community (Rowe *et al.*, 1968).

It is of interest to note that IgG levels in an African Negro population were higher in maternal than their respective infants' cord sera (McFarlane and Udeozo, 1968). In contrast IgG levels were lower in Caucasian mothers than in cord sera from their infants (Michaux *et al.*, 1966). It has been suggested that the cord IgG level is dependent on both placental transfer and synthesis by the fetus itself (McFarlane and Udeozo, 1968). We have found no significant difference in the IgG levels between mother and their respective infants' cord sera.

Values of IgG appeared to be lower in pregnant women in Gambia (Rowe *et al.*, 1968). In our study we find no significant difference in the IgG level between pregnant and non-pregnant women.

Further studies on the levels of immunoglobulins in mother-child pairs and in pregnant and non-pregnant Semai women are in progress using larger population samples.

Summary

The serum levels of IgG, IgA and IgM were measured in 108 Semai subjects and 14 cord blood samples. The mean adult levels of IgG, IgA and IgM in the Semai were significantly higher than in the corresponding levels in adult urban non-aboriginal Malaysians. Semai children attain adult levels of IgG by their 5th year. No significant difference was observed between the mean IgG levels of maternal sera and their respective infants' cord sera.

Table 4

Comparison of mean immunoglobulin levels of non-pregnant and pregnant Semai females (mg/100 ml)*

	No. of Subjects	IgG	IgA	IgM
Pregnant	14	1327 ± 455	241 ± 145	412 ± 235
Non-pregnant**	18	1618 ± 508	300 ± 172	392 ± 208

* No significant difference ($p > 0.05$).
** Random sample from non-pregnant Semai females.

No significant difference was observed in the mean IgG, IgA and IgM levels between pregnant and non-pregnant Semai females.

Acknowledgements

We thank Dr. T.E. Khoo, Medical Superintendent of the Aboriginal Hospital, Gombak for his kind cooperation and Professor K.J. Lindqvist and Dr. E.J. Aw of the Department of Microbiology, the National University of Malaysia for their encouragement and advice.

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Decreased serum immunoglobulin A level in a patient with bronchiectasis

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IN RECENT YEARS immunoglobulin A (IgA) has assumed great biological significance. Although a relatively minor constituent of serum, it is the predominant immunoglobulin in external secretions, particularly of the gastrointestinal and upper respiratory tract, and appears to play an important protective role in local defence mechanisms (Tomasi & Bienenstock, 1968).

The incidence of IgA deficiency in Caucasians ranges from 2 to 7 per 1000. (Ammann & Hong, 1973; Rosen, 1975); the incidence in Malaysians is not known. Although recurrent mild and moderately severe respiratory and intestinal tract infections have been observed in many cases of isolated IgA deficiency (Hobbs, 1968), there are many IgA – deficient individuals who remain healthy throughout life (Rockey et al., 1964; Hereman & Crabb, 1968). Thus it is not entirely clear why some IgA-deficient individuals are asymptomatic whereas others suffer recurrent infections.

The present study is an outcome of observations over several years on a patient with bronchiectasis, chronic diarrhoea and recurrent episodes of otitis media.

Immunological studies recently performed suggest that the clinical manifestations are probably a consequence of decreased IgA levels and markedly elevated IgE levels observed in the patient.

Case Report

The patient, N.K. a Punjabi female now aged 10 years (Dec, 1975) and the youngest in a family of 6 girls and 1 boy, has a normal birth history and a history of having received full immunisation in the first 2 years of life. She has had no immunising diseases. The parents and other relatives are healthy. There is no consanguinity.

N.K. was first seen at age 2½ years for heavy *trichuris* infection. From age 2½ years she had a chronic cough and by 4 years she had been admitted once for bronchopneumonia and otitis media, and three times for chronic diarrhoea. Rectal biopsy revealed a non-specific colitis. The chronic diarrhoea resolved spontaneously after age 4 years. At age 5, a left lobectomy was performed for poorly controlled bronchiectasis. The patient required several further admissions for inguinal lymphadenitis, maxillary sinusitis, chronic suppurative otitis media and exacerbations of bronchiectasis. (Table 1).

Cultures of sputum and ear swabs yielded *H. influenza,* Diphtheroids, *Klebsiella, Staphlococcus, serratia marcescens* (ear swab) or *proteus.* Several antibiotics including Gentamycin, Bactrim, Ampicillin, Penicillin, Tetracycline and Erythromycin were used singly and in combination to control the infections.

Other data obtained on 22/12/75: height 125 cm; weight 22 kg. Blood group: A positive; Haemoglobin: 11.7 gm%, MCHC 30; WBC 10,600 cells/mm (Polymorphs 63%, Lymphocytes 23%, Monocytes 5%, Eosinophils 9%): ESR 45 mm/hr; Platelets 102×10^3; Mantoux test negative; α_2 fraction of serum proteins increased.

Table 1
Summary of Clinical History of Patient NK

Admission number	Year	Age in years	Clinical History
1	1968	2½	Trichuriasis.
2	1968	2½	Bronchopneumonia, trichuriasis, and (¾) amoebiasis, diarrhoea.
3	1969	3	Non-specific diarrhoea and chronic otitis media.
4	1969	3	Chronic diarrhoea and chronic otitis media.
5	1971	5	Bronchiectasis and recurrent pneumonia, L. lobectomy for bronchiectasis.
6	1972	6	Bronchiectasis and bronchopneumonia.
7	1975	9	Inguinal lymphadenitis, chronic maxillary sinusitis, adenitis, bilateral chronic suppurative otitis media and exacerbation.
8	1975	9	Bronchiectasis, chronic otitis media.
9	1975	10	Bronchiectasis, (L) otitis media, IgA deficiency.

Immunological Studies:

The recurrent episodes of infection suggested an underlying immunological disorder and tests of cellular and humoral immunity were carried out.

The patient's polymorphs gave a normal (65 percent) Nitroblue tetrazolium (NBT) reduction test. The Mantoux test was negative. The stimulation index of Phytohemagglutinin (1% PHA) transformed peripheral blood lymphocytes separated by Ficoll-Hypaque centrifugation and cultured in medium RPMI 1640 at a concentration of 1×10^6 cell/ml was of the order of 10 and comparable in magnitude to those observed in controls.

Serum immunoglobulins A, G, M and D levels were assayed by the single radial immunodiffusion method (Mancini et al., 1965) using plates obtained from a commercial source (Behringwerke AG, Germany). Serum IgE was determined by a radio immunoassay procedure using a kit from Pharmacia AB Diagnostics, Sweden.

Table 2 summarises the serum immunoglobulin A, G, M, D and E levels in the patient, her mother and three elder sisters. Sera from other members of her family were not available at the time the work was carried out.

Table 2

Serum Immunoglobulin Levels in Family Members

Family**	Birth year	Age in years	Relationship to patient	SERUM IMMUNOGLOBULINS* IgG	IgA	IgM	IgD	IgE
1. –	–	55	Father	ND	ND	ND	ND	ND
2. G.K.	–	40	Mother	243	139	138	0	9000
3. –	1953	23	Sister	ND	ND	ND	ND	ND
4. P.K.	1955	21	Sister	243	156	273	0	3300
5. –	1958	18	Brother	ND	ND	ND	ND	ND
6. M.K.	1961	15	Sister	278	136	306	0	2200
7. B.K. (Twin I)	1963	13	Sister	213	139	153	0	6500
8. B.K. (Twin 2)	1963	13	Sister	178	69	138	0	2200
9. N.K.	1969	10	Patient	337	31	356	475	2600
Control mean value ± standard deviation for Malaysian Indians				154 ± 38	146 ± 51	217 ± 79	29 ± 42	1300 ± 2000

* Values in International/ml. (Blood samples obtained on 26–29/12/75). To convert to mg percent, multiply values by 8.33 for IgG, 1.51 for IgA, and 0.89 for IgM; Data from Shah & Yadav (unpublished).

** All members of the family alive and well.

ND = Tests not performed as donors not available.

Discussion:

The patient had reduced IgA levels whereas the other immunoglobulins were raised. The markedly elevated IgD level is of interest as this is the first instance such a high value has been recorded in our laboratory. Serum immunoglobulin levels of other members of the family fall within the normal range for the Indian population in Malaysia. The serum IgE levels in all members of the family are elevated (pathologic range >800 IU/ml) and these are probably related to intestinal and other parasitism.

In selective IgA deficiency serum IgA levels are often less than 5 mg percent; there is no deficiency of other immunoglobulins and a normal antibody-mediated and cell-mediated immunity is present (Ammann & Hong, 1971). The patient N.K. has decreased serum IgA level (47 mg%) and not isolated IgA deficiency. Here the defect may be a failure of maturation of the B cell on antigenic stimulation or possibility the presence of suppressor T cells that inhibit the maturation. The description of suppressor T cells in a number of patients with immunodeficiency states represents an important recent development (Waldmann et al., 1974). The nature of the block in B cells is unknown.

IgA plays a major role in the first line defence against microbial, parasitic and viral infections at the local level (Per Brandtzaeg, 1973) especially in the respiratory and gastrointestinal tract. In the presence of decreased levels of secretory IgA antibodies, synthesis of the other immunoglobulins may be elevated as seen in our patient. Lack of secretory IgA can impair antigen exclusion by the mucosal lining resulting in antigenic challenge with elevation of IgE (Taylor et al., 1973).

11 individuals with combined IgA and IgE deficiency studied by Polmer et al (1972) were free of any respiratory disease. But 10 of 14 IgA-deficient patients, with normal IgE levels had significant disease. These observations suggest that elevated IgE levels may play an important role in the occurrence of respiratory disease in IgA deficient patients.

The markedly elevated IgD serum levels observed in our patient is of interest. It is well established that the main immunoglobulin receptors on lymphocytes are IgM and IgD. The lymphocyte surface IgD receptors are present in all age groups including newborn. The precise biological function of *serum* IgD remains unknown. An analysis of large number of normal sera obtained from various sources in Malaysia (Yadav, unpublished) shows the patient N.K. to have the highest level of record. Luster and co-workers (1976) have reported elevated serum IgD levels in patients with allergic bronchopulmonary aspergillosis.

The present report draws attention to the paucity of immunological studies and other data on patients with immunological disorders in Malaysia.

Summary:

The patient, a 10-year old Punjabi girl, was first seen at age 2 years for heavy trichuris infection. From age 2 years to 4 years, she had a chronic cough and was admitted once for bronchopneumonia and otitis media and three times for chronic diarrhoea. Rectal biopsy at this time showed a non-specific colitis. The chronic diarrhoea resolved spontaneously after age 4 years. At age 5 years, a left lobectomy was performed for bronchiectasis and recurrent pneumonia. The patient required several further admissions for lymphadenitis, sinusitis, otitis media and bronchiectasis.

Immunological investigations revealed a normal NBT-dye reduction by her leukocytes and a normal *in-vitro* response by her lymphocytes to PHA. The serum IgA was reduced while other immunoglobulins (IgG, IgM, IgD and IgE) were markedly elevated. Since IgA is the primary immonoglobulin of secretory surfaces, its decrease or absence may be associated with infections in the respiratory and gastrointestinal tracts.

It is suggested that high IgE levels in IgA-deficient patients are primarily responsible for the clinical manifestations of respiratory and gastrointestinal infections.

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Primary and secondary risk factors for coronary heart disease: Their role in prevention*

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Introduction

CORONARY HEART DISEASE (CHD) is the dominating cause of death in most industrialized countries. This group of diseases also causes considerable disability for surviving victims. The high initial mortality in combination with the above-mentioned fact as well as the limited possibilities of treatment in the acute phase have called for primary preventive efforts. The generally bad prognosis for those who survive an attack of myocardial infarction (MI), with about 30 times higher mortality during the first year of follow-up, than in a comparable age group, has also called for secondary preventive measures.

In order to enable such measures knowledge about causation is desirable, but not mandatory. If possible etiologic factors can be defined, the effect of various intervention measures is usually well worth studying. Thus, preventive trials in men might be the only possibility of answering the questions concerning etiology. An initial step in these efforts is to isolate risk factors for the various stages of the disease. The present paper summarizes studies concerning risk factors and prevention carried out at the Section of Preventive Cardiology in Göteborg.

Primary risk factors

The classical method for finding risk factors is to study a population prospectively. This method can be used if the prevalence of the risk factor and the incidence of end-points (non-fatal and fatal myocardial infarction – MI –, sudden coronary death – SD –, etc) are sufficiently high. This is true for several of the conventional risk factors for CHD. Some factors are, however, uncommon in the population, and prospective studies might not detect such a factor, e.g. diabetes mellitus. Well designed case-control studies with carefully performed analysis of possible bias and confounding variables can be used in this case. In case-control studies it is of special importance to allow for the effects of selection due to death, as often only survivors can be analyzed. In the case of MI several factors are affected by the disease process per se, and these effects have been evaluated by us (Wilhelmsen *et al.*, to be publ).

Another problem in long-term prospective studies is that some factors might be connected with a certain end-point event only during a very limited time period before the event. Such a factor will be nearly impossible to detect by prospective studies in general populations, but might be found with the aid of case-control studies or by specially designed prospective studies using selected groups of e.g. high risk individuals. An example of such a possible risk factor is psychological stress which can precipitate an acute MI or SD.

Table I summarizes results of both prospective and case-control studies performed in the same community with standardized procedures. The results are based on data published previously (Wilhelmsen *et al.* 1973, Elmfeldt *et al.* 1975, Tibblin *et al.* 1975, Elmfeldt *et al.* 1976, Elmfeldt *et al.* 1976, Elmfeldt *et al.* 1976, Wilhelmsen *et al.* 1976, Bergstrand *et al.*, in press, Wilhelmsen *et al.*, subm for

* Paper read before the Academy of Medicine of Malaysia, 1976.

publ, Wilhelmsen *et al.*, in press, Wilhelmsen *et al.*, to be publ). Besides the male sex and age, early parental death (= the parents of the index case dying at low age) is associated with MI in univariate analysis, and at least in some of the studies also significant in multivariate analysis. This factor was not significantly associated with other risk factors for CHD. It is probable that this factor mirrors a genetic tendency towards CHD. Only one of the lipid factors, namely hypercholesterolemia, stands out as a significant risk factor in multivariate analysis in men. In women, it seems as if hypertriglyceridemia is more important than hypercholesterolemia. In accordance with all other studies, hypertension is a risk factor also in multivariate analysis.

Two factors directly connected with personel habits – tobacco smoking and alcoholic intemperance – are associated with MI; the first factor being the strongest risk factor in the male, middle-aged population.

In Fig. 1 is given a schematic overview of the possibilities of confounding of the risk factors for MI. The various factors may be associated directly with MI, but also in some instances via other factors. The signs in Fig. 1 can be treated in usual mathematical ways; minus times minus gives plus, and minus times plus gives minus. Both smoking and hypertension are positively associated with MI, and these associations cannot be explained by the

Table I

Risk factors for myocardial infarction and sudden coronary death according to studies in Göteborg

Factor	Type of analysis		
	Prospective		Case-control
	Univariate	Multivariate	Univariate
Male sex	†	†	†
Age	†	†	†
Parents dying early	†	(†)	0
Hypercholesterolemia	†	†	†
Hypertriglyceridemia	†	–	†
Diabetes	†	0	†
Overweight	–	–	–
Increased body fat	–	–	–
Hyperuricemia	–	–	–
Hypertension	†	†	†
Tobacco smoking	†	†	†
Alcoholic intemperance	†	†	†
High coffee consumption	–	–	–
Physical inactivity, occupation	–	–	–
Physical inactivity, leisure	†	–	†
Stress	–	–	†
Angina pectoris	†	0	†
Dyspnea	†	†	†
ST-T exercise	†	–	0
High respiratory frequency exerc.	†	–	0
Low max. exercise performance	†	†	0

† = significant association, 0 = not studied

influence of either of these factors on the other. Serum cholesterol and serum triglycerides are, however, positively associated with each other and their association with MI might well be caused by either of these factors predominantly. By using multivariate analysis it is possible to solve this problem mathematically, but the biological mechanisms can naturally not be detected by this method.

Alcoholic intemperance is of great theoretical and practical interest as a risk factor. Thus, this factor has turned out to be exclusively connected with fatal CHD events but not with non-fatal MI. This might hypothetically imply an effect on cardiac arrhythmias rather than on the atherosclerotic process per se, or on any process connected with the progress of the myocardial injury. This explanation is supported by findings at autopsy; these patients seem to die suddenly with relatively moderate coronary artery stenoses and rather uncommonly any anatomically detectable MI (Wilhelmsen *et al.*, to be publ). Further studies concerning the possible the possible mechanisms are in progress.

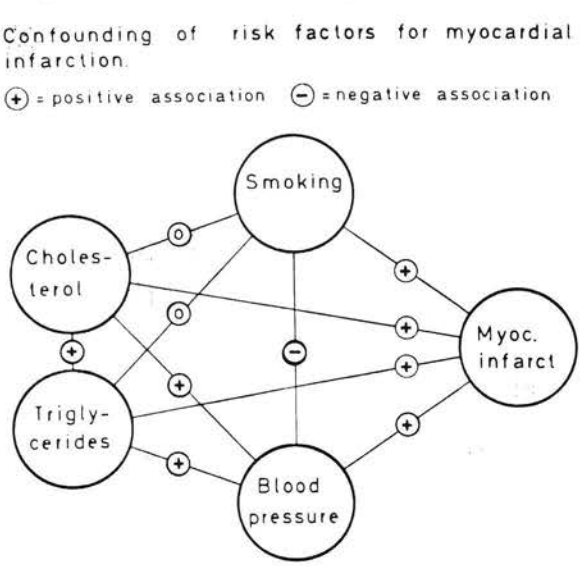

Fig. 1
Schematic overview of the confounding of risk factors for myocardial infarction.

The association between MI and the two factors physical inactivity during leisure time and stress are doubtful. None of these factors are significantly associated with MI in multivariate analysis and their significant association with CHD in case-control studies, must be regarded with great caution. The patients may have overemphasized their pre-infarct situation retrospectively. With respect to psychological stress another explanation is, however, possible. The stressful experience might be undetected in the long-term prospective studies because the stress is only of importance during a very short time before the infarct, like what was discussed previously. Thus, psychological stress may be of importance only in certain situations when the heart is especially sensitive to various adverse influences. Continuous recording of events in subjects at high risk of suffering a MI or SD might be the only clinical – epidemiological way of looking into these problems.

Two factors associated with physical performance are risk factors in univariate as well as in multivariate analyses, namely dyspnoea during exertion and low maximum exercise performance (Wilhelmsen *et al.* 1973, Tibblin *et al.* 1975, Wilhelmsen *et al.*, 1976 and to be publ). It is of interest to note that low maximum exercise performance is of greater importance as a risk factor than ST- or T-changes in the ECG at rest or during physical exercise. Presently we cannot explain the association between low maximum performance and MI. It may be, that it is a very early sign of CHD causing reduced myocardial performance but no perceivable pain at that instance.

Possibilities of primary prevention

Out of the primary risk factors listed in Table I, the most important ones are also treatable, at least to some extent. These are tobacco smoking, hypercholesterolemia and hypertension. The statistical associations between these factors and MI do not, however, necessarily imply that a cause-effect relationship is present. Genetical or other background factors may well be responsible both for the elevations of blood cholesterol and blood pressure, or the tendency to become a smoker, and parallelly affect the coronary vessels and myocardium increasing its vulnerability. This possibility is shown in Fig. 2. If such factors are responsible for both the risk factors in question and CHD, treatment directed towards the risk factors would not be of particular value. If the mechanisms, however, are as depicted in Fig. 3, treatment against the risk factors might very well influence the incidence of MI even if the hypothetical factor X could not be influenced. As animal studies cannot mirror the circumstances in man, intervention trials aiming at reducing the risk factors have to be performed. Such a study is under way in our group (Wilhelmsen *et al.* 1972). Recently, it has been found that antihypertensive therapy reduces CHD morbidity (Berglund & Wilhelmsen, to be publ). Similar results concerning reduction of lipid levels and smoking habits are not available yet.

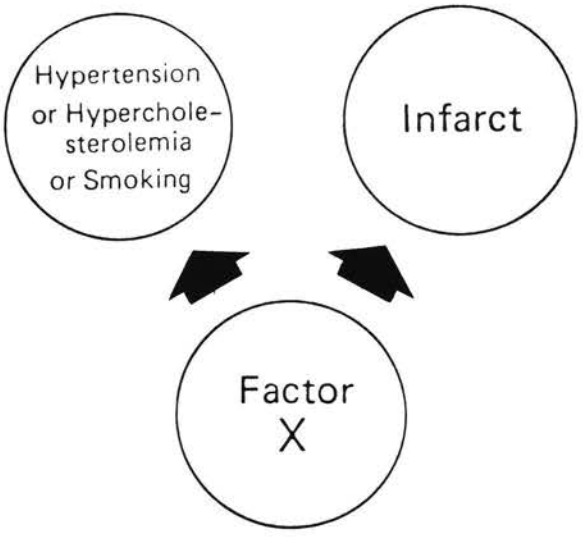

Fig. 2
Schematic relationship indicating that (perhaps) genetical or other background factors may affect the coronary vessels and myocardium increasing its vulnerability.

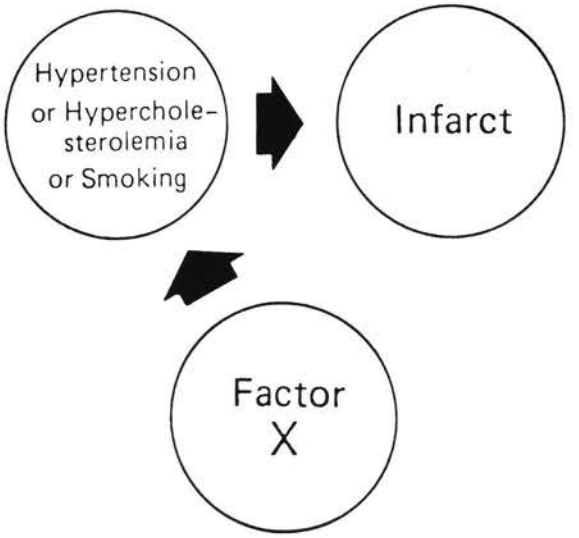

Fig. 3
Schematic relationship to show that (perhaps) the risk factors are intermediate between factor X and myocardial infarction.

Secondary risk factors

Cardiovascular diseases are the immediate causes of death in 90% of the cases during at least 5 years' follow-up. It can be expected that certain factors will stand out as more closely associated with new events of CHD among individuals already having demonstrated their susceptibility to CHD. Furthermore, it is probable that risk factors might be different in different stages of the disease.

In Table II are listed the risk factors for a following event *after* a MI found in the studies in Göteborg. From several studies it is evident that other factors than the conventional primary risk factors are more important during the hospital phase (Henning *et al.* 1975) and during the first 2 years of follow-up (Vedin *et al.*, in press) and even up to 4 years' follow-up (Wilhelmsen *et al.* 1975). The most important of these factors all mirror the size of the myocardial damage as this is evaluated by clinical methods. Hitherto, there is no proof available that those who suffer an extensive myocardial damage are more heavily burdened by known primary risk factors. Some indications in this direction were, however, found in one study comparing patients with non-fatal MI and fatal CHD (Tibblin *et al.* 1975). It seems as if the infarct size is more dependent on other factors such as local catecholamine release or some other (undefined) factor (Wilhelmsen 1976). The infarct size may also be a reflection of a more extensive coronary

Table II

Risk factors for a following event after a myocardial infarction according to studies in Göteborg

	Type of analysis	
	Univariate	Multivariate
A. Fatal		
Age	†	†
Previous infarction	†	†
Major myocardial injury	†	†
Arrhythmias	†	–
Angina pectoris	†	(†)
Hypercholesterolemia	–	–
Hypertriglyceridemia	–	–
Diabetes	†	0
Hypertension	–	–
Smoking	†	†
Physical inactivity	–	–
B. Non-fatal		
Hypertension	†	†
Smoking	†	†

artery disease, which is indicated by a study of coronary angiography and autopsy in non-fatal and fatal cases of CHD (Wilhelmsen *et al.*, to be publ). This might also be the reason for the increased mortality after a first MI in patients with angina pectoris (Wilhelmsson *et al.*, to be publ). The hemodynamic load during the acute, vulnerable phase of the MI is certainly of great importance.

The importance of cardiac arrhythmias for prognosis has been extensively studied, but interestingly enough our studies have not shown that arrhythmias are of predictive importance when other variables indicating an extensive myocardial damage have been taken into consideration. That might have to do primarily with the fact that the tendency towards cardiac arrhythmias during the acute stage is very closely related to the infarct size. A very careful analysis of the importance of arrhythmias in addition to infarct size variables during the hospital phase is going on.

Of the most important primary risk factors hypercholesterolemia, hypertension and smoking only the last mentioned factor is a significant risk factor for a fatal event after a MI (Wilhelmsson *et al.* 1975, Wilhelmsson *et al.*, subm for publ, Aberg *et al.*, subm for publ, Johansson *et al.*, to be publ). The effect of these (primary) factors has only been studied for a 5-year follow-up period, and it is possible that they are of importance only for those patients who have survived that time. The present findings, however, indicate that other means of secondary prevention than dietary advices and hypotensive therapy might be more useful for preventing death. Hypotensive therapy is evidently indicated from other reasons (e.g. preventing stroke) in these patients.

An interesting result is that we only found hypertension and smoking to be risk factors for a non-fatal MI after a first event (Table II). As these two factors are also primary risk factors, it might had been expected that also hypercholesterolemia had been connected with the rate of non-fatal recurrences after the initial phase, but there was no tendency whatsoever in this direction (Johansson *et al.*, to be publ).

It should be remembered that patients having suffered a MI are selected in several respects. They have demonstrated themselves to be sensitive to myocardial damage. The finding that the post-MI cholesterol value does not have any importance for prognosis does not imply that cholesterol-lowering regimen is of no value. The same reasoning applies to other "primary" risk factors. A patient with MI and low cholesterol (or low blood pressure, or low/no tobacco consumption) has probably other factors (known or unknown) which are of importance for the risk.

During the first year after an initial MI the excess mortality and morbidity is approximately 30 times, and during the second year 10 times among MI patients in comparison to healthy men of the age group 40 – 49 years (Vedin *et al.*, in press). In this period, and even up to 5 years after a MI, the risk is predominantly determined by the size of the previous MI. So far, we have had very little knowledge concerning possibilities of reversing the serious effects of the big MI. Recent studies have shown that beta-blockade can reduce the infarct size in animals.

Secondary prevention

Knowing the adverse effects of a big MI another interesting intervention measure would be to try to reduce the initial infarct size. One of the most interesting group of drugs which has turned out to be of some value in animal studies is beta-blockers. A double-blind clinical trial using beta-blockers in the acute stage of MI is going on. One aim is to study the effect on long-term mortality.

As already discussed above stopping smoking after a MI was of value (Wilhelmsson *et al.* 1975). This has already been discussed. Any trial concerning the effect of hypotensive treatment after MI is not ethically acceptable and of minor interest as there are reasons for treating hypertension whatever the effect might be on CHD mortality. We did not find any association between cholesterol values and prognosis after a first MI during 5 years' follow-up, and cholesterol-lowering drugs was not either of value according to the Coronary Drug Project (Coronary Drug Project Research Group 1975).

Physical inactivity has been discussed as a risk factor both for a primary event and for following events, but our results are largely negative. In a controlled trial it was also shown that physical training did not improve prognosis with the respect to non-fatal or fatal recurrences (Wilhelmsen *et al.* 1975). Some effects on the psychological and physiological well-being were, however, found (Sanne *et al.* 1973).

Concluding remarks

It has been found that the risk factors for a primary CHD event differ from a secondary event to some degree, and this fact logically implies different preventive measures in primary and

secondary prevention. Antismoking advice is logical from many aspects, but it is not yet proven whether or not it has any preventive effect for a first MI. Treatment of hypertension seems to be beneficial, but it is uncertain whether decrease of cholesterol values will lower incidence of CHD. A practical problem in this context is also the possibilities of inducing these changes in the population. Ongoing primary preventive trials will give answers to these questions.

In secondary prevention there are good evidence for the beneficial effect of beta-blocking agents at least in the earlier stages of the disease, and furthermore cessation of smoking is evidently beneficial during up to 5 years after MI. The possible effects of other intervention measures are not settled yet.

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Salivary mucoceles – racial and histological variations

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SUMMARY

The authors report on their study of 250 cases of salivary mucoceles in Malaysia and discuss racial variations in their distribution. In the Malay male mucoceles formed 5.1% of all specimens reported in them. Likewise the figures by race and sex were: Malay female (4.1%), Chinese female (5.0%), Chinese male (2.7%), Indian male (2.8%) and in the Indian female (2.0%). The overall study showed that both sexes were about equally involved. However in the Indians the males predominated and in the Chinese the females had a higher frequency. In the Chinese female and Indian female mucoceles occurred with the greatest frequency between 0 – 20 years. In the Malay male it was between 11 – 30 years. Mucoceles were rare after 40 years. Mucous extravasation mucocele (MEM) occurred most commonly in the lower lip. MEM in the tongue was more common in the Chinese male and female and Malay female, whereas MEM in the buccal mucosa was more frequent in Europeans. Mucous retention mucoceles (MRM) are extremely rare in the Chinese and Malays who are of Mongoloid racial origin. In contrast to MEM, MRM is rare in the lower lip and is found most frequently in older patients. Like Sela and Ulmansky (1969) this study too showed variant 2 of their histological subclassification of MEM to be the commonest. In the Malay male and female variant 1 was rare and variant 3 was rather uncommon. All the mucoceles were surgically excised. The recurrent rate was 3.0%. All the eight patients with recurrence were of Mongoloid racial origin. Five of the recurrent cases belonged to variant 3 of the histological subclassification and three cases to variant 2.

A MUCOCELE is a circumscribed swelling arising from the abnormal accumulation of mucous secretion. Salivary mucoceles are not uncommon and they are the most frequent lesion involving minor salivary glands. The incidence of mucoceles is understandable since minor salivary glands are widely distributed in the submucosa of the oral mucosa and trauma to the mucosa which causes their formation occurs frequently.

MATERIAL AND METHODS

This study was based on the records of the Department of Stomatology, Institute for Medical Research, Kuala Lumpur and for the years 1967 – 75. Only histologically confirmed salivary mucoceles and patients reported for the first time were included in this study. In all 250 mucoceles were reported.

Between 1967 – 75 this Department reported in all 7425 biopsy specimens. Mucoceles formed 3.4 per cent of all the specimens. In the Malay male mucoceles formed 5.1 per cent of all specimens reported in them. Likewise the figures by race and sex were: Malay female (4.1 per cent), Chinese female (5.0 per cent), Chinese male (2.7 per cent), Indian male (2.8 per cent) and in the Indian female (2.0 per cent).

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FINDINGS

Race, sex and age distribution

Table 1 shows the distribution of mucoceles by race, sex and age groups.

Clinical findings

The clinical diagnosis of mucocele or mucous cyst was made in 83 per cent of the cases. The clinical diagnosis in the other 17 per cent of the cases was benign tumour of epithelial or connective tissue or salivary gland origin, viral wart and sublingual dermoid cyst.

The lesions were consistently painless, freely movable, smooth, soft masses varying in size from a few millimetres to several centimetres (Fig. 1). The larger lesions were usually located in the floor of the mouth, the typical location of the so-called ranula. (Fig. 2). The colour was dependent on the depth at which the mucus accumulated in the tissue. Those masses which were deep had a normal mucosal surface, while the more superficial lesions produced a bluish or translucent change in the mucous membrane. When the lesion was situated immediately beneath the epithelium, a bulla developed containing a clear fluid. Often the mucoceles would "burst" spontaneously or the patient would purposely traumatize them to allow drainage and decompression. A mucocele on cutting was often unilocular and filled with thick gelatinous fluid which often escaped.

Figure 1 – shows the macroscopic appearance of a cleanly excised mucocele which is oval, smooth and soft.

From the available data 17 patients (14.8 per cent) had the lesion for more than one year. Fifty-eight patients (50.4 per cent) had the lesion for less than three months.

Table 1

Distribution by race, sex and age groups of 250 patients with mucoceles

Age	Malays		Chinese		Indians		Others	Total		Percentage
	M	F	M	F	M	F	M	MEM	MRM	
0 – 10	7	7	11	15	4	6	–	50	0	20.1%
11 – 20	19	32	12(1)	26	17(1)	3	–	109	2	44.6%
21 – 30	21	7	9	4	6	2	–	49	0	19.7%
31 – 40	9	2	3	6	3(1)	0(1)	–	23	2	10.0%
41 – 50	0	1	0	2	2	0	–	5	0	2.0%
51 – 60	1	0(1)	1	0	2	0	–	4	1	2.0%
61 – 70	0	0	0	1(1)	0	0	1	2	1	1.2%
71 – 80	0	0	0	1	0	0	–	1	0	0.4%
	57 (22.9%)	50 (20.1%)	37 (14.9%)	56 (22.5%)	37* (14.5%)	12 (4.7%)	1 (0.4%)	243	7*	100.0%
	M:F = 1.1:1		1:1.5		3.1:1					

* In one Indian male the age was not recorded.
Figures within brackets denote Mucous Retention Mucocele (MRM)

MEM = Mucous Extravasation Mucocele.
Others = British Male.

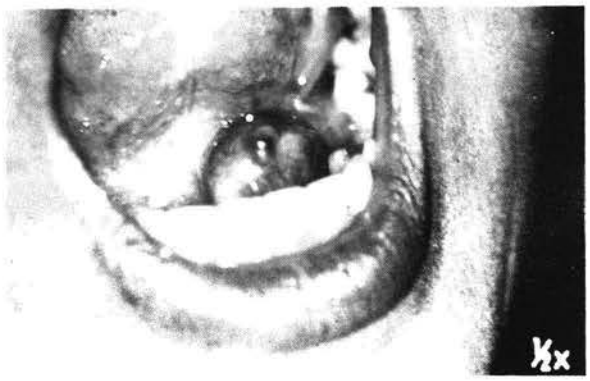

Figure 2 – shows a mucocele on the left side of the floor of the mouth and containing clear fluid. The typical location of the so-called ranula.

Figure 3 – is a low-power photomicrograph showing part of a mucous extravasation mucocele (MEM) with the cystic contents consisting of mucus and inflammatory cells. Glandular tissue is present (Haematoxylin-eosin stain). Orig. magnification ×25.

Histopathology

Histologically, mucoceles can be divided into two main types, viz. (1) mucous extravasation mucoceles (MEM) which is the much commoner variety and where the lining is composed of compressed connective tissue cells (Figs. 3 and 4) or granulation tissue and (2) mucous retention mucoceles (MRM) in which the cystic cavity is lined by epithelium (Fig. 5). Aggregations of glandular tissue are characteristically present in close proximity to the cyst-like space, and are usually the site of inflammatory or degenerative changes.

Figure 4 – is a high-power photomicrograph showing part of a MEM lining composed of compressed connective tissue cells. The amorphous substance seen is mucin. Lymphocytes are also evident. (Haematoxylin-eosin stain). Orig. Magnification ×160.

In all there were 243 MEM and 7 MRM. The ratio of MEM:MRM by race and sex were: Indian male (11.3:1); Indian female (11:1); Chinese male

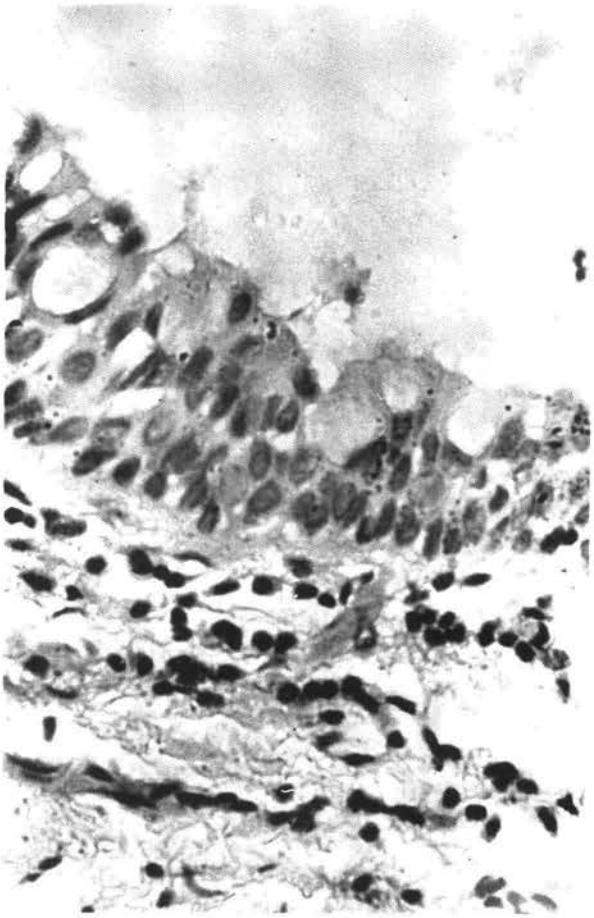

Figure 5 – is a high-power photomicrograph showing part of a mucous retention mucocele (MRM) in which the cystic cavity is lined by epithelium. (Haematoxylin-eosin stain). Orig. Magnification ×160.

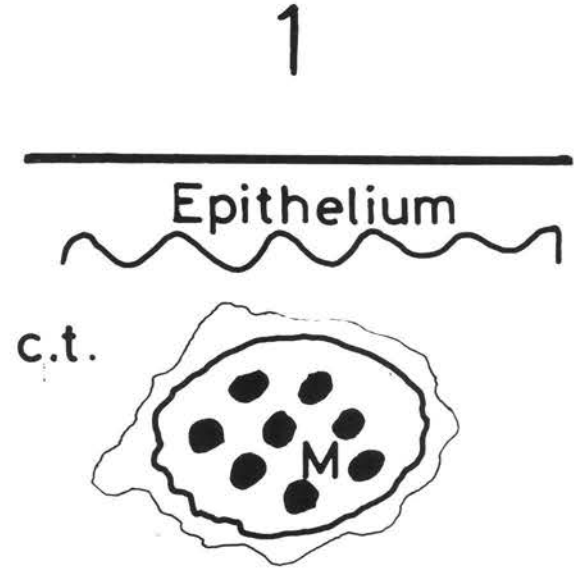

Figure 6 – is a diagramatic representation of the histological subclassification of mucous extravasation mucoceles (MEM) according to Sela and Ulmansky (1969). (a) Variant 1 – Mucin dispersed diffusely with tendency to form small pools. No definite cystic cavity. (b) Variant 2 – Pool of mucin contained in a well-defined cystic cavity and surrounded by a fibrous capsule or granulation tissue and (c) Variant 3 – Pool of mucin just below oral epithelium. Three sides of cystic cavity formed by a fibrous capsule and one side of cyst formed of oral epithelium.
c.t. = connective tissue;
f.c. = fibrous capsule.

(36:1); Chinese female (55:1); Malay male (57:0); and the Malay female (49:1). About 59 per cent of the patients showed aggregations of mucous glands in close proximity to the cyst-like space. Approximately 72 per cent of the Malay males, 50 per cent of the Malay female, 65 per cent of the Chinese male, 57 per cent of the Chinese female, 47 per cent of the Indian male and 58 per cent of the Indian female showed the presence of mucous glands. These glands were often characterized by such secondary changes as atrophy of glandular tissue and its replacement by interstitial fibrosis and dilation of ducts.

Sela and Ulmansky (1969) have further subclassified MEM into three variants (Figs. 6a, b and c). Tables 2 and 4 show the distribution of the histological variants by race, sex and anatomical sites.

Anatomical sites of distribution

Table 3 shows the distribution of mucoceles by anatomical sites. Of the 7 cases of MRM 3 cases involved the floor of the mouth, two cases the buccal mucosa, and one case each the lower lip and tongue respectively.

DISCUSSION

Like Cataldo and Mosadomi (1970) our study too showed that both sexes were about equally involved. However there was a predominance of males in the Indians (M:F = 3.1:1) and of females in the Chinese (M:F = 1:1.5). About 84 per cent of the mucoceles occurred before the age of 31 years and the peak incidence was between 11 – 20 years (45 per cent). Mucoceles were rare after 40 years. In the Chinese female and Indian female mucoceles ocurred with the greatest frequency between 0 – 20

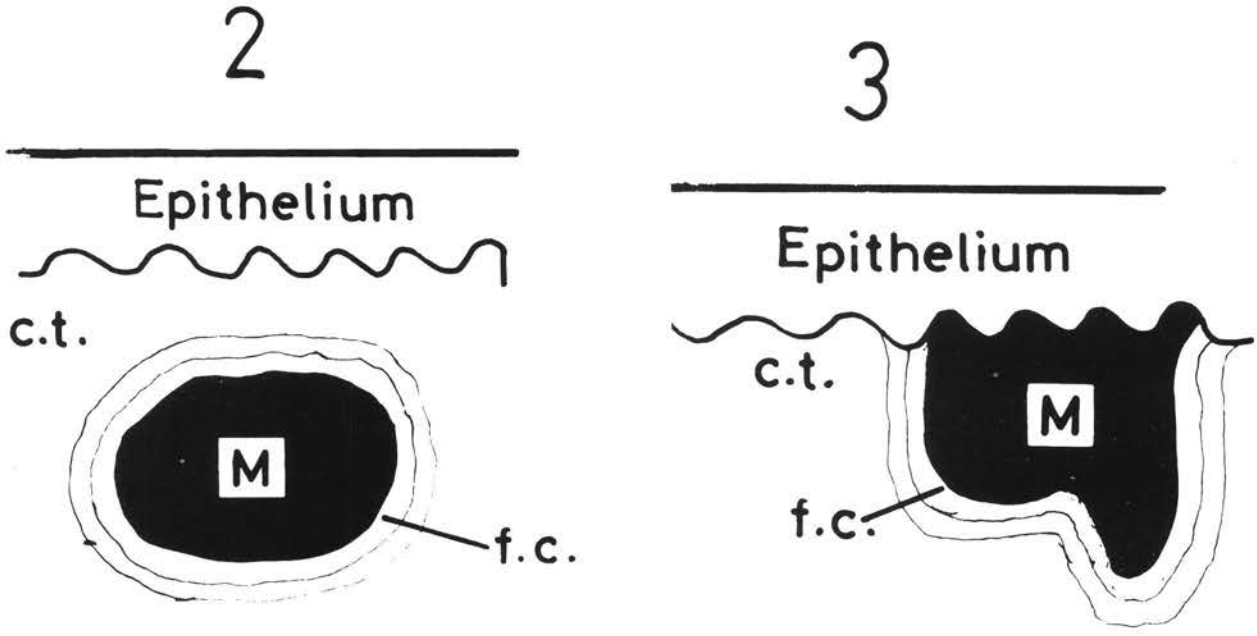

Table 2
Distribution of histological variants of mucous extravasation mucoceles (MEM) in 196 patients (after Sela and Ulmansky, 1969)

	Malays				Chinese				Indians				Total	Percentage
	M	%	F	%	M	%	F	%	M	%	F	%		
Variant 1	1	2.8	1	2.4	6	19.4	12	24.5	7	25.9	3	27.3	30	15.3%
Variant 2	25	69.4	27	64.2	14	45.2	16	32.6	10	37.0	6	54.5	98	50.0%
Variant 3	3	8.3	5	11.9	9	29.0	12	24.5	9	33.3	2	18.2	40	20.4%
Variant 1 + 2	3	8.3	2	4.8	1	3.2	4	8.2	–	–	–	–	10	5.1%
Variant 1 + 3	–	–	2	4.8	1	3.2	2	4.1	–	–	–	–	5	2.6%
Variant 2 + 3	4	11.2	3	7.1	–	–	1	2.0	1	3.8	–	–	9	4.6%
Variant 1 + 2 + 3	–	–	2	4.8	–	–	2	4.1	–	–	–	–	4	2.0%
	36	100%	42	100%	31	100%	49	100%	27	100%	11	100%	196*	100.0%

* In 47 cases the biopsy material was inadequate for histological classification.

Table 3
Distribution of mucoceles by race, sex and anatomical sites

Anatomical site	Malays		Chinese		Indians		Others	Total	Percentage
	M	F	M	F	M	F	M		
Lower lip	38	24	22	26	29(1)	8	1	148(1)	59.6%
Upper lip	0	1	0	0	0	0	0	1	0.4%
Lip Nos	2	1	1	0	0	1	0	5	2.0%
Floor of mouth	13	13(1)	5(1)	13	1	1(1)	0	46(3)	19.6%
Tongue	0	6	5	11	1(1)	0	0	23(1)	9.6%
Buccal mucosa	2	3	2	2(1)	1(1)	1	0	11(2)	5.2%
Palate	0	1	1	1	0	0	0	3	1.2%
Alveolar process	0	0	0	1	0	0	0	1	0.4%
Mouth Nos	2	0	0	1	2	0	0	5	2.0%
Total	57	50	37	56	37	12	1	243(7)	100.0%

The figures within brackets denote Mucous Retention Mucoceles (MRM).
Nos – Not otherwise specified.

Table 4

Distribution of histological variants (V) by anatomical sites

	V1	%	V2	%	V3	%	V1 + 2	%	V1 + 3	%	V2 + 3	%	V1 + 2 + 3	%	Total	%
Lower lip	14	46.7	60	61.2	30	75.0	5	50.0	3	60.0	7	77.8	1	25.0	120	61.2%
Floor of Mouth	2	6.7	23	23.6	1	2.5	3	30.0	1	20.0	–	–	2	50.0	32	16.3%
Tongue	6	20.0	7	7.1	4	10.0	1	10.0	1	20.0	2	22.2	1	25.0	22	11.2%
Cheek	3	10.0	5	5.1	2	5.0	–	–	–	–	–	–	–	–	10	5.1%
Palate	2	6.7	–	–	–	–	1	10.0	–	–	–	–	–	–	3	1.5%
Lip Nos	1	3.2	2	2.0	2	5.0	–	–	–	–	–	–	–	–	5	2.6%
Mouth Nos	2	6.7	1	1.0	1	2.5	–	–	–	–	–	–	–	–	4	2.1%
	30	100%	98	100%	40	100%	10	100%	5	100%	9	100%	4	100.0%	196	100.0%

Nos: Not otherwise specified.

years. In the Malay male it was between 11 – 30 years. In the others the greatest frequency was between 0 – 30 years.

Like Cataldo and Mosadomi's (1970) study of 594 mucoceles and Harrison's (1975) review of 400 mucoceles and Southam's report of 236 mucoceles, the lower lip was the commonest site for MEM (60 per cent) (Fig. 7). The floor of the mouth (19.6 per cent), tongue (10 per cent) and buccal mucosa (5 per cent) were involved in descending order of frequency. MEM in the tongue was more common in the Chinese male and female and Malay female whereas MEM in the buccal mucosa was more frequent in Europeans. The location of MEM in the lower lip was usually lateral because of the habit of biting the lower lip with the maxillary canines. Only one case of MEM in the midline of the lower lip was reported in a 6-year-old Chinese boy. In contrast mucoceles were rare in the upper lip. The occurrence of MEM in the ventral surface of the anterior two-third of the tongue was probably due to the habit of playing with the tongue and by rubbing it against the mandibular anterior teeth.

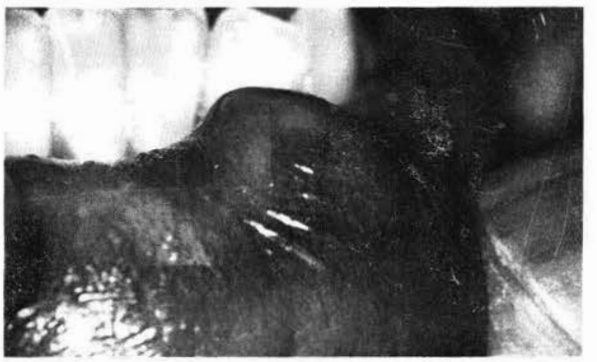

Figure 7 – shows a mucous extravasation mucocele (MEM) in the lower lip.

The frequency of MEM:MRM in the Indian male (11.3:1) and Indian female (11:1) is almost similar to the studies of Cataldo and Mosadomi (1970) – 12.3:1; Cohen (1965) – 10.4:1; Harrison (1975) – 9:1; Sela and Ulmansky (1969) – 13.5:1 and Standish and Shafer (1959) – 15.5:1. In contrast Chaudhry et al (1960) – 5.6:1 and Robinson and Hjorting-Hansen (1964) – 4.7:1 reported a higher frequency of MRM. Our study also shows that MRM seems to be extremely rare in the Chinese and Malays who are of Mongoloid racial origin. The frequency of MEM:MRM in them were respectively: Chinese male (36:1); Chinese female (55:1); Malay male (57:0) and Malay female (49:1). Moreover both in the Malays and in the Chinese mucous gland aggregations were more frequent in the males whereas in the Indians it was more common in the female.

Harrison (1975) as well as Southam (1974) have emphasized that in contrast to MEM, MRM is found most frequently in older patients and is rare in the lower lip. Our findings too support these observations. Harrison (1975) has stated that these differences indicate that different causative factors are present. The possibility has been suggested that MRM may arise from dilatation of a duct which was partially obstructed by a sialolith or a mucous plug. Southam (1974) however is of the view that there is no evidence to support the generally accepted suggestion that MRM is due to duct blockage and he postulates that either they may arise as spontaneous cystic change in an oncocyte-lined duct or they represent a cystic type of papillary cystadenoma. He further adds that a dilated oncocytic duct, a cystic papillary cystadenoma and a MRM may therefore be different manifestations of the same pathological process.

Like Sela and Ulmansky (1969) our study too showed variant 2 (50 per cent) of their histological subclassification to be the most common. In the Malay male and female variant 1 was rare and variant 3 was rather uncommon. Variant 1 occurred most commonly in the lower lip (46.7 per cent) and secondly in the tongue (20.0 per cent). Variant 2 occurred most frequently in the lower lip (61.2 per cent) and secondly in the floor of the mouth (23.6 per cent). Variant 3 occurred most commonly in the lower lip (75.0%). A combination of more than one variant formed about 14 per cent of the cases.

All the mucoceles were surgically excised. In eight patients there was a recurrence (3 per cent). Seven of the patients (86 per cent) were Chinese. The other patient was a Malay male. Six cases of recurrence were in the lower lip, one case was on the floor of the mouth and another case involved the buccal mucosa. Five of the recurrent cases (63 per cent) belonged to variant 3 of the histological subclassification and three cases (37 per cent) to variant 2.

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ST. segment displacement in myocardial infarction*

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ABSTRACT

The prognostic value of ST segment displacement after acute myocardial infarction is investigated, with particular reference to hospital practice without the service of continuous monitoring system. The electrocardiographs of thirty-three patients with proven myocardial infarction were studied for the relationship of ST segment displacement to the site of infarct, the rise in SGOT, and the frequency of persistent hypotension, heart failure and death within 48 hours of infarction. Anterior infarcts were found to have greater ST segment displacement than infarcts in other sites. There was a direct correlation between the extent of displacement and the rise in SGOT, suggesting a relationship between displacement of ST segment and size of infarct. The displacement was also greater in complicated cases which occurred more frequently in anterior than inferior infarction. It is concluded that ST segment displacement is of predictive value and may be the only clue to the size of infarct in rural hospitals without adequate laboratory service and monitoring system.

INTRODUCTION

THE ESTABLISHMENT OF coronary care unit in larger hospitals providing continuous monitoring has enabled recognition and treatment of life threatening arrhythmias and prevention of serious complications of acute myocardial infarctions and mortality has been reduced by from 14 to 18%. But what about smaller hospitals which are ill equipped for coronary care? Can a simple ECG, supported by clinical observation and serum enzyme estimation, be of help in identifying the group of high risk patients?

This paper attempts to answer the last question, and in particular, to assess the prognostic value of ST segment displacement. The scope of study covers the relationship between ST segment displacement and

1. the site of infarct
2. serum glutamic oxaloacetic transaminase (SGOT) level
3. persistent hypotension
4. heart failure
5. death within 48 hours of infarction.

PATIENTS AND METHODS

This is a retrospective study of patients with acute myocardial infarction admitted to the District Hospital in Segamat during the period from July 1974 to March 1976.

The diagnosis of myocardial infarction was established when two of the following three criteria were met with:

1. Typical clinical history;
2. Indubitable electrocardiographic evidence of recent infarction or sequential ST and T wave changes;
3. A significant rise in SGOT level.

The infarction was regarded as subendocardial when ST depression and/or T wave inversion without Q wave development was accompanied by significant increase in SGOT.

* Presented at the 11th Malaysia-Singapore Congress of Medicine in August 1976 at Kuala Lumpur.

Exclusions:

1. Sudden deaths occurring before ECG could be recorded, presumably due to acute myocardial infarction by virtue of history of ischaemic heart disease.
2. Patients whose symptoms lasted more than 48 hours before seeking hospital admission.
3. Patients whose ECG's showed bundle branch block.
4. Patients with pericardial rub on auscultation.

In each case the ECG taken about 48 hours after the onset of infarction was studied, except in those cases that died during the early hours of infarction when the initial ECG was the only one available. The displacement of the ST segment from the isoelectric line was measured by the method of Wilson & Pantridge. The lead showing the greatest displacement was chosen. The isoelectric line was taken as the TP segment, or as the PQ segment when the TP segment was difficult to locate because of tachycardia. The point of reference on the ST segment was 0.06 seconds after the nadir of the S or QS wave, or after the R wave when no S wave was present.

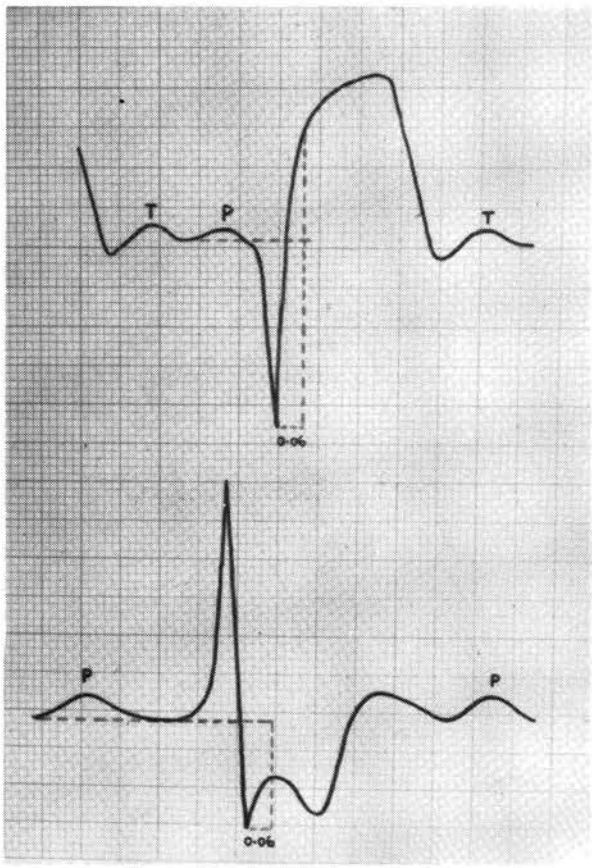

Fig. 1: Measurement of ST segment displacement. Upper tracing: transmural infarction with ST segment elevation. Lower tracing: subendocardial infarction with ST segment depression.

Whenever possible, serial estimations of SGOT were done for three successive days and the mean recorded.

Persistent hypotension was considered to be present when the systolic blood pressure remained less than 90 mm.Hg for about twenty-four hours regardless of the clinical state of the patient.

Heart failure was diagnosed either clinically by the presence of breathlessness, basal lung crepitations, third heart sound and raised jugular venous pressure, or from chest X-ray appearance.

RESULTS

Age, sex, race

Thirty three patients were included in this study, thirty one being males. There were 17 Indians, 9 Chinese and 7 Malays. Their age distribution is shown in Table 1, ranging from 38 to 79.

Table 1

Age Distribution of Patients

Age \ Race	Malays	Chinese	Indians	Total
30 –	0	0	1	1
40 –	2	2	6	10
50 –	2	1	4	7
60 –	3	2	3	8
70 – 79	0	4	3	7
Total	7	9	17	33

Site of Infarct

Anterior infarct was the commonest, with 17 out of 33 cases. The remainder consisted of equal number of inferior and subendocardial infarcts.

Arrhythmias

Twenty-six patients or 78.8% showed some disturbances of rate or rhythm within the first 48 hours of infarction. Sinus tachycardia and sinus bradycardia were the commonest disturbance. Atrio-

Table 2

Site of Infarcts

Site of Infarct	No. of Pts.	%
Anterior	17	51.5
Inferior	8	24.25
Subendocardial	8	24.25
Total	33	100

ventricular block of all degrees was seen, with one case of complete heart block, which was successfully treated with Saventrine. There were two cases of ventricular tachycardia, both died shortly after their ECG's were taken. Ventricular ectopic beats were seen in three patients; in none of these were the ectopics frequent or conforming to R on T pattern. Supraventricular tachycardia was seen in one patient who presented with sudden collapse. He responded remarkably to intravenous digoxin.

Table 3

Arrhythmias as recorded from ECG tracings

Arrhythmias	No. of Pts.
Bradyarrhythmias	
1. Sinus Bradycardia	7
2. 1° A-V Block	3
3. 2° A-V Block	2
4. 3° A-V Block	1
Tachyarrhythmias	
1. Sinus Tachycardia	7
2. Supravent. Tachy.	1
3. Ventricular E.B.	3
4. Ventricular Tachy.	2
Total	26

ST segment Displacement

Displacement of less than 5 mm was seen in 23 patients, and in 12 of them it was less than 2.5 mm. One patient showed a displacement of 15 mm, and died a few hours after the onset of chest pain before further ECG's could be recorded.

Anterior infarcts were associated with greater displacement of ST segment; in six patients it exceeded 5 mm. None of the patients with inferior infarcts showed a displacement of ST segment exceeding 5 mm. Subendocardial infarcts ranked intermediate in the degree of ST segment displacement.

Rise in SGOT level

Twenty eight patients had SGOT level estimated, but in two the results were not traceable due to loss of specimens while being dispatched to the laboratory of a general hospital.

Majority of the 26 patients had a mean rise o SGOT up to 200 I.U./L. Anterior and subendocardial infarcts were associated with higher level of SGOT, the rise in SGOT being related to the degree of ST segment displacement. Inferior infarcts were associated with rise in SGOT of 200 I.U./L. and less.

Table 4

ST segment displacement in relation to site of infarct

ST Segment Displacement	Site of Infarct			Total
	Anterior	Inferior	Subendocardial	
0 –	5	5	2	12
2.5 –	6	3	2	11
5.0 –	4	0	3	7
7.5 –	1	0	1	2
10.0 –	0	0	0	0
12.5 – 15.0	1	0	0	1
Total	17	8	8	33

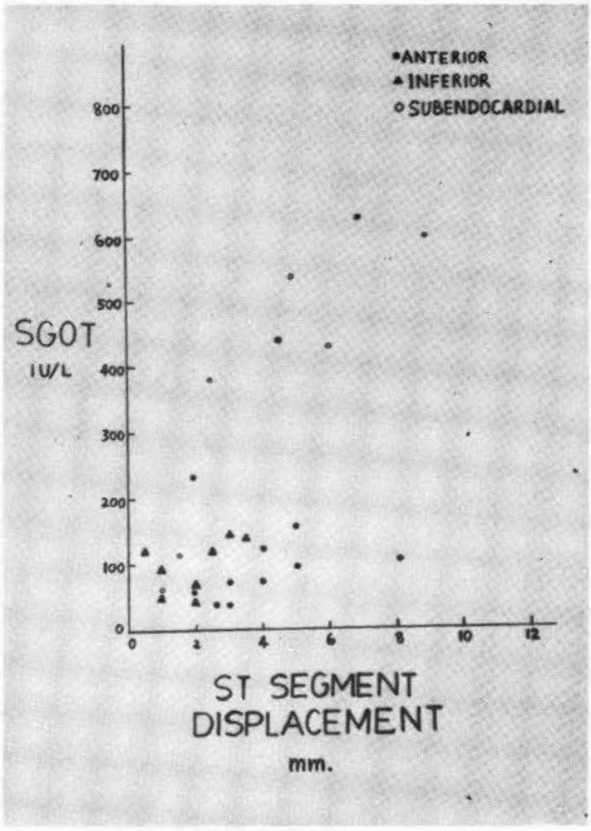

Fig. 2: Correlation between SGOT level and ST segment displacement.
Normal SGOT range: 2 to 20 I.U./L.

Complications within 48 hours of infarctions

There were 11 patients with persistent hypotension, 12 patients with heart failure and 9 patients died within the first 48 hours of infarction. Fig. 3 shows that the anterior and subendocardial infarctions were associated with a greater number of these complicated cases compared with inferior infarctions.

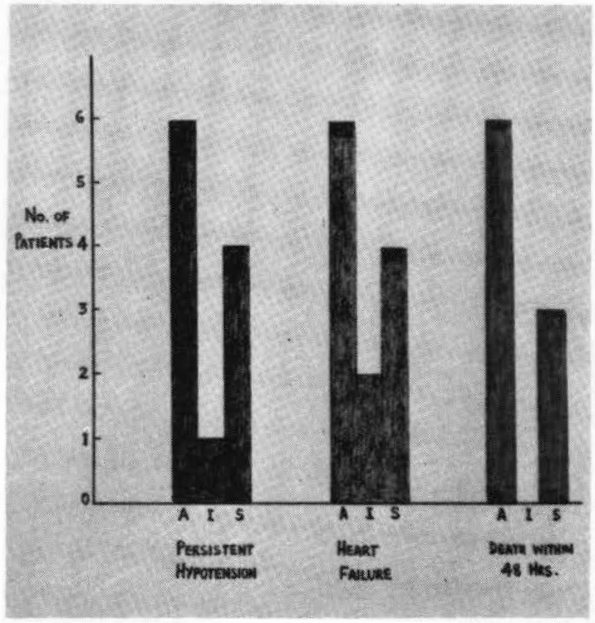

Fig. 3: Frequency of complications in relation to site of Infarct.
A = anterior infarct
I = inferior infarct
S = subendocardial infarct

Complicated cases occurred in association with ST segment displacement of various degrees. (Table 5) But in terms of the percentage of patients involved, there were more complicated cases when ST segment was greater than 5 mm. This is well

Table 5

ST segment displacement in relation to complications of infarction

ST Segment Displacement	No. of Patients	With Hypotension		With Heart Failure		Dead Within 48 hrs	
		No.	%	No.	%	No.	%
0 –	12	3	25	4	33	3	25
2.5 –	11	2	18.2	4	36.4	2	18.2
5.0 –	7	4	57.1	3	43	2	28.6
7.5 –	2	1	50	1	50	1	50
10.0 –	0	0	0	0	0	0	0
12.5 – 15.0	1	1	100	0	0	1	100
Total	33	11	33.3	12	36.4	9	27.3

seen in Figs. 4, 5 and 6 which showed that the percentage of patients with persistent hypotension, heart failure and death within 48 hours of infarction was higher when ST segment displacement exceeded 5 mm.

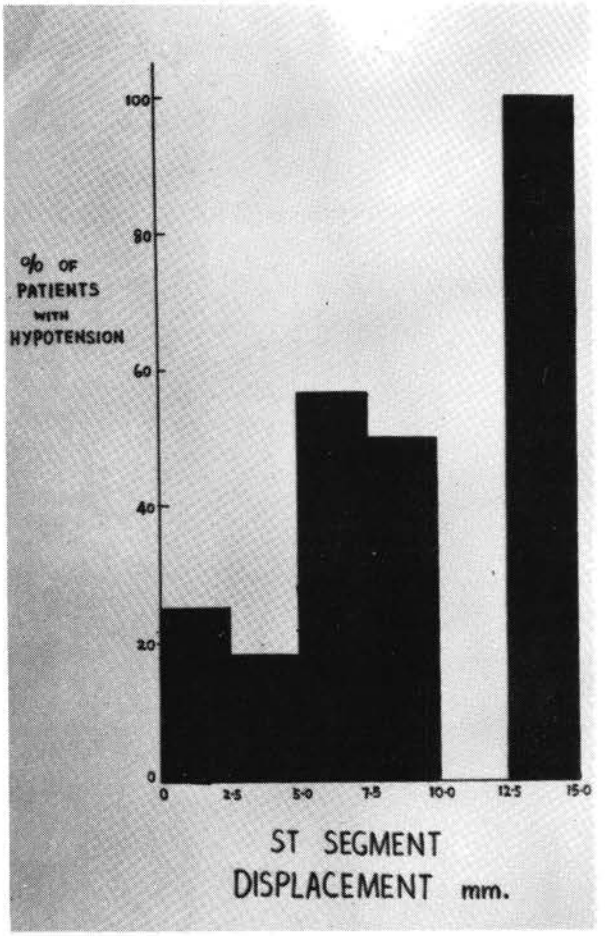

Fig. 4: Percentage of patients with hypotension in relation to ST segment displacement.

DISCUSSION

Myocardial infarction is an unpredictable disease. Sudden death may occur at any time in the mildest cases, while others who are gravely ill during the acute stage may survive to many years. Indications of grave prognosis include persistence of shock over 24 hours and early development of congestive heart failure. Transient arrhythmias are common and prognosis is not adversely affected, but a persistent irregularity, especially when due to multiple ventricular ectopic beats, ventricular tachycardia, heart block or atrial fibrillation, is of grave significance. (Scott R.B. 1973)

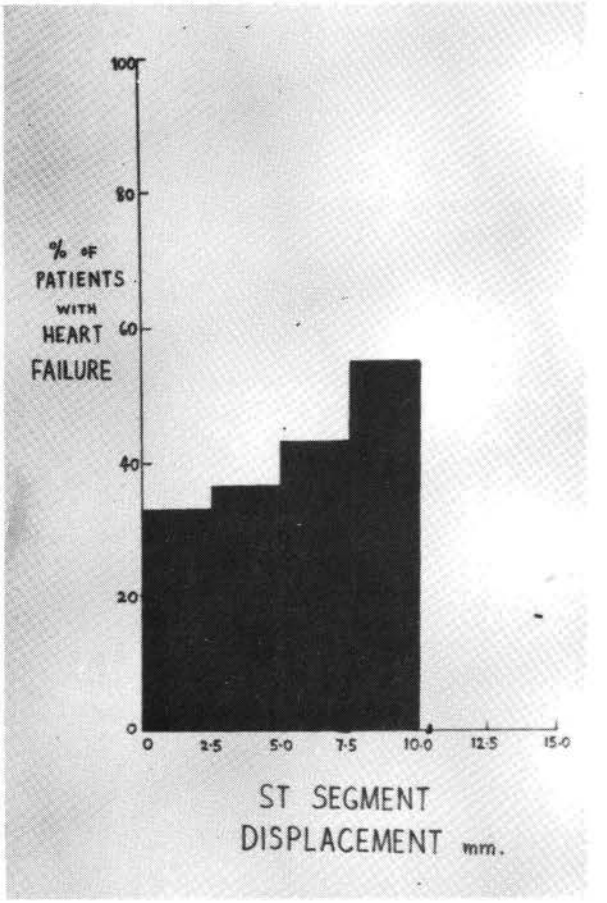

Fig. 5: Percentage of patients with heart failure in relation to ST segment displacement.

The recorded incidence of arrhythmia depends on, among other things, the availability of continuous monitoring of patients. Eric Stock (1968) reported that the incidence of monitored arrhythmias varied between 73 and 95%.

In the setting of rural hospital practice where facilities for continuous monitoring are absent, the diagnosis of arrhythmia rests on the chance finding from a routinely taken ECG tracing and is therefore limited. Thus in this study, only one case of supraventricular tachycardia and two cases of ventricular tachycardia were noted.

The incidence of major arrhythmia is known to increase with the severity of infarction, as judged by persistent hypotension, cardiac decompensation and cardiogenic shock. In these complicated cases, it is therefore worthwhile to have serial recordings of ECG taken, so that prompt treatment may be instituted, for example, when multiple ventricular ectopic beats appear.

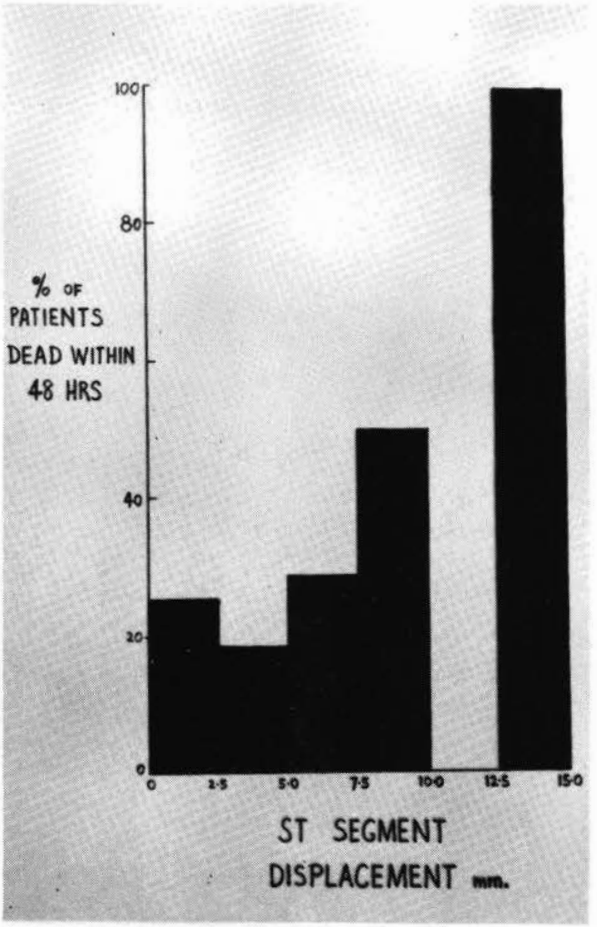

Fig. 6: Percentage of patients dead within 48 hours of infarction in relation to ST segment displacement.

However, early ventricular fibrillation is not related to the severity of the infarction (Lawrie *et al.* 1968); its detection and treatment depends very much on a specialised coronary care unit. These cases present as "sudden deaths" in hospitals without continuous monitoring service. On the other hand, late ventricular fibrillation occurring after the period of continuous monitoring, is a real risk in patients with severe infarction (Thomson & Sloman 1971) and among these patients, the finding of greatest predictive value is persistent displacement of ST segment. (Wilson & Pantridge 1973)

Cardiogenic shock and pump failure indicate the presence of a large infarct, shock occurring when more than 40% of the left ventricular muscle mass is destroyed. However, ventricular function is diminished in nearly all patients with acute transmural infarction including those without complications. Thus, there is a wide spectrum of depression of ventricular performance in transmural infarction: most extreme in cardiogenic shock, intermediate in congestive heart failure without hypotension, and least in uncomplicated infarction. (Mason D.T. 1973)

The size of an infarct may be assessed by two recently described techniques, namely the disappearance curves of serum creatinine phosphokinase (Sobel *et al* 1972) and the mapping of praecordial ST segment elevation in a 48 lead system. (Reid *et al* 1974) The results of this study have shown that even simple measurement of ST segment displacement in a single lead is itself of predictive value after myocardial infarction.

There was a good correlation between the rise in SGOT level and the extent of ST segment displacement. Furthermore, complicated cases occurred more frequently when ST segment displacement was greater. These findings suggest that ST segment displacement is a good indicator to the size of infarct.

This study has also shown that anterior infarcts were associated with greater rise in SGOT levels as well as extent in ST segment displacement, as stated by other workers (Morris et al 1974). Moreover, severe pump failure occurred more commonly with extensive anterior infarcts, compared to inferior infarcts (Mason D.T. 1973) and this too, was observed in the present study.

These findings are of particular importance to doctors practising in rural hospitals where laboratory facilities for serum enzyme estimation are often lacking, let alone continuous monitoring service. Besides clinical findings, the only clue to the severity of infarction would then be the extent of ST segment displacement. Even in hospitals with continuous monitoring, the study of ST segment displacement is still worthwhile because those cases exhibiting persistent displacement would require longer period of monitoring for late ventricular dyarrhythmias.

CONCLUSION

This study has shown that ST segment displacement is of predictive value after myocardial infarction for these reasons:

1. The extent of ST segment displacement is correlatable to the rise in SGOT level and hence to the size of the infarct.

2. Cases complicated at 48 hours by persistent hypotension, heart failure and deaths were associated with greater ST segment displacement.

3. Anterior infarcts when compared to infarcts in other sites were associated with greater ST segment displacement and more complicated cases.

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Gallstone ileus

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Summary:

Gallstone ileus should be no longer be considered as a rare syndrome, but should be included in the differential diagnosis of all cases of intestinal obstruction. The lack of familarity with its mode of presentation have contributed significantly to its high mortality and morbidity. The syndrome is reviewed and two new cases are presented illustrating the difficulties in diagnosis and management.

Introduction:

GALLSTONE ILEUS (Bernard's syndrome) is best defined as a mechanical intestinal obstruction caused by impaction of one or more gallstones within the bowel lumen. Although it has long been a recognised entity, it still remains an infrequent cause of intestinal obstruction, being responsible for only 2 – 3% of all cases. The average general surgeon may, therefore, reasonably expect to see one case in every 8500 major operations (Raiford 1962). This lack of familarity with the condition, together with its frequently insiduous presentation, is responsible for the failure, more often than not, to make a correct diagnosis, thus leading to a morbidity and mortality entirely out of proportion to that of the more common types of obstructive diseases.

The appearance of two cases of gallstone ileus in our department, within a few months of each other, together with the problems we encountered because of the lack of familiarity with the syndrome, have stimulated a review of the literature to emphasize the clinical picture and management of the disease.

Incidence:

The total number of reported cases probably number about 1000. Large series have been collected by Raiford, Deckoff, Moore, Fjermeros and Foss and Summers. With increasing life expectancy and therefore an increasing incidence of gallstone disease, the syndrome should no longer be considered as a rarity, of academic interest only, but should routinely form part of the differential diagnosis of intestinal obstruction.

The figures in Table 1 show the relative frequency of gallstones as a cause of intestinal obstruction. However, if only patients of 70 years or more are considered, gallstone ileus accounts for 24% of the cases of non-strangulating intestinal obstruction seen in this age group (Brockis and Gilbert 1959). It is essentially a disease of the elderly, with the

Table 1

Relative Incidence of Gallstones as a Cause of Intestinal Obstruction

Source	Denominator of Comparative Incidence	Percentage
Foss and Summers (12)	All cases of gallstones	0.3 to 0.4%
Cooperman, et al (6)	All cases of spontaneous biliary fistulas	14%
Raiford (21)	All cases of intestinal obstruction	3.0%
Dulin and Peterson (9)	All cases of intestinal obstruction	5.3%

majority of patients being in the seventh and eighth decades. Since it is dependent upon a basis of gallbladder disease, the sex distribution parallels that of cholecystitis and is found 8 – 9 times more commonly in women than in men. In his series, Day (1975) noted that the syndrome was three times more common in Caucasians than in American Negroes.

Pathogenesis:

The basic disease is a chronic inflammation of the gallbladder with concomitant cholelithiasis. Secondary to the cholecystitis, pericholecystitis occurs, resulting in adhesions between the gallbladder and bowel. The offending stone then erodes by pressure to form a cholecystoenteric fistula, through which the stone passes. In a large series of 176 cases, Wakefield (1939) noted that the commonest point of exist of the stone was through the duodenal wall in 101 cases and transverse colon in 33 cases. However, not all fistulas empty into the gastrointestinal tract. Reports of gallstones being found in the bronchus, the pleural and peritoneal cavities, portal vein, renal pelvis, bladder and pregnant uterus have been reported.

When a gallstone enters the digestive tract, there are several possible results:

1. Passage spontaneously via the rectum without causing symptoms. It has been estimated that less than 10% of gallstones entering the gastrointestinal tract result in obstruction (Raiford 1962).

2. Entrance into the stomach, causing intermittent pyloric obstruction and vomiting (Hudspeth, et al 1970).

3. Intermittent, low grade obstructive symptoms as the stone traverses the bowel to be expelled or removed manually per rectum.

4. Impaction with obstruction. The most common site of impaction is the terminal ileum where the stone is held up by the ileo-caecal valve (Foss and Summers 1942). The other common locations are in the upper ileum and distal jejunum were irritative spasm or simple diameter disproportions are the causes of obstruction. Generally, stones less than 2.5 cm. in greatest diameter, traverse the bowel without any difficulty. However, spontaneous enlargement of the stone can occur during migration, especially if it is delayed in its course by being trapped in a diverticulum or any abnormal sacculation (Raiford 1962). In only 3 – 5% of cases is the site of obstruction the large bowel (Horowitz, 1963; Holmnielson 1954). The sigmoid colon is the most common site as this is the narrowest segment of the large bowel. It is also frequently associated with diverticulitis, neoplasia and adhesions, all of which favour blockage.

Residual stones remaining in the gallbladder may or may not use the fistula as a means of egress, depending on the extrusive force of the organ, or, more specifically, upon the patency of the cystic and common bile ducts. The importance of residual stones, whether they are in the gallbladder or proximal intestinal tract, is demonstrated by the increasing frequency of reported cases of recurrent obstructions following closely the first episode which have been relieved by laparotomy.

The fate of the fistula after relief of the obstruction is still in doubt. Most authors believe that the fistula closes spontaneously and the gallbladder cavity becomes obliterated if the cystic and common bile ducts remain patent. If, however, obstruction of either duct is present, it is likely that the fistula will remain open, acting as a physiological bypass to permit passage of bile from the biliary tree into the intestine.

Symptoms:

Although many authors have stressed the classical triad of small bowel obstruction, aerobilia and presence of a laminated gallstone in the bowel on X-rays, the majority of cases do not present with this picture. Early symptoms may simulate that of cholecystitis and late presentations resemble that of any full blown intestinal obstruction.

A typical history of biliary tract disease is obtainable only in 60% of cases (Day 1975). There is usually no distinct symptoms that can be related to the time of perforation of the gallbladder. The duration of illness may vary from 24 hours to several weeks. During this relatively long period, the symptoms, in a strikingly large proportion of cases, are characteristically intermittent. The most common complaints are abdominal pain and distension associated with vomiting. This protracted remitting course is more typical of intestinal obstruction by gallstones than any other forms of intestinal obstruction. The periodicity of symptoms have been attributed to passage of the stone distally as well as to recurring spastic intestinal contraction around the stone. The progressive nature of the symptoms and shifting of the primary site of pain has led Raiford to coin the term 'migrating obstruction' as descriptive of the condition. Fjermeros (1964)

noted that 40% of the cases which he reviewed presented with such a clinical picture.

With repeated episodes, oedema and inflammatory changes supervene, making the occlusion complete and permanent.

Clinical Findings:

Physical examination rarely contribute significantly to the diagnosis as one sees only signs of intestinal obstruction. Palpation of a large gallstone through the abdominal wall have been reported to be diagnostic. However, there is nothing to indicate the nature of the mass and it is of little significance in the absence of other confirmatory findings. The patients are usually in poor condition with dehydration, low urine output and electrolyte imbalance. Laboratory studies are usually non-specific, with evidence of hemoconcentration and electrolyte imbalance. A white cell differential count will show some degree of leucocytosis with moderate shift to the left. A correct diagnosis must depend, therefore, on a combination of clinical findings. As successful treatment of the disease depends on an early diagnosis, a high index of suspicion is necessary.

Radiological Findings:

The more common radiological signs associated with gallstone ileus have been enumerated by Rigler and his colleagues (1941):

1. Air shadow in the biliary tree due to reflux of air through the fistula (93%). This, however, is not pathognomonic.

2. Dilated loops of small bowel. A single film is not diagnostic, but when successive films show advancement of the level of obstruction, this finding gains in diagnostic significance.

3. Demonstration of a radio-opaque stone, sometimes laminated, especially if it can be localised in the small bowel at the approximate level of obstruction. However, because of other possible causes of calcific densities as well as the fact that the majority of gallstones are radiolucent, this does not form a dependable finding.

4. Disappearance of a previously observed large gallstone (Fjermeros 1964).

Treatment:

Like any other forms of intestinal obstruction, the primary objective in the treatment of gallstone ileus is the relief of the obstruction at the earliest optimal time. Although unnecessary delay is to be condemned, time should be taken for adequate hydration, electrolyte replacement, gastrointestinal decompression and treatment of concomitant pathological findings such as diabetes and associated cardiovascular diseases.

At laparotomy, the point of impaction is located. The stone is then displaced proximally to a normal segment of bowel and removed by an antimesenteric enterotomy which is opened longitudinally and closed transversely. If the stone cannot be dislodged or if the bowel segment is not viable, then a segmental resection and a primary end to end anastomosis should be carried out. Although some surgeons have proposed crushing the stone through the intestinal wall, this is not advisable as it entails the risk of further injury to an already devitalised segment. Likewise, manual propulsion of the stone into the colon, where it might be passed on by peristalsis (Troell 1954), is not advocated as the procedure may lead to an undetected subserous rupture of the bowel wall (Fjermeros 1964). In critically ill cases, simple exteriorization of the diseased portion of the intestine can be a life saving measure.

Once the obstruction has been relieved, it is mandatory to search the bowel and the gallbladder for other stones, especially if the obstructing stone is facetted. The incidence of recurrent gallstone ileus had been reported by Buestow (1963) to be between 5 and 9% and by Kirkland (1961) to be as high as 16%.

There is still varying opinion regarding the management of the cholecystoenteric fistula. In the past, the majority of surgeons believed that no attempt should be made to repair the fistula or remove the gallbladder at the time of the acute obstruction unless there was obvious leakage, abscess formation or impending gangrene of the gallbladder. This policy was instituted because the majority of patients were in a poor physiological status at the time of the initial operation. Furthermore, the prevailing belief was that most of these fistulas will close spontaneously. Interval cholecystectomy and repair of the fistula as a second elective operation was, therefore, indicated only if:

1. Symptoms of gallbladder disease persisted.

2. Residual stones were demonstrated in the gallbladder.

3. Recurrent attacks of cholecystitis or cholangitis occur.

4. If the fistulous communication is between the gallbladder and the colon as these cases have a high incidence of post-operative malabsorption syndromes and ascending infection.

However, while a fair number of patients who had only an enterotomy as the primary mode of therapy were asymptomatic in the post-operative period, recent reports on the long-term follow up of these cases have revealed that a significant proportion of them (11 – 30%) had recurrent attacks of cholecystitis and cholangitis (Warshaw and Bartlett 1966). Also, in 1962, Bossart and his colleagues reported that there is a much higher incidence of carcinoma of the gallbladder developing in cases of biliary-enteric fistulas (15%) as compared to a 0.8% incidence for all cases of cholecystitis in general. These factors, together with the increasing indicence of recurrent gallstone ileus and the increased morbidity accompanying a second procedure have prompted a more aggressive and complete repair at the time of the initial operation. This one-stage procedure consisting of enterotomy, cholecystectomy and fistula repair have been advocated by Cooperman and others. They have based their opinion on the premise that the one-stage repair does not carry a significantly higher operative mortality than enterotomy alone. It has the advantage of removing the sources of further morbidity. The procedure is therefore feasible in selected patients and should be considered when the situation permits.

Prognosis:

Prior to 1940, the mortality rate due to gallstone ileus was well over 60% (Table 2). This was reduced to 30% during the period 1940-1960, probably due to a better understanding of the pre and post-operative management of the geriatic patient. Recent reports, within the last decade, have indicated mortality rates of less than 15%, which, however, is still unduly high. The factors which contribute to the high mortality rates in gallstones ileus are:

1. Incorrect diagnosis and delay in treatment. In his series, Cooperman and his colleagues (1968) have shown that the average duration between onset of symptoms and admission to hospital was 7 days. The lack of familiarity with the syndrome, and its remittent course may easily lead to a mistaken diagnosis and therefore an expectant attitude on the part of the attending surgeon. Thus the patient is allowed to become markedly affected with pronounced deterioration of the general condition before surgical relief is instituted.

2. Age and associated diseases.
Gallstone ileus is essentially a disease of the elderly, the average age of the patient being 65 years. Tolerance to acute illnesses and major surgery in this group of patients is low. In his series of 78 cases, Deckoff (1965) noted that serious concomitant diseases were present in 83% of the cases, of which, obesity and cardiovascular disorders accounted for 58% and diabetes for 50%.

The most common complication noted was wound infection. Other common complications were localised peritonitis, respiratory problems, phlebitis and biliary tract infections.

Table 2

Changing Mortality Rate in Gallstone Ileus

Period	Source	Number of Cases	Mortality %
Prior to 1925	Moore	134*	75
1884 – 1942	Fjermeros	74	62
1920 – 1940	Brockis and Gilbert	94*	51
1925 – 1940	Foss and Summers	150*	57.4
1940 – 1955	Brockis and Gilbert	72*	33
1943 – 1962	Fjermeros	104	34
1955 – 1960	Faiford	149*	26.1
1955 – 1966	Cooperman	15	13

* Collected from literature

Case Report 1:

A 59 year old Chinese man was admitted to the hospital with complains of pain in the right hypochondrium for 5 days associated with vomiting. He had no bowel movements since the pains started. The patient gave a history of recurrent colicky pains in the same area which was brought on by meals. Clinical examination at the time of admission showed the patient to be a thin elderly man with moderate dehydration. There was distension and tenderness of the upper abdomen with a positive succusion splash. Laboratory studies showed the following values:

Hb. 14.5 g/100 ml; blood urea nitrogen 134 mg/100 ml; serum creatinine 1.6 mg/100 ml; serum sodium 139 mEq/litre, serum potassium 4.7 mEq /litre and serum chloride 93 mEq/litre. Urine examination showed mild proteinuria, 9 Rbc and 5 Wbc per microlitre together with the presence of hyaline and granular casts.

The patient was diagnosed as a case of pyloric stenosis probably due to chronic duodenal ulcer and was treated by nasogastric suction and intravenous fluid therapy. The BUN values came down with rehydration and his abdominal signs subsided. A barium meal examination done on the 4th hospital day showed no evidence of gastric outlet obstruction but deformity of the duodenal cap was noted together with leakage of some contrast medium from the first part of the duodenum. Attempts to wean the patient off nasogastric suction on the twelfth post-operative day was not successful as the patient re-developed abdominal pains and distension. Repeat abdominal X-rays at that time showed dilated loops of small bowel with multiple air-fluid levels. A palpable mass in the left paraumbilical region was also felt at that time. Decision to operate was made on a provisional diagnosis of small bowel obstruction due to an ileal tumour.

At laparotomy, the small bowel was found to be grossly dilated with a large gallstone (5 cm $\times$ 7 cm) impacted 90 cm from the ileo-caecal valve. The gallbladder was found to be fibrosed with marked adhesions and a fistulous communication between it and the first part of the duodenum. In view of the poor condition of the patient, only an enterotomy was performed and the obstructing calculus removed. Post-operative convalescence was satisfactory except for infection of the abdominal incision. The patient was discharged two weeks after surgery.

Case Report 2:

A 67 year old Chinese woman was well until 24 hours before admission when she experienced severe generalised colicky abdominal pains associated with vomiting. Two days before that, she noticed that she had passed some melenic stools. There was no history of biliary tract disease. The patient was dehydrated and in a poor general condition, with bilateral basal lung creps and generalised abdominal distension. There was tenderness and guarding all over the abdomen with absent bowel sounds. The abdominal X-ray showed the presence of a large opacity in the (L) abdomen, but because of lack of familarity with the syndrome, the significance of this opacity was overlooked. The patient was diagnosed as a case of generalised peritonitis due to a perforated viscus and was operated on 4 hours after admission. At operation, she was found to have generalised peritonitis due to a gangrenous perforation of the jejunum at the site of impaction of a gallstone (4 $\times$ 5 cm), located about 20 cm distal to the duodenal-jejunal flexure. The gallbladder was fibrotic and contained multiple small gallstones. The common bile duct was dilated and two stones could be palpated within its lumen. There was a fistulous communication between the gallbladder and the first part of the duodenum. A segmental resection of the involved bowel was carried out together with a cholecystectomy, choledocholithotomy and repair of the duodenal fistula. Post-operatively, however, the patient developed gram negative septicaemia and died 28 hours after operation.

Fig. 1 Shows dilated loops of small bowel with a large faintly opacified mass in the left upper abdomen (black arrow).

Comments:

Both cases point to some of the factors responsible for the high mortality and morbidity of this syndrome, particularly delay in seeking treatment and delayed surgical relief because of lack of specific diagnosis due to lack of familiarity with the condition. The extent of the surgical procedure performed during the acute phase of the illness should be decided by a careful evaluation of the physiological status of the patient in conjunction with the findings at operation.

Conclusion:

The best prophylaxis against the high mortality rate of gallstone ileus is the removal of these gallstones at the earliest possible date before the creation of a biliary-enteric fistula. An earlier diagnosis, earlier surgical attack, adequate pre and postoperative preparation as well as tailoring of the surgical procedure to the condition of the patient will to a significant reduction in the moftality and morbidity.

Acknowledgements:

My grateful thanks to: Dr. Devinder Singh for permission to use his case, Cik Rohana for typing the manuscript and The M.I. Department, Faculty of Medicine.

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Primary carcinoma of liver

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PRIMARY CARCINOMA OF LIVER has a world wide distribution. The incidence in Africa and certain parts of Asia varies from 13 to 53% of all malignancies (Berman, 59; Sung et al, 1967; Tull, 1932; Ying et al, 1963).

A variety of carcinogens have been incriminated to be responsible for variation of the incidence in different parts of the world (Alpert and Davidson 1969; Higginson 1963; Lin, 1970).

Recent observations indicate an etiological relationship between hepatitis B virus and hepatoma (Ruoslahti and Seppala, 1973).

Various etiological factors for primary carcinoma of liver namely cirrhosis, malnutrition, aflatoxins, hepatitis B virus are prevalent in Bangladesh.

As has already been pointed out there is a wide range of variation in the incidence of cirrhosis in primary carcinoma liver. This varies from 16 – 80%. Macronodular variety is the predominant type. An incidence of 13.1 – 24% has been reported in macronodular cirrhosis (Purtilo and Gottlieb, 1973; Reed et al, 1973.)

Cirrhosis is one of the commonest gastro-intestinal disorders in Bangladesh and macronodular is the commonest type we have encountered (Islam, Chowdhury and Ali, 1976). It is therefore estimable that Bangladesh is one of the areas in which primary carcinoma liver is likely to have a very high incidence. The purpose of this article is to analyse the clinical details of 30 cases proved to be primary carcinoma of liver.

Materials and Methods

Thirty cases of primary carcinoma liver diagnosed histologically have been included in this study.

Initial diagnosis in most of the cases were based on clinical grounds. Investigations included plain X-ray liver and chest, various liver function tests, routine laboratory investigations and demonstration of alpha-fetoprotein. Scanning was done in a limited number of cases, barium and endoscopic examinations were performed to exclude extra-hepatic primary malignancy.

Results

A total of 30 cases could finally be accepted as primary carcinoma liver.

Table 1 shows the age distribution of 30 cases reported here.

Table 1

Age distribution in 30 cases of primary carcinoma of liver

Age	Number of Patients	Percentage
12 – 20 years	1	3.33
21 – 30 years	1	3.33
31 – 40 years	5	16.66
41 – 50 years	10	33.33
51 – 60 years	6	20
Above 60 years	7	23.33

Maximum number of cases namely 10 out of 30 (33.33%) were in the age group 41 – 50 years. Below 30 years it was rare. Only one case could be found in the age group 12 – 20 and there were five cases in the age group 31 – 40 years. Above 50 the incidence was higher than below 30 years. Twenty six cases were male (86.66%) and only four cases (13.33%) were female.

Table II shows the distribution of symptoms in 30 cases.

Table II

Symptoms in 30 cases of primary carcinoma of liver

Symptom	Number of Patients	Percentage
Mass in abdomen	23	76.66
Pain in abdomen	16	53.33
Anorexia	17	56.66
Fever	13	43.33
Loss of weight	14	46.66
Jaundice	5	16.66
Oedema of legs	6	20
Swelling of abdomen	6	20
Melaena	2	6.66

Commonest symptoms with which the patients presented was a mass in the epigastrium or right hypochondrium. Twenty three out of 30 cases (76.66) presented with this complaint.

Upper abdominal pain and loss of appetite were the next frequent symptoms. Sixteen cases (53.33%) had upper abdominal pain and 17 (56.66%) complained of loss of appetite.

Loss of weight and fever were present in 14 (46.66%) and 13 (43.33%) cases respectively. Jaundice was relatively infrequent and five out of 30 cases (16.66%) had jaundice.

Physical signs of the cases are shown in Table III.

Enlarged liver with or without tenderness was present in all 30 cases (100%).

Next in frequency was anaemia. Twenty out of 30 cases (66.66%) had anaemia. In 11 cases (36.66%) spleen was palpable and a similar number had ascites.

Table III

Physical signs in 30 cases of primary carcinoma of liver

Sign	Number of Patients	Percentage
Anaemia	20	66.66
Jaundice	6	20
Finger clubbing	3	10
Oedema of legs	7	23.33
Enlarged lymph nodes	2	6.66
Palmar erythema	4	13.33
Spider angioma	2	6.66
Flapping tremor	1	3.33
Enlarged liver	30	100
Bruit over liver	7	23.33
Palpable spleen	11	36.66
Engorged abdominal veins	3	10
Ascites	11	36.66

A bruit over the liver could be heard in seven cases (23.33%) whereas palmar erythema was present in four (13.33%) cases.

Laboratory investigations and the findings are shown in Table IV.

Table IV

Investigation findings in 30 cases of primary carcinoma of liver

Investigation findings	Number of Patients	Percentage
Polymorphonuclear leucocytosis	13	43.33
Elevated S. alk. Phosphatase	19	63.33
Elevated S. transaminase	9	30
Elevated S. bilirubin	6	20

Polymorphonuclear leucocytosis was present in 13 cases (43.33%) and serum alkaline phosphatase was elevated in 19 (63.33%) cases.

Alpha-fetoprotein was done in 17 cases and 10 were positive. For some technical difficulties scanning could not be done in all cases. All the four cases which had scanning done, showed abnormalities consistent with space occupying lesion in the liver. Liver biopsy was done in 21 cases of which 18

(85.7%) showed evidence of hepatocellular carcinoma.

Discussion

Incidence of primary carcinoma of the liver varies from country to country. This is partly contributed by the etiological factors responsible which constitute a wide range from chemicals namely azo compounds to malnutrition. Conceivably the age range shows variations in the eastern countries from that in the west. In the Chinese and the Bantu the disease usually occurs below 40 years whereas in the present series the highest incidence was above 40. Ten out of 30 (33.33%) cases were in the age group 41 – 50.

Male to female ratio shows wide variations from 2:1 to 9:1 (Ruoslahti and Seppala, 1973). The cases were predominantly males in the present series.

Vast majority of our cases presented with swelling in the epigastrium and right hypochondrium and enlargement of the liver was present in all the cases.

Anorexia (56.66%) pyrexia (43.33%), pain in the abdomen (53.33%) and loss of weight (46.66%) were the next frequent complaints by the patients. Spleen could be palpated in one third of the cases, and a similar number had detectable ascites. Oedema legs was present in a quarter of the cases and a similar number had jaundice. A bruit over the liver may be heard in cases of primary carcinoma liver due to increased vascularity, tortuosity, variations in the calibre of hepatic artery and relative stenosis of their larger branches (Sherlock 1975). This author stresses that in the absence of alcololic hepatitis presence of murmur is diagnostic of hepatocellular carcinoma. In the present series a quarter of the cases had bruit over the liver and friction rub could not be detected in any of the cases. All cases where bruit could be detected were ultimately found to be primary carcinoma liver.

It has not been possible for us to follow up the cases and as such relative frequency of metastases in the distant organs could not be axcertained. In one case however we had the unique observation of secondary involvement of the skin which was histologically proved. This particular patient had also widespread metastases in the lungs. We are not aware of any report on primary carcinoma liver involving the skin.

Polymorphonuclear leukocytosis (43.33%), elevated serum alkaline phosphatase (63.33%), and serum transaminase (30%) were helpful laboratory evidences. Of these a raised serum alkaline phosphatase was found in the majority of the cases (63.33%). In primary hepatocellular carcinoma a raised serum alkaline phosphatase is due to increased production and obstruction.

Alpha-fetoprotein was positive in 10 out of 17 cases. Serum alpha-fetoprotein has been found to be positive in 40 – 90% cases of hepatocellular carcinoma. This is however not a specific test and may be positive in other conditions namely carcinoma of the testis, stomach, pancreas and lungs, acute viral hepatitis, Indian childhood cirrhosis, and a wide range of other liver diseases (Bloomer et al, 1973; Davidson, 1973; Nayak et al, 1972). Inspite of recent advances in the diagnosis of hepatocellular carcinoma including liver scan with gallium 67, liver biopsy remains the most definite method for the diagnosis.

Summary and Conclusion

Clinical featues of 30 cases of primary carcinoma liver have been analysed and compared with the findings of other authors.

An epigastric mass has been found to be the most common finding.

Secondary metastases in the skin in one case has been recorded. This has not so far been reported in the literature.

A bruit over the liver has been taken as clinical diagnostic evidence for hepatocellular carcinoma whereas friction rub has not been recorded in any case.

Liver biopsy has been found to be the only definite evidence for diagnosis. Limitations of other evidences have been pointed out.

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Juvenile Myasthenia Gravis

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MYASTHENIA GRAVIS, a still uncommon, though not a rare disorder, occurs in about 2 – 4 cases per 100,000 (Hokkanen, 1969). It affects females more than males in the ratio 3:2. The predominant age of onset in the females is the third decade, and in the males is the fifth and sixth decade (Osserman and Genkins, 1971). In children, myasthenia presents in neontatal and juvenile forms. Neonatal myasthenia gravis, manifests within three days of life, and accounts for 12.3% of babies born of myasthenic mothers (Namba, T., 1970). This transient illness disappears within six weeks, and is probably due to a neuromuscular blocking substance transmitted via the placenta. Sarah Bundey (1972) distinguishes an early-onset juvenile myasthenia gravis, which begins before the age of two years, likely to be inherited as an autosomal recessive character, and a late-onset juvenile form, which begins between two and twenty years. This resembles adult myasthenia. The onset of the disorder in infancy, is 1 – 2% of all cases, under ten years is about 4.3% of all cases, and those under twenty years is about 24% of all cases. The case reported here, is therefore one of early-onset juvenile myasthenia gravis, (Millichap and Dodge, 1960).

Case Report

A 28 month-old Pakistani girl, whose parents are first cousins, was admitted to East Ham Memorial Hospital, in August, 1974, for investigation, as it was noticed that she had bilateral ptosis, and was unable to walk properly, for eight and twelve months respectively. The onset was very gradual.

Her birth was normal. Neonatal and infantile development were normal until eight months of age, when it was noticed that she made no attempt to roll over, crawl, or reach out for objects. At eleven months, she was dysaethric. The words 'dada' and 'mama' which she had said at eight months, were never repeated, and she failed to learn new words. At one year, she appeared unduly tired, especially in the evenings. She walked occasionally, but only if led. The illness worsened in a slow and progressive way.

There was a past history of bronchitis at six months, and at 26 months with uneventful recovery on both occasions. No history suggestive of myasthenia gravis was found in the family and relatives.

On examination, she was very irritable, anaemic and listless. Weight on admission was 10 kgs. As there was bilateral ptosis, she often tilted her head backwards to look at anything. She preferred to sit around in the cot, and wished that someone would carry her. Bilateral facial weakness was present. In the central nervous system, there was diminution of power and tone in the limbs. No wasting. Reflexes, fundi and sensory systems were normal. There was delay in motor development. The cardio-vascular, respiratory and abdominal systems were normal.

The following investigations were normal: full blood and differential counts; nose and throat swabs; urine for culture, sensitivity and chromatography; serum calcium, phosphorus, magnesium; protein bound iodine; T3 resin uptake; chest and skull x-rays; tests for auto-antibodies against thyroid, gastric parietal cells, anti-nuclear factor; smooth-

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muscle immunofluorescence, mitochondrial antibodies immunofluorescence, striated and cardiac muscle, and muscle biopsy. Electromyogram (EMG) showed a full pattern of normal units. No evidence of myopathy. (This investigation was done at the London Hospital).

Edrophonium (Tensilon) test – positive response. Haemoglobin 8.8 Gms%; erythrocyte sedimentation rate 20 mms/hour. Muscle enzymes: Serum aldolase 15.8 micromoles (mmol) per minute (min) per litre (L) at 37°C, serum creatinephosphokinase (CPK) 424 mmols/min/L at 37°C, serum lactic dehydrogenase (LDH) 1120 mmols/min/L at 37°C, serum glutamic oxalacetic transaminase (SGOT) 144 mmols/min/L at 37°C, serum hydroxybutyrate dehydrogenase (HBDH) 400 mmols/min/L at 37°C. Six weeks later the muscle enzymes were repeated: serum aldolase 17.5 mmols/min/L at 37°C, CPK 1280 mmols/min/L at 37°C, LDH 600 mmols/min/L at 37°C, SGOT 78 mmols/min/L at 37°C, HBDH 210 mmols/min/L at 37°C.

Muscle enzymes were normal in the parents, but slightly abnormal in both siblings. Brother — six years old: serum aldolase 3.4 mmols/min/L, CPK 108 mmols/min/L at 37°C, LDH 520 mmols/min/L at 37°C, SGOT 5 mmols/min/L at 37°C, HBDH 190 mmols/min/L at 37°C. Sister — nine months old: serum aldolase 8.6 mmols/min/L at 25°C, CPK 140 mmols/min/L at 37°C, LDH 580 mmols/min/L at 37°C, SGOT 39 mmols/min/L at 37°C, HBDH 240 mmols/min/L at 37°C.

As the tensilon test was positive, the patient was started on neostigmine bromide 3.75 mgms., eight hourly, orally. She was discharged home 24 hours later, after three weeks stay in hospital, still weighing 10 kgs. She was advised to continue on the same medication. When reviewed one week after starting neostigmine bromide, it was interesting to note that there was a dramatic therapeutic response. She weighed 12 kgs., looked pink in colour, ptosis was less, she was walking better, and was even a little cheerful. The dose was then increased to 7.5 mgms., twice daily, orally. Three weeks later, she walked by herself, and six weeks after onset of treatment, she was running around, the ptosis was slight, and she continued to gain weight. She was now on neostigmine bromide 7.5 mgms., three times a day, with no side effects. Eleven weeks after treatment had commenced, the child developed a chest infection. During this period, she walked less and tiredness in the evenings became noticeable again. Appropriate antibiotics were given, and neostigmine bromide was increased to 7.5 mgms., six hourly. She began walking well again, was less dysarthric, and although the impression of ptosis was still present, it was remarkably less.

Discussion

This case is being reported mainly because of the unusual finding of raised muscle enzymes. It is unlikely that this was due to thyroid disease as the child is euthyroid, and no thyroid antibodies were present. The cause of this increase in muscle enzymes is unexplained, but reports of cases rarely mention these enzymes. Muscle enzymes are worthy of further study in myasthenia gravis.

I am indebted to Dr. S. B. Dimson, M.D., F.R.C.P., Consultant Paediatrician at East Ham Memorial Hospital, under whose care the patient was admitted, for permission to publish this case, and for reading the manuscript.

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Phototherapy in neonatal jaundice

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THERE IS a high incidence of hyperbilirubinaemia among newborn infants in this part of the world (Sinniah, Tay and Dugdale 1971). Any measures that can cause a significant reduction in serum bilirubin levels and reduce the need for exchange transfusions will be a major contribution towards the management of these infants.

Phototherapy was first advocated for neonatal jaundice by Cremer, Perryman and Richards (1958). Despite use over many years, doubts are still being expressed as to its effectiveness and safety (Elliot, Moncrief and George, 1974). Although several studies have previously been carried out, there are no previous reports of a trial of phototherapy using individually matched control infants. The effectiveness of phototherapy in a multi-racial group of Malaysian infants has also not been evaluated.

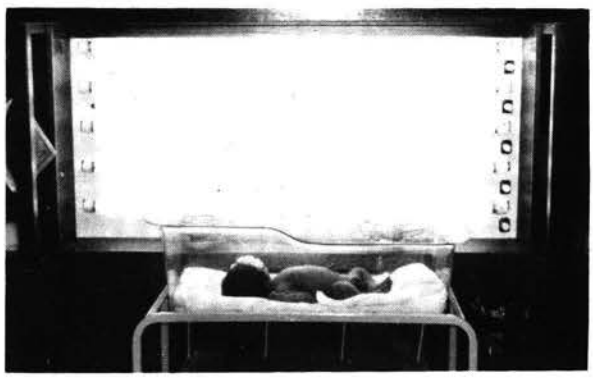

Fig.: Infant, nursed unclad except for eye pads receiving phototherapy.

Because of this, the present study was undertaken to evaluate the effectiveness of the postnatal treatment of neonatal hyperbilirubinaemia (S.B. > 10 mg/100 ml) in a group of Malaysian babies with phototherapy.

Material and Method

Babies born in the Maternity Unit, University Hospital, Kuala Lumpur, were observed daily for jaundice. Those with clinical jaundice which exceeded 10 mg/100 ml were studied. Twenty pairs of infants were matched for race, sex, maturity, birth weight, feeding and age. None of the infants had G.6-P.D. deficiency or blood group incompatibility. None had bruising, cephalhaematoma or other neonatal complications. None received phenobarbitone or other drugs known to influence serum bilirubin levels.

One group of infants served as controls. The other group received phototherapy continuously for at least for 48 hours. Phototherapy was provided from eight 40 watt, white fluorescent tubes (Philips TL 40W/54), emiting a radiant energy of 1.5 Joules per hour between 400 – 490 nm. The tubes were replaced every 200 hours after use. The infants were nursed unclad except for bandages covering the eyes and placed at a distance of 65 cm from the light source. A liberal fluid intake was ensured in all.

Serum bulirubin levels were determined on blood obtained by heel puncture at the beginning and at 24 and 48 hours after phototherapy in both control and phototherapy treated babies.

Results

Twenty matched pairs of infants were studied. The race, sex, gestational age, birth weight, age at the onset of the study and serum bilirubin levels of these infants are shown in Table I. The mean serum bilirubin levels in control and phototherapy treated infants were compared at the beginning and at 24 and 48 hours after phototherapy respectively. These are recorded in Table II. There was no significant difference between the mean gestational age and birth weight between the 2 groups ($P>0.6$; $P>0.6$ respectively). There was no significant difference between the mean serum bilirubin levels of control and phototherapy treated infants at the beginning of the study, but highly significant differences were observed at 24 hours and at 48 hours ($0.01>P>0.001$ and $0.01>P>0.001$ respectively) with significantly lower serum bilirubin levels being recorded in the group which received phototherapy.

No serious side effects were observed although an occasional infant become overheated and required cooling, and 2 babies developed loose green stools.

Discussion

The 2 groups of infants were matched as closely as possible to avoid possible interference by such variable factors as race, sex, gestational age, birth weight, feeding and age which are known to influence the serum bilirubin levels. Comparative studies between the 2 groups show phototherapy to be a safe and effective method of treating hyperbilirubinaemia in newborn babies. There was a definite fall in serum bilirubin levels in 17 of 20 babies receiving phototherapy, no change in 1 and a small rise in 2, compared with a definite fall in 7, no change in 2 and a definite rise in 11 of the control group infants at 24 hours.

Phototherapy generally reduces bilirubin levels by an average of 2 – 3 mg/100 ml within 24 hours and this rate is maintained during the period of phototherapy.

Although previous studies have shown phototherapy to be effective in the treatment of hyperbilirubinaemia, no matched control studies have so far been reported. The results of the present study are in accordance with observations made in other centres.

10 of the 20 pairs of infants studied were of either Malay or Indian racial origin, while the other 10 were Chinese. Skin pigmentation or the lack of it does not appear to influence the effectiveness of phototherapy which was as effective in Malay or Indian babies as in the Chinese. The effectiveness of phototherapy in Negro babies has been reported by Porto (1970).

Table I(A)

Clinical Data and Serum Bilirubin Levels in Control Infants and Those Receiving Phototherapy

Controls Case No.	Race	Sex	Birth wt. Kg.	Maturity in weeks	Age in days at start of phototherapy	Serum Bilirubin Levels in mg/100 ml		
						Start of phototherapy	24 hours later	48 hours later
1	C	M	3.3	40	4	14.0	16.0	13.0
2	C	M	4.0	40	3	14.0	17.0	13.0
3	C	M	3.3	40	3	13.2	10.0	12.0
4	C	M	3.6	40	5	17.3	13.2	12.0
5	C	M	2.0	32	4	13.2	13.2	–
6	C	M	3.3	40	3	12.0	19.2	–
7	C	F	2.9	38	4	15.2	15.0	15.3
8	C	F	3.3	38	3	12.0	14.4	–
9	C	F	1.7	37	4	16.8	14.2	13.2
10	M	M	3.1	39	6	13.2	14.4	9.6
11	M	M	3.1	40	5	13.1	11.0	9.0
12	M	M	1.5	30	4	13.2	14.4	–
13	M	M	1.8	40	3	14.4	16.8	14.4
14	M	F	2.2	34	4	13.2	12.0	11.3
15	M	F	2.6	38	7	18.0	15.6	13.1
16	M	F	2.9	40	5	14.8	16.4	11.0
17	M	F	3.0	40	5	12.0	13.2	18.7
18	I	M	2.0	37	5	12.0	13.2	–
19	I	M	1.6	39	2	12.0	13.2	18.7
20	I	F	2.2	34	5	14.4	14.4	–
MEAN			2.67	37.8		13.9	14.34	13.16

C = Chinese M = Malay I = Indian

Table I(B)

PHOTOTHERAPY Case No.	Race	Sex	Birth wt. Kg.	Maturity in weeks	Age in days at start of phototherapy	SERUM BILIRUBIN LEVELS in mg/100 ml Start of phototherapy	24 hours later	48 hours later
1	C	M	3.5	40	4	16.7	14.2	14.2
2	C	M	3.5	40	3	14.4	14.4	7.6
3	C	M	3.2	42	3	13.2	10.0	9.0
4	C	M	2.8	38	5	15.5	12.5	9.0
5	C	M	2.1	40	4	12.0	9.6	–
6	C	M	3.3	40	3	15.0	7.6	–
7	C	F	2.7	37	4	16.0	14.2	6.0
8	C	F	3.9	40	3	12.0	6.0	–
9	C	F	2.0	38	4	16.8	12.0	7.2
10	M	M	3.0	40	5	14.4	14.0	10.8
11	M	M	3.0	40	5	15.6	12.0	10.8
12	M	M	1.3	30	4	11.0	8.4	–
13	M	M	2.0	36	3	12.0	15.6	7.2
14	M	F	1.8	36	4	16.0	12.5	9.8
15	M	F	2.7	40	7	18.0	14.0	9.5
16	M	F	3.0	37	5	15.6	16.8	12.0
17	M	F	3.1	38	5	16.0	15.0	13.0
18	I	M	2.1	38	5	12.0	8.0	–
19	I	M	1.6	40	5	16.0	15.0	13.0
20	I	F	2.4	36	5	11.0	7.0	–
MEAN			2.64	38.3		14.46	11.99	9.94

C = Chinese M = Malay I = Indian

Table II

Mean Serum Bilirubin Levels in Control and Phototherapy Groups

GROUP No. of Patients	MEAN SERUM BILIRUBIN LEVELS in mg/100 ml Start of Phototherapy	24 hours later	48 hours later
Control	13.9 ± 1.74	14.34 ± 2.09	13.16 ± 2.78
Phototherapy	14.46 ± 2.08	11.99 ± 3.24	9.94 ± 2.40
Difference between means	0.56	2.35	3.22
Significance of difference (p)	$0.3 > P > 0.2$	$0.01 > P > 0.001$	$0.01 > P > 0.001$

No short term complications have been observed in this study apart from overheating, bronzing of the skin and loose green stools.

Summary

Twenty pairs of Malaysian babies with neonatal jaundice, matched for race, sex, gestational age, birth weight, age and feeding were studied; one group received phototherapy and the other served as controls. Significantly lower serum bilirubin levels were recorded both at 24 hours and 48 hours of phototherapy in the treated group. No serious side effects were observed apart from occasional overheating and loose green stools in 2 infants.

It is concluded that phototherapy is a safe and effective method of treating idiopathic neonatal hyperbilirubinaemia in babies of multi-racial origin as in Malaysia.

Acknowledgements

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Subacute (Dequervain's) thyroiditis - Study of seven cases

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SUBACUTE THYROIDITIS SAT is an acute, subacute or chronic, generalized, self limiting, non-bacterial inflammation of the thyroid. The onset is often drematic and acute with severe pain radiating to the jaw or the ear, an enlarged painful tender thyroid and systemic manifestations including fever. Usually the diagnosis of subacute thyroiditis is not difficult but the thyroid may not be tender (Volpe 1958) and recent reports by Hamburger 1974 and Papapetrou 1975 have emphasized that this lack of tenderness in atypical cases accompanied by symptoms of thyrotoxicosis may lead to diagnostic confusion and inappropriate treatment of such occult or silent thyroiditis as thyrotoxicosis. Low radio-iodine uptake with thyrotoxicosis clinically and hyperthyroxinemia or hyperthytriiodothyronemia can occur in Hashimoto's thyroiditis, ingestion of iodide, thyroid hormone, certain other drugs and the ectopic production of thyroid hormone, but thyroiditis of viral or autoimmune origin will be suggested by a raised sedimentation rate, tenderness over the thyroid gland, and characteristic features on thyroid biopsy. Thyroiditis and so called hyper-thyroiditis may masquerade as several different conditions including thyrotoxicosis. Also painful conditions of the neck including dental abscess, tonsillitis, myositis and neuritis may be mis-diagnosed as thyroiditis. A characteristic low 131-I uptake is one of the important signs (Werner 1948) although raised ESR, elevated thyroid hormone levels, thyroid antibody tests, viral studies and lastly but most important thyroid biopsy is most useful in establishing the diagnosis. When dealing with a painful thyroid condition haemorrage into a cyst may mimic closely the explosive onset so frequently seen in subacute thyroiditis. In this area such patients are often medicated with iodides, thyroxine and analgesics including phenylbutazone and antithyroid drugs all of which may produce a depressed 131-I uptake so characteristic of SAT. To compound the confusion a history of pre-existing goitre may be seen in up to 16% of cases of SAT. (Woollner LB et al 1957). In the thyroid investigation centre at the department of Nuclear Medicine here only 7 cases of subacute thyroiditis which fitted with the clinical and laboratory criteria described above have been seen, although during the same period over 1500 cases of miscellaneous thyroid conditions were investigated. The incidence of SAT in other centres have been variously described as 1 – 6.2% of all patient with thyroid disease (Woollner et al 1967). While a highly selected group is being referred to this centre it was felt a detailed clinical and laboratory investigation including aspiration cytology, thyroid function, viral studies and careful follow-up was worthwhile. The nature and extent of the anamolies occurring in the parameters of thyroid function during the course of the disease and the role played by the pituitary-thyroid feed back mechanism is disputed. According to some investigators the levels of TSH are found to be normal in the initial phase though others maintain the levels are low or even high. A follow up study of the various parameters of thyroid activity during the weeks following SAT was done in four cases who presented this year.

MATERIALS AND METHODS:

The patients were investigated as part of a routine thyroid investigation protocol which included a history of febrile illness in patients and contacts, symptoms referred to the neck and goiter, systemic

complaints such as fever and malaise, and symptoms of toxicity. Thyroid status was assessed clinically and on the basis of thyroid function tests. Routine thyroid tests included 131-I uptake (normal 24 hour value 15 – 45%) and scan, TSH stimulation test, Serum thyroxine (T-4) using the competitive protein binding (Murphy et al 1964), (normal range 4 – 12 micrograms %) Effective thyroxine ratio (ETR) using the modified Mincey techniques (Mahadev et al 1970) normal range 0.82 – 1.16, T-3 resin uptake normal range 75 – 112%, serum human thyroid stimulating hormone (HTSH) using the Abbott HTSH kit, 0 – 5nIU/ml, serum triiodothyronine (T-3) using the Abbott T-3kit normal range 1 – 2.5 ng/ml, and TRC for thyroid antibodies using the thyroglobulin haemagglutination kit. Besides the above relevant thyroid tests erythrocyte sedimentation rate (ESR) and white blood cell counts (WBC) were performed at each visit, blood was taken and examined for antibodies to influenza serotypes, and adenovirus (at least 2 specimens at the initial visit and 2 months later were obtained for each cases). Fine needle aspiration biopsy over the involved area of the thyroid was done at the initial visit and light microscopical examination of the smears stained by May-Grunwald Giemsa (MGG) was performed. The aspiration biopsy was repeated on complete recovery. All patients after complete recovery were given 0.2 mgm of thyrotrophin releasing hormone (TRH) and the TSH response monitored over 1 hour. The normal pattern (see figure 1) at 20 minutes is a mean value of 9.5 uIU/ml range 3.5 – 15.6 uIU/ml, at 60 minutes a mean of 6.8 uIU/ml range 2.0 – 11.5 uIU/ml. All the patients were initially treated symptomatically with aspirin, and a course of antibiotics had often been earlier given by the referring doctors. All cases had x-rays of the neck on the initial visit for signs of tracheal compression.

RESULTS:

Case 1 LFY female aged 29 was referred to an E.N.T. Specialist with a history of a painful tender swelling of the thyroid gland worse on the left side and associated with fever and chills for 1 month, She complained of dysphagia but did not give a history of palpitations, sweating, tremors or other symptoms suggestive of toxicity. On examination there was a tender lump over the right side of the thyroid gland which moved on deglutition. There was no bruit and no tremors or sweating.

	26/2	7/4	28/4	6/5	19/7
131-I Uptake 4 Hrs.	2%	3.2%	–	–	28%
SCAN	1.4%	3%	–	–	48%
T-4	6.4 ug%	4.6 ug%	7.0 ug%	10 ug%	3.6 ug%
RU	87%	111%	124%	99%	110%
ETR	0.93	1.16	0.88	0.95	0.88
T - 3	2.0 ng/ml	–	–	–	2.3 ng/ml
HTSH	5.0 uIU/ml	–	–	–	3.0 uIU/ml

Aspiration cytology of thyroid initial showed a classical appearance of giant histiocytes, lumphocytes and mononucleated inflammatory cells. (See fig. 2). The TRC for thyroid antibodies was negative.

Viral Studies – A/Port Chalmers 1:20 (1st. specimen)
1:20 (2nd. specimen)
Other influenzae – ive
Adenovirus CT Test – ive

An exaggerated HTSH response to TRH was seen after complete recovery (See fig. 1).

Case 2 SLS aged 31 years female was first seen on 3.1.76 with a history of a painful tender swelling of the neck for more than two weeks. Examination showed no significant abnormality except pooling of saliva in the hypopharynx and an exquisitively tender goiter most marked over the right lobe of the thyroid gland. The pulse was rapid over 90/minute, but there were no other signs of toxicity. She was swinging a high fever of 102°F since admission and direct laryngoscopy under GA by an ENT specialist showed no lesion of the trachea or the bronchial tree proximally. Plain x-ray of the neck showed a soft tissue swelling anteriorly but no tracheal compression.

Thyroid aspiration cytology showed inflammatory cells with neutrophils leukocytes and macrophages.

Viral Studies A/Port Chalmers 1:10 (1st. Specimen)
1:10 (2nd. Specimen)
A/Victoria 1:10 (1st. Specimen)
1:80 (2nd. Specimen)
All other strains negative
Adenovirus CF Test negative.

	3/1	23/2	26/4	19/7
131-I Uptake 4 hrs.	2.6%	24%	–	9%
24 hrs.	0.9%	57%	30%	24%
SCAN	Normal except for greater pick up on the right			enlargement of the right lobe of the thyroid
T-4	14.3 ug%	5.6 ug%	8.1 ug%	3.6 ug%
RU	73%	111%	112%	108%
ETR	1.92	0.82	1.08	0.92
T - 3	1.8 ug/ml	–	–	1.8 ug/ml
HTSH	–	–	–	1.2 uIU/ml

TRC for thyroid antibodies was negative. The patient was treated symptomatically with asprin and rest and recovered within one month. However on review in May she had symptoms of sore throat suggestive of a relapse. However she was clinically free of thyroid swelling or tenderness. On 19/7 seven months after the initial onset of the illness the patient appeared euthyroid and there was no residual thyroid lump. An exaggerated response of HTSH to TRH was however noted (see fig. 1) and the basal T-4 level was in the lower limit of normal range and had gone down considerably since the initial examination.

Case 3 CKW 38 years, male gave a history of fever for 2 months and had lost nearly 20 pounds in weight. About one month ago he developed a painful lump right neck, and heat intolerance and palpitations. He gave a past history of peptic ulcer for which a polya gastrectomy was done. Initial examination showed an oval swelling hard and tender arising from the right lobe of thyroid gland. He had tremor tachycardia and warm moist palms. The ESR was 120/1st. hour, WBC and Urine examination were normal and the Widal Weil Feli-ive.

Thyroid aspiration cytology showed initially on 3.6.76 degenerate follicular cells with inflammatory cells and red blood cells.

TRC for thyroid antibodies showed a low litre 1/250. The patient received symptomatic treatment and 2 weeks later had completely recovered and the lump was no longer palpable. ESR previously 120 mm/1st. hour on admission on 31/5 had now fallen to 12 mm on 13/6. On 12/7 the patient had completely normal findings and TRH test showed an exaggerated HTSH response (see figure 1).

Viral Studies Influenza – B Hongkong
1:40 (1st. specimen)
1:40 (2nd specimen).
Other strains – ive
Adenovirus CF Test – ive

Case 4 TYC, 38 years male, had fever, pain in the neck, palpitations, weight loss and sweating for 6 weeks. He had seen several doctors for his painful neck and received several analgesics including 'Tanderil' and antibiotics. His wife and children had also developed a 'flu' at the same time but had recovered completely. There was a hard tender lump over the right neck but no other significant finding. There were no overt signs of thyrotoxicosis.

Before TSH	31/5	After TSH	13/6	12/7
131-I Uptake 4 hrs.	3.4%	3.7%		
24 hrs.	0.6%	4.7%		
	31/5		13/6	12/5
T-4	15.5 ug%		5.2 ug%	5.6 ug%
RU	67%		110%	112%
ETR	1.19		1.03	1.1
T-3	2.6 ng/ml		–	1.6 ng/ml
HTSH	0.1 uIU/ml		–	10 uIU/ml

	21/5		26/5	21/7
Before TSH		After TSH		
131-I Uptake 4 hrs.	3.0%	3.2%	–	18%
24 hrs.	1.2%	1.0%	–	29%
131-I Scan				Normal Thyroid
T-4	11.0 ug%			4.2 ug%
RU	108%			116%
ETR	1.00			0.80
HTSH	0.1 uIU/ml			
T-3	3.5 ng.ml			

Thyroid aspiration cytology showed inflammatory cells and degenerate follicular cells. TRC for thyroid antibodies was negative. The patient was diagnosed as acute thyroiditis and initially treated conservatively but the pain worsened and the fever continued. The patient was put on steroid therapy on 8/6 and almost within 24 hours the patient's symptoms remitted. However each time the steroids were withdrawn the patient relapsed till after the third course the patient finally had a sustained remission. On 21.7.76 a repeat thyroid aspiration showed normal follicular cells. A TRH test showed an exaggerated response pattern.

Viral Studies A/Port Chalmers 1:80 (1st. Specimen)
1:40 (2nd. Specimen)
A/Victoria 1:80 (1st. Specimen)
1:40 (2nd. Specimen)
Residual antibody against all other strains – ive
Adeno virus – ive

DISCUSSION:

Clinical findings – Thyroid pain, swelling and an associated febrile onset was present in all the cases and the onset was acute in all of them. Four of the cases were referred by ENT Specialists. In contrast in the Mayo Clinic series 37% had jaw pain and were referred by dental surgeons (Tolman et al 1962). A hyperthyroid syndrome was seen in three cases and in case 3 there was a severe weight loss of nearly 20 pounds, were thyroid pain and fever less striking these cases may plausibly be misdiagnosed as hyperthyroidism. Such 'occult' or 'silent' SAT have been previously reported by Hamburger et al 1974 and Papatrou et al 1975 and may in fact be fairly common in this area as the overall incidence of classical SAT appears to be lower in relation to thyroid disease in general. Many of the systemic symptoms such as fever and malaise were indistinguishable from common febrile illnesses such as influenza. The thyroid swelling was assymetrical in all the cases. This was evident clinically and in 3 cases the gland was very hard, one of them being misdiagnosed as thyroid carcinoma by the referring doctor. None of the cases had any past history of thyroid swelling.

Table 1
Main features of 7 cases subacute thyroiditis studied

Thyroid pain swelling and tenderness		100% (7/7)
Febrile illness		100% (7/7)
Dur		
Duration of symptoms at onset	2 weeks	1/7
	4 weeks	2/7
	6 weeks	3/7
	8 weeks	1/7
Hyperthyroid syndrome		45% (3/7)
Elevated ESR		100% (4/4)
Depressed 131I uptake		100% (7/7)
Elevated T4		45% (3/7)
Elevated T3		(3/4)
Thyroid aspitation cytology		
Inflammatory cells		100% (4/4)
Necrotic follicular cells		50% (2/4)
Giant cells		25% (1/
Viral influenza antibody		4/4
Titres present significant rise		1/4
TRC thyroid antobodies		
Negative		6/7
Weakly positive		1/7
Patchy assymetrical pick up on 131I scan after recovery		3/7
Exaggerated TSH response to TRH after recovery		100% 4/4
Complete response to symptomatic therapy		90% 6/7

I - 131 uptake: All the patients had markedly depressed 131-I uptake in the initial study. Thyroidal activity was too low for scans to be done and in case 4 – 99 Tc m uptake was also markedly depressed. Since Werner's description of this in 1949 as an important feature of SAT it has been described as the most reliable finding. However iodide ingestion, antithyroid drugs, thyroxine, ectopic production of thyroid hormone and conditions like Hashimoto's

disease may produce a similar uptake pattern. Most of the patients had taken analgesics and antibiotics outside before their initial visit here and drug interference has to be carefully ruled out – for example case 4 had taken 'Tanderil' a drug which depresses thyroidal 131-I uptake and is goitrogenic. The response to TSH administration in SAT is interesting. One of the earliest cases diagnosed in this series in 1972 had a classical history of painful thyroid lump associated with fever raised ESR and a high serum T-4 of 9.1 ug% but although the patient had a thyroid lump on the left side on TSH stimulation this was a functioning nodule and the apparently normal right lobe was cold. All the other cases had markedly depressed 131-I and 99 Tc m uptakes which did not rise on TSH stimulation thus proving that primary thyroid cell impairment leading to a temporary impairment in iodide concentration mechanism is the cause for the low uptake. It is possible the case described above may in fact be a case of thyroid adenoma with localized thyroiditis involving one lobe. The patient has completely recovered and no thyroid biopsy has been done and it is not possible to confirm this. It is however clear that interruption of the thyroid iodide concentration mechanism rather than the lack of endogenous TSH stimulation due to an over whelming outpouring of thyroid hormones from the damaged thyroid appears to be the cause for the low radioiodine uptake seen initially in SAT (Daniel Glinoer et al 1974). The depressed 131-I uptake coexisting with the high T-4 values correspond to the hyperthyroid or stage 1 phase of SAT as described by Volpe et al in 1958. In case 2 thyroidal 131-I uptake reverted to a high normal range within 6 weeks and subsequent values of 24 hour radioiodine uptake declined corresponding to a decline in T-4 levels. Basal HTSH values at the onset were normal and it is likely the suppression of 131-I uptake during this phase was due to thyroidal damage.

Thyroidal hormone levels – In nearly half the cases serum thyroxine was initially elevated. Two cases 1 and 4 had high serum T-3 values in the presence of normal T-4 values. This is difficult to understand if one postulates that the high values of thyroid hormones in the circulation is due to abnormal release of intrathyroidal hormones rather than increased production of hormones by the thyroid. Triiodothyronine has a larger volume of distribution in the body and a higher turnover and from this one would imagine elevated T-3 levels will be less striking and sustained than elevated T-4 levels. Increased extrathyroidal conversion of T-3 to T-4 and faulty autoregulation by the thyroid and high T-3/T-4 ratio could be postulated in these cases. The T-3 resin uptake and the ETR values corelate closely with T-4 values initially and on follow-up. On follow-up thyroxine levels which were initially elevated in 3 of 7 cases progressively fell in all to normal levels within 1 month. Cases 1, 2 and 4 had T-4 values in the subnormal range after apparent complete recovery. In case 1 a low T-4 was associated with elevated T-3 values. All 4 cases had exaggerated HTSH responses to TRH (See Figure 1) although the basal HTSH values were normal. This suggests some degree of hypothyroidism. One patient was followed up for more than 3 years and had completely recovered from SAT but showed an exaggerated HTSH response to TRH. In the 4 cases described it is possible further follow up may reveal a reversion of TRH response to normal with time. SAT in contrast to Hashimoto's thyroiditis has been described as leading very rarely to permanent hypothyroidism (Volpe 1958) and occasionally to hyperthyroidism (Perloff et al 1956.)

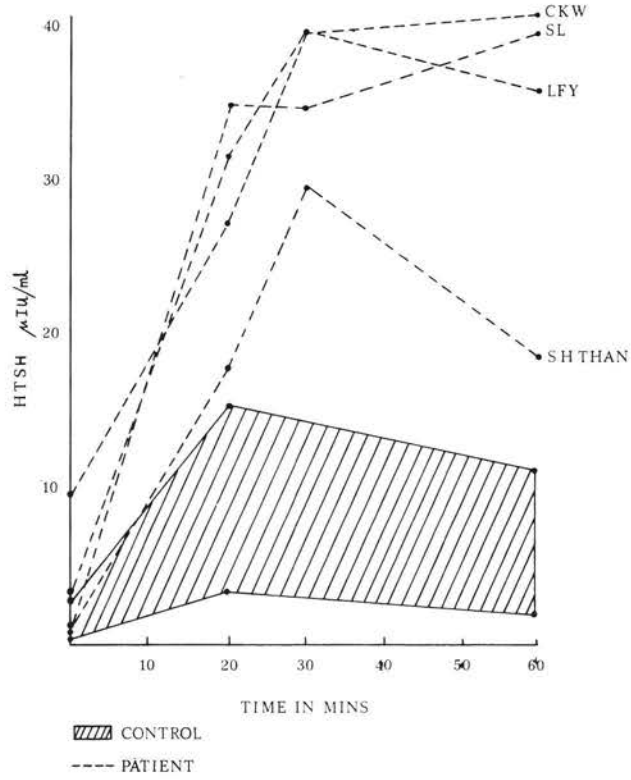

Figure I

HTSH response to 0.2 mg of TRH in four patients following complete recovery from acute thyroiditis.

Thyroid Cytology – Multinucleated giant cells are classical of SAT but was only identified clearly in 1 of the 4 cases. These cells contained about 30 nuclei situated one on top of the other (see figure 2). In 3 or 4 cases degenerative changes in the follicular cell were striking cloudy cytoplasmic vacuolization and pyknotic nuclei. In case 4 a repeat thyroid aspiration cytology after steroid therapy showed completely normal follicular cells although initially they showed degenerative changes. Proliferative changes in the follicular cells have been reported in the recovery phase of SAT (PS Persson 1967). Inflammatory cells in the form of macrophages, polymorphs, mature lymphocytoid cells and red blood cells were a constant finding in all 4 cases studied cytologically. In case 1 a repeat aspiration after apparant recovery showed persistent macrophages, lymphocytoid cell and polymorphs. Aspiration cytology cannot by itself exclude malignancy – this was exclude malignancy – this was excluded on clinical grounds and on the basis of thyroid function tests. However aspiration with characteristic findings of giant cells, degenerative changes in the follicular cells, and inflammatory cells strongly supports a diagnosis of SAT. One could exclude with certainty haemorrhage into a cyst as a cause for a painful thyroid lump. Diffuse lymphoid thyroiditis characteristically shows Askanazy cell change with typical granulations of the cytoplasm, and acute suppurative thyroiditis would show a predominantly polymorph pattern of infiltration and causative bacteria may be identified. However the cytological pattern in SAT varies from patient to patient and from one part of the thyroid to another (Persson 1967). Numerous reports suggest that even malignant thyroid processes and reticulum cell sarcoma could be diagnosed cytologically (Frazell et al 1958) but it is clear this technique is better avoided where malignancy is strongly suspected.

Viral studies – Subacute thyroiditis in all cases reported here as elsewhere was preceded by an upper respiratory infection, fever and systemic manifestations, and occurred in 2 of the cases in association with 'flu' like illness in contacts. Subacute thyroiditis has been associated with mumps epidemics in at least 5 reports, measles, influenza, common cold, adenovirus infections mononucleosis, coxaxkie virus, cat scratch fever, and at least 2 non-viral agents malaria and Q fever. In case 2 there was a significant rise in titre of influenza antibodies to A/Victoria 1:10 to 1:80 and it is almost certain the illness occurred in association with influenza although the actual role of influenza in producing

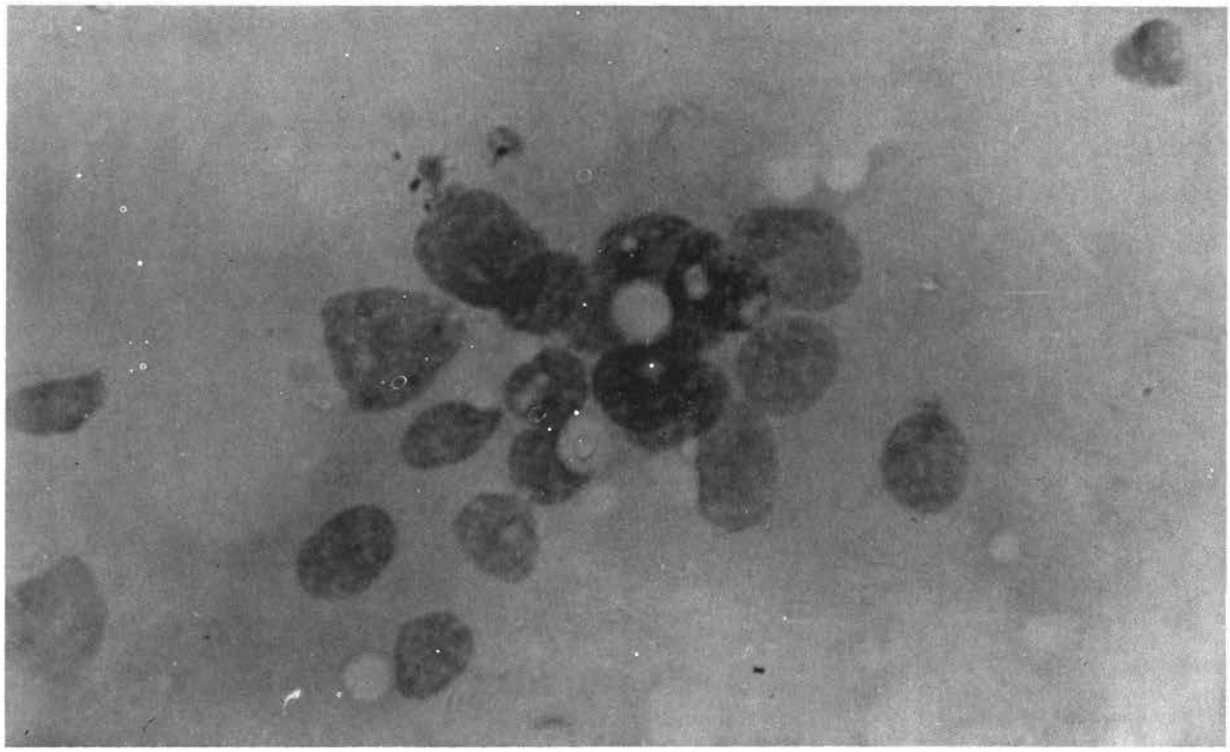

Fig. 2

the thyroid lesion is not certain. Case 4 showed a fall in titres of A/Port Chalmers and A/Victoria from a very significant level of 1:80 to 1:40. Volpa 1967. In a series of 58 patients first described a high titre of viral antibodies to influenza A, mumps, coxackie B type and adeno virus which fell to normal during the course of the illness in nearly half of them. The presence of significant titres of more than 1 viral antibody may merely represent an anamnestic response to the inflammatory thyroid lesion rather than a specific viral infection. It is also possible at least in the 2 cases where either a significant fall corresponding to the course of the illness or a significant rise may indicate a viral etiology for SAT. It is quite possible that SAT may in fact be a stereotyped thyroidal inflammatory response to a variety of viruses (Volpe 1967).

Therapy – Two of the seven cases in the series were treated with steroids. All the other cases appeared to have responded to symptomatic measures. In case 4 withdrawal of steroids was followed by a relapse. It is generally recommended that steroids in SAT should be carried on at least for 1 month and gradually reduced over the next month. (Eylan et al 1957). Salicylates however are highly effective in the majority of cases and steroids can be reserved for the severe one. Case 4 had normal thyroid cytology following steroids can be reserved for the severe one. Case 4 had normal thyroid cytology following steroid therapy whereas case 1 and 2 continue to show inflammatory cells and macrophages on repeat aspiration more than 3 months after the onset. While the value of steroids may entirely be symptomatic it may have a direct effect in arresting thyroid inflammatory process triggered of by virus and in this respect may have a wider role. Other methods including surgery, antithyroid drugs, radioiodine and external radiotherapy have been used and have a failure rate of about 25% and are inferior to steroids.

Summary and Conclusion:

1. The clinical pattern in 4 cases of subacute thyroiditis has been described in detail. 3 other cases followed up for more than 2 years were reassessed.
2. Influenza antibodies were present in all 4 cases but a significant rise in titre to A/Victoria strain occurred in 1 case and a significant fall in titres during the illness to 2 strains A/Victoria and A/Port Chalmers occurred in 1 case. The significance of this finding is discussed and points to a viral role in the etiology of SAT.
3. Thyroid aspiration cytology is a useful technique in diagnosis and follow-up of cases of SAT.
4. Thyroid failure in the long term as a permanent feature of SAT has hitherto been described as a rare manifestation but an exaggerated HTSH response to TRH in 6 cases studied after apparant recovery suggests that some degree of marginal thyroid insufficiency may persist.

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Folk medical beliefs and practices in Sitiawan

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Introduction

IN A developing country like Malaysia, where our cultural heritage is such that our people still cling on so steadfastly to the old ways and are still influenced by tradition in their thinking, behaviour, and action, it is inevitable that a practitioner in modern medicine will often encounter, and often find, certain beliefs and practices of our people interfering, hindering, and sometimes, perhaps, even resisting his practice of modern medicine. In such instances then, the modern medical practitioner's attitudes towards these folk medical beliefs and practices and how he reacts or deals with them will undoubtedly be of immense importance in his management of his patients. A knowledge and understanding of the traditional folk beliefs and practices, in relation to illnesses, their causations and cures, is therefore invaluable. This has been well recognised by the medical profession, and of late, more and more interest is being focussed on the topic. Sandosham (1974) called it the "cross cultural approach in medical practice", and Chen (1974) outlined what he called the "socio-cultural foundations" upon which medical practice in rural Malay communities might be based.

In this paper, the author presents a study of the people of Sitiawan in their beliefs and practices in respect of illnesses, their causations and cures. The purpose is to further enhance our knowledge and understanding of our people's traditional beliefs, practices, and behaviour in illnesses so that we can better deal with them, when we encounter them.

Materials and Methods

This study is based mainly on:-

(1) Personal observations made by the author on his patients,
(2) Random interviews of the general public, and
(3) Personal knowledge of the author in folk medical beliefs and practices of the people of Sitiawan, being a member of the same cultural heritage, born and brought up in Sitiawan, subjected to the same influences and indoctrinations, and having shared the same beliefs, and experienced and participated in some of the practices himself.

Background

Sitiawan is one of five mukims of the District of Dindings, in the State of Perak. It comprises the following towns and kampongs:- Kampong Koh, Simpang Empat, Simpang Dua, Pekan Gurney, Simpang Lime, Kampong China, Kampong Pasir Panjang Luat, Kampong Datuk Sri Haji Kamaruddin, Kampong Sitiawan, Ayer Tawar, Kampong Raja Hitam, Kampong Bahru, Kampong Jering, and Kampong Selamat. Of these, Kampong Koh is the largest with a population of 8,071 (Census 1970). The main livelihood of the people of Sitiawan are rubber tapping, farming, and fishing. Sitiawan is, thus, by criteria and definition, rural, and enjoys the attention of the Government as a rural area in terms of development and medical and health facilities and services, although in many respects it has attained urban characteristics.

Medical and Health services in Sitiawan

There are eleven private modern medical practitioners manning twenty private clinics, viz:- Simpang Tiga 2, Kampong Koh 7, Simpang Empat

3, Ayer Tawar 5, and Changkat Kering 3. There is one District Hospital based in Lumut with 5 medical officers, and there are 2 Government sub-health centres (Pusat Kesihatan Kechil) with one in Simpang Empat and one in Ayer Tawar, and there are 7 midwifery clinics (kelinick2 bidan berkaitan) with one in each of the following towns and kampongs:- Kampong Koh, Kampong Sitiawan, Kampong Datuk Sri Haji Kamaruddin, Pekan Gurney, Kampong Raja Hitam, Kampong Ayer Tawar and Kampong Bahru. Besides these, there are Government mobile clinics which go into the remote rural areas at monthly or more frequent intervals. Thus, on the medical and health side, Sitiawan is quite well served by both the private sector and the Government.

The People of Sitiawan

There are three main ethnic groups living in Sitiawan, viz., Malays, Chinese and Indians. Of the total population of 55,972 in Sitiawan, 66.78% are Chinese, 13.36% Malays, 18.46% Indians, and 0.20% Others (Census 1970). Each of these ethnic groups tends to group into a separate community, with the Chinese concentrating mainly in the town areas, the Malays mainly along the coastal areas, and the Indians mainly in rubber estate or coconut plantation areas. However, despite this apparent ethnic segregation and grouping, with each ethnic community tending to retain their own culture and customary practices, brought along by their immigrant fore-parents, from the foreign land of their origin, there is a tendency towards cross-cultural interaction and influence, with the result that each ethnic group tend to adopt and absorb some of the beliefs and practices of the other ethnic groups. This is particularly observed in their beliefs and practices in folk medicine, where although there are a lot of differences, there are also basically a lot of similarities among the various ethnic groups.

The Yin and Yang Principle

Because of our heterogenous cultural heritage and the dominance of influence by the Chinese, and in order that we may or can attempt to understand our people's traditional beliefs, superstitions, and practices in illnesses, it is important that we know and understand the fundamentals of the Chinese concept of the Yin and Yang Principle upon which the whole system of the Chinese medical practice is based.

According to the Yin and Yang Principle, all energy (ch'i) and/or energy movement in the body originates from the conflict between a pair of opposites, called Yin and Yang. Yin is the female or the negative element, and Yang is the male or the positive element. In normal healthy condition, the two opposing forces of the pair of opposites, the Yin and the Yang, are in a state of balance or equilibrium with one another, and maintain harmony or homeostasis in the body. However the two opposing forces are perpetually at tug-of-war with one another, with each trying and wanting to dominate the other. This engenders and determines the flow of the vital life energy, called ch'i, throughout the body. This energy (ch'i) is essentially vital for all bodily functions without which death will result, as when a person dies, the Chinese would say, "The ch'i has stopped or has left the body". If the orderly flow of energy (ch'i) is disturbed or interrupted at any site, the whole organism as well as the affected parts or organs becomes imbalanced and illness will result. The type of illness that will result will depend on which one of the pair of opposites dominates. An excess of energy in the Yin will give rise to a strong Yin which will therefore dominate over the relatively weaker Yang, and therefore the illness will manifest the Yin characteristics, and vice versa.

This disturbance in the relative strength of Yin and Yang causing imbalance and disharmony in the body can result from a number of influences and causal agents.

The traditional Chinese concept of wholeness of health is not just a maintenance of harmony in one's own body system, but a maintenance of harmony with the whole Universe and everything in it. Thus, man and the Universe are seen as two inseparable systems (Teoh 1973). Everything around him, including the 5 elements in the traditional Chinese concept (fire, water, wood, metal, and earth), the foods he eats, the environment he lives in, the weather, the position and movement of the stars and planets, etc, will influence and affect his Yin and Yang balance and hence his inner harmony, and hence his health.

Acupuncture

The fundamental of acupuncture is the use of needles to restore any imbalance of the Yin and Yang, which has been the cause of illness, and thereby restores health. According to the Yin and Yang concept, the energy (ch'i) flows along definite lines or routes, called meridians, throughout the body, in an orderly fashion. There are twelve paired and two unpaired meridians. Each of these meridians has its main branches and sub-branches like the roots of a tree, and they run throughout the whole body, reaching all the organs and tissues, carrying the energy (ch'i) to them, thereby regulating their functions and maintaining harmony throughout the body system. Illness will result when this orderly flow of ch'i is interrupted or gets out of balance. Acupuncture, by using needles to pierce certain

sensitive points in the skin, will restore the orderly flow of ch'i thereby restore the normal balance in the body. These sensitive points in the subcutaneous tissue of the skin are the acupuncture points. They lie along the meridians, and there are a thousand such points over the body surface. Each of these acupuncture points relates to an organ or a tissue in the body. The proper application of the needles to the points for the organ or tissue affected will restore normal function to that organ or tissue.

Moxibustion (Moxa treatment)

Moxibustion is the burning of herbs or moxa preparations, in the form of cones, balls, or sticks, on acupuncture areas. The theory is the same as acupuncture, and that is, by affecting the skin through the burning stimulation, the internal organs that are inter-connected to special skin areas (the acupuncture points) will respond, be stimulated, or be suppressed, and eventually be restored to normal.

Results

Now, having the background and an insight into the traditional Chinese medical concept, the author can now proceed to present the results of his study of the folk medical beliefs and practices of the people of Sitiawan.

A. Folk Concept of Aetiology of Illnesses

In the Sitiawan folk concept of illnesses, basically all illnesses are attributed to one or more of the following 5 known causal agents, viz., heat, cold, wind, water, and poisons, to which the 6th causal agent, the supernatural, may be added.

Diagnosis of an illness is made according to which of the above mentioned 6 causal agents is believed or thought to be the cause of the illness. Accordingly they are referred to as heat-caused illnesses, cold-caused illnesses, wind caused illnesses, water-caused illnesses, or poison-caused illnesses, and if illnesses are due to the supernatural, they are referred to as spirit possession, the work of witchcraft or magic, or the work of wrath of evil spirits, or ghosts, or gods, because the patient has offended them or has not fulfilled his promises made to them.

B. Folk Concept of Symptomatology and Signs of Illnesses

Such symptoms like dry mouth, thirst, sore-throat, epistaxis, yellowish expectorations, hemoptysis, red eyes, flushed face, constipation, malaena, dark concentrated urine, haematuria, insomnia, irritability, excitability, restlessness, headache, and pyrexia are said to be due to heat, whereas cold caused illnesses are said to manifest symptoms like rhinorrhoea, sneezing, chills, diarrhoea, watery dilute urine, whitish expectorations, and cold extremities. Cough could either be due to heat or cold. When it is associated with yellowish expectorations or hemoptysis, it is said to be due to heat: when it is associated with whitish expectorations, like in asthma, it is said to be due to cold.

Wind caused illnesses are believed to present as abdominal pain, abdominal distension, fits, and various body and joint pains. The latter include all orthopaedic and rheumatologic diseases like osteoarthritis, ankylosing spondylitis, rheumatoid arthritis, fibrositis, myositis, neuritis, tendonitis, and gout. They are all referred to as "wind pain".

Relating to water caused illnesses, oedematous swelling of the face and legs are believed to be due to an excess of water, whereas symptoms and signs like deep breathing, panting, dry skin, and scanty urine are believed to be due to lack of water, which in turn is believed to be due to heat which dries up the water. Therefore, the symptoms of the two conditions are inter-related. Similarly are the symptoms of excess of water and "cold" inter-related.

Poisons on the other hand are believed to be the cause of infective inflammatory conditions like boils, erysipelas, impetigo, and skin erruptions and rashes of any kind, either allergic or infective. Itch is frequently complained of as a manifestation of 'poison in the blood'.

As with regard to the supernatural, hysteria (including mass hysteria) hallucination, violent outburst, delirium, flight of thoughts, withdrawn state, talking or singing to oneself, and in short, all the manifestations of psychietric illnesses find easy explanation as being due to, and manifestation of, spirit possession, witchcraft, or the work of wrath of offended gods, ghosts or malign spirits. Congenital deformities and malformations are similarly believed to be of supernatural origin. It is believed that the embryonic development of a child can be influenced by the positions and movements of stars and planets and the imaginative and visionary impressions of the expectant mother. For examples, pre-auricular sinus, and thyro-glossal fistula or sinus are believed to be due to the expectant mother accidentally piercing her finger while doing sewing; hare-lip and cleft palate are believed to be due to the expectant mother accidentally cutting her finger while chopping wood or cutting meat, or according to the Malays, if biten by a crab (Kuah 1972); birth-marks are believed to result from a mother doing painting while expecting; a mongol is born because the expectant mother has looked at monkeys too much and too often, or has eaten monkeys; similarly

watching movies is believed to affect the embryonic development of a conception, e.g. a swing of a sword in the movie in the direction of the embryo could severe a limb and the child could be born without a limb or limbs. Because of these, expectant mothers usually refrain, or are advised to refrain, from certain duties and entertainments.

C. Folk beliefs and practices in the treatment of Illnesses

Regarding treatment a great deal of attention is given to foods, which are usually classified into 4 types, viz., those that are 'cooling' or 'cold', those that are 'heaty' or 'hot', those that are 'poisonous', and those that are 'neutral'. There are no definite systems or criteria in the classification of foods. Some foods are classified more on individual experience and reaction to them than what they are generally accepted for they are. Thus, some foods may be considered by some people to be 'cooling', whereas to some other people they may be considered to be 'neutral'. For an example, duck is considered by some people to be 'poisonous' because when they take it their old illness is precipitated or aggravated. However, to some other people duck is completely harmless, and to them duck is 'neutral'. Yet, despite some of these incongruities and inconsistencies, there is general acceptance in the classification of most of the foods. The following Table 1 represents examples of the generally accepted classification of foods by the people of Sitiawan especially among the Chinese community.

It is learned that in the practice of folk medicine, the first principle is one of prevention and avoidance of the causal agents, and the second principle is to counter the actions of the causal agents and thus to restore health. For the first principle, the greatest attention and emphasis is paid to foods. Avoidance of any suspecting or incriminating food is the rule, and as far as possible only the neutral foods are to be taken. This avoidance of foods is carried to the extreme by the rural Malays especially during the immediate puerperal period when only a plate of rice with salt and pepper is served. A second serving, fruits, vegetables and milk are tabooed (Kuah 1972).

The following are beliefs and practices of the people of Sitiawan in the treatment of the various illnesses.

(a) Heat Caused Illnesses.

These are believed to result from excessive ingestion of 'heaty' or 'hot' foods, or over exposure to heat, like being in the sun for long periods. Those who have an illness caused by heat are, therefore, recommended to avoid "heaty" or "hot" foods and to take "cooling" or "cold" foods. In addition they would be given "cooling" herbs to cool the body heat.

If fever is present, and especially when it is accompanied by nausea, vomiting and drowsiness, a condition known as 'ba'an' in Hock Chew, or "Chu Mo Dang" or just 'Mo Dang' in Cantonese, is diagnosed. This is a very popular diagnosis in Sitiawan, and it is believed that modern medicine cannot cure it, and it must be treated by traditional methods, at least initially.

Usually one or more of the following practices or methods is employed for treating 'heat' caused illnesses including 'ba'an' depending on the experience and choice of the practitioner:-

1. Washing or sponging with down-feathers from fowls soaked in warm water.

Table 1

Examples of Traditional Classification of Foods

Foods considered 'heaty' or 'hot'	Foods considered 'cooling' or 'cold'	Foods considered 'poisonous'	Foods considered 'neutral'
1. All fried or roasted foods especially eaten when still hot.	1. Ice and icy refrigerated foods.	1. Sea foods like crabs, prawns, ikan kembong, shark, Ray fish.	1. Rice.
2. Meat from wild games e.g. wild boars, deer, monkeys.	2. Foods left overnight which have not been re-heated.	2. Meat from wild games durians, Jack fruit.	2. Wheat flour and foods made from it like bread.
3. Spicy foods like chillies, pepper, ginger, curry.	3. Certain fruits and vegetables like water melon, sweet potatoes, cabbage, barley, cucumber.	3. Chicken.	3. Pork.
4. Coffee and cocoa.	4. Tea, glucose.		4. Most fish like ikan bawal merah and ikan bawal puteh.
5. Certain fruits like durians and rambutans.			

Rubbing the epigastrium with a warm boiled chicken egg wrapped in a piece of dark cloth. Sometimes a silver coin is introduced into the egg before commencement of the rubbing, and at the end of the treatment the coin is removed. If the coin becomes black, it is a convincing proof that the diagnosis is correct and that the causal agent has come out through the coin turning it black.

Needling. This is different from acupuncture. It usually consists of rubbing the epigastric region of the abdomen with some substances wrapped in a piece of black cloth. (The composition of the substances wrapped in the black cloth is a closely guarded secret and is handed down from parents to children. However, some believe that they contain caustic soda). After rubbing for some time, if the diagnosis of 'ba'an' is correct, weals or papules will appear over the area rubbed. This may be accompanied by the simultaneous appearance of coarse black hair-like objects resembling pig's hair, hence the Cantonese name for the disease 'Chu Mo Dang', for 'Chu Mo' in Cantonese means pig's hair. This hair-like objects can be pulled out one by one from the wrapped up cloth bundle used for rubbing. The weals or papules are then teased out with a needle, or they are pulled up with the tip of a needle and sliced open with a razor blade and then teased. Needling, cutting, and teasing will bring out whitish fine thread-like tissues. This is continued until all the weals or papules are done, when the treatment is complete, and the patient feels better with ceasation of nausea and vomiting, and the fever subsides.

Snapping. Heat stroke, heat exhaustion, and heat-caused headaches are treated commonly by pinching and pulling the skin and the underlying tendon and muscle over certain designated sites of the body. The most common sites are the bridge of the nose, the neck, especially the sterno-mastoids, and the upper back involving the trapezius, the supraspinatus and the rhomboids. The proper procedure is to use the pulps of the thumb and index finger or the knuckles of the index and middle finger, and after wetting them with some water, pinch or grab the skin and tendon, or muscle, underneath it, pull, and then, let the tendon or muscle and skin slip off. If done with experience, there is a snapping sound as the muscle or tendon and skin slip off, and after repeating a few times, the skin so treated will turn red with echymoses. This proves that the diagnosis is right. If the illness is not due to heat the treated skin will not turn red. After the treatment, the patient will usually feel better with the headache lessened or gone.

(b) Cold caused illnesses

These are believed to result from excessive ingestion of "cooling" or "cold" foods, or over exposure to chills or cold, like not wearing enough warm clothings in cold weather or getting caught in the rain. The remedies recommended are avoidance of "cold" or "cooling" foods and the taking of "heaty" or "hot" foods, besides herbal drugs. Quinine and paracetamol tablets are popularly self-prescribed and self-administered as a protective measure and for treatment of cold caused illnesses.

When one has been in the sun for long periods, or has been hot and sweating after strenuous work, then gets caught in the rain or takes a cold shower, or a bath, or a swim, and he becomes sick with fever and chills, he is said to suffer from "chee-chui" (which means "chilled with water"). It is believed that a patient with such a condition if given an injection will result in coagulation of his blood and he will die. Many fatalities in Sitiawan had been blamed on the failure of the doctor to recognise the condition and give the injection thus causing death. Folk treatment for this condition involves pricking the pulps of all ten fingers and toes as a form of bleeding or blood letting. In "chee-chui" it is believed that the blood will be dark and will ooze from the needle prick wounds. Sometimes folk practice in the treatment also involves rubbing and massaging the patient all over with oil. Only after all these treatments is a patient felt safe to be treated by a western trained doctor. In fact, some native practitioners will advise their patients to go for an injection by a modern doctor after they have treated them.

(c) Wind caused illnesses

These are believed to result from entry of wind into the body. Certain conditions are believed to predispose to wind entry:-

1. During the immediate post-partum period or puerperium. The mother is not allowed to bathe or go out-door during the confinement period to avoid wind from entering her and causing her to be ill. Puerperal fever is believed to be caused by wind entering the body through the still raw genital tract.
2. Sleeping without covering the abdomen especially the umbilical region. It is believed that wind can enter the body through the navel. If the navel is not covered during sleep, wind will enter the body through it and will cause abdominal pain.

3. Crying excessively. It is believed that the excessive opening of the mouth during crying will allow wind to enter through the mouth and thus cause abdominal distension and colic.

4. Sleeping in damp places or on cement floor. This is believed to give rise to rheumatologic and orthopaedic conditions called 'wind pain'.

Folk practices in the treatment of wind caused illnesses include:-

1. Rubbing and/or massaging the affected part or the whole body with a medicated oil called 'hon-yu', which is usually liniment methyl-salicylate or seal oil.

2. Cupping. This is done by burning pieces of paper in a tumbler, which is then inverted and cupped over the part of the body to be treated. The burning pieces of paper exhausts the oxygen in the tumbler thus creating a partial vacuum which produces the suction which is believed to be able to extract the wind from the affected part of the body. The area so treated becomes bruised circular patches, taking the shape of the mouth of the tumbler. These could last for days. The most common sites for cupping are the lumbar region of the back for low backache, the upper part of the back, the chest, and the epigastrium for generalised body aches or myalgia, and the umbilical region of the abdomen for wind caused abdominal pain.

3. Leeching. This is done with a hollowed buffalo's horn which is open at both ends. The skin over the area to be treated is shaved (if it is hairy) and then cut several times superficially with a razor blade so that bleeding occurs. The wider end of the horn is then placed over the bleeding skin and suction is done by applying the mouth to the narrower end of the horn. A modification of this is the use of a bamboo tube instead of the buffalo's horn. This leeching is also employed in removing causal agents of supernatural origin especially by the Malays.

4. Acupuncture.

5. Moxibustion.

These latter two, acupuncture and moxibustion, have been dealt with earlier. They are employed not only for the treatment of wind caused illnesses but also for all forms of illnesses where the restoration of the Yin and Yang imbalance is needed.

(d) Poison caused illnesses

Abscesses, boils, and all other infective inflammatory conditions like erysepelas, cellulitis and infected wounds, pruritus, and various skin eruptions and rashes, either of infective or allergic origin, are believed to be caused by 'Poison in the blood'. This may result from the ingestion of 'poisonous' foods, or entry of 'poison' through wounds and animal or insect bites. Foods that will precipitate or aggravate an inflammatory condition are said to be 'poisonous', and include prawns, crabs, ikan kembong, durians, chicken, etc. Therefore, in poison caused illnesses, avoidance of 'poisonous' foods is usually advised. In addition the following are usually practised:-

1. Purging with purgatives and laxatives to cleanse the body of 'poison', and to wash out the excessive heat in the body. In the folk beliefs poison and heat are closely related and both are considered to be usually present together.

2. Self-prescription and self treatment with anti-poison drugs. All antibiotics and sulphonamides are regarded as all-purpose anti-poison drugs, and they are used in almost any condition which is thought or believed to be caused by poison or likely to give rise to a poisonous condition. The most commonly used anti-poison drugs are tetracycline, penicillin, and M & B 693 (sulpyridine). Tetracycline capsules are commonly taken for dog's bite, nail prick, and any other physical injuries. Usually only one or two capsules are taken and the patient feels falsely safe and secured that he is protected. Penicillin ointment is commonly used for sores, cuts, mosquitoes' bites, skin rashes of any sort, itch and burns. M & B 693 tablets are popularly and almost customarily ground into powder and used to dress wounds, ulcers, eczema, otitis media and otitis externa. Itch is generally considered to be a manifestation of poison in the blood, and the anti-poison drugs are often self-prescribed and self-administered for its treatment. Even the traditional medical practitioners are adding these Western drugs to their range of cures.

(e) Supernatural caused illnesses

Malevolent demons, evil spirits, offended gods or ghosts, and evil magicians and bomohs (traditional Malay medicine men with magical powers) are believed to cause illnesses in the following ways:-

1. by taking possession of the victim's body and creating havoc therein.

2. by witchcraft in the projecting of stones, darts, poisons, worms, etc., into the victim's body, or in extracting something, usually part of the victim's soul, from the victim's body.

For the treatment of these illnesses, celestial beings are generally consulted to find out the cause and to obtain advice with regard to cures. Usually either a spirit medium (dang-ki), or a paster, or a bomoh, is called for the purpose, depending on which ethnic group, culture, and religion the patient and his family belong to. These people serve as a medium of contact with the celestial world and celestial beings, and through whom the celestial beings can talk to the mortal beings, assisting in diagnosis, and giving advice regarding cures.

Folk practices in the treatment of these illnesses involve and include prayers, incantations, the use of charms or charm papers (hoo), exorcisions, the wearing of talismans or amulets to protect against and to ward off evil spirits and evil spells, and the appeasement or atonement of offended gods or ghosts by the fulfillment of promises made to them, the making of offerings, and/or the performance of certain rites or rituals.

Discussion

The Sitiawan folk concept of the six causal agents (heat, cold, wind, water, poison and the supernatural) and particularly the first four (heat, cold, wind and water) undoubtedly has its origin in the ancient traditional Chinese concept of the five elements (fire, water, wood, metal and earth) with, of course, compromise, influence, alteration and modification by the Hindu concept of the four elements (fire, water, wind, and earth), and the concept that the human body like all matter in general is made up of these elements. According to the ancient beliefs, health in an individual depends on the balance in composition between these elements in the body. Any disturbance in any one of these elements will result in illness, the nature of which will depend on the element disturbed and whether it is increased or decreased. Through the passage of time, much of this concept of illness causation has become blended with and absorbed into the Yin and Yang concept.

However, although these ancient medical concepts are only philosophical and superstitious beliefs, they have become so ingrained into our people that a barrier is formed in their receptiveness against the knowledge and understanding of the modern scientific concept of illnesses. To these people illnesses are still attributed to the traditionally conceived six causal agents, with their symptomatology and signs explained by them, and their therapy based on them.

Stomach ache caused by eating food left overnight is still held to be due to the 'coldness' of the food and not due to food poisoning due, to the presence of bacteria and toxins. Psychiatric illnesses, especially schizophrenia, paranoia, and various psychoses, are still believed to be due to spirit possession and witchcraft, caused by demons, or offended gods, or ghosts, or evil bomohs. The fatalities of 'chee-chui', which are actually cases of G-6-P-D deficiency, with intravascular haemolysis precipitated by certain drugs leading to acute renal failure and eventually death if prompt and proper treatment is not instituted, are still believed to be due to coagulation of the blood as a result of injections for the condition.

Yet, however, despite the wrong concept, the wrong reasoning, and the wrong explanation, some of the practices adopted by the rural people in their prevention and treatment of illnesses are not wrong or harmful. Indeed, some are beneficial, and some we may even learn and make use of in our practice of modern medicine. Examples of these are:-

1. The customary practice of heating up food left overnight to drive out the 'coldness' so as to prevent stomach ache is in actual fact killing and destroying the bacteria and toxins present, thus preventing food poisoning.

2. The washing and sponging of a febrile patient with chicken feathers soaked in warm water to bring down the temperature is comparable to tepid sponging of our modern scientific medical practice. Similarly is the rubbing of the epigastrium with a warm boiled chicken egg wrapped in a piece of dark cloth, although the dark cloth and the silver coin turning black are mere magician's tricks designed to make the show more convincing. The silver coin turns black because of the formation of a covering of silver sulphide in reaction with the sulphur present in the egg yolk.

3. The principle and methods involved in the treatment of psychiatric illnesses are not unlike those employed in psychotherapy in modern psychiatry, except, perhaps, that the approach is different, and that psychiatric illnesses are not considered as disturbances of the mind but as being due to supernatural causes. However, there are many features in the traditional beliefs and practices in the treatment of the mentally sick that merit our attention and which perhaps we can learn and incorporate into our modern psychotherapeutic principle and procedures. One fact worthy of note is the use by the traditional healers of the knowledge of religion,

mythologies, folk beliefs, folk superstitions, and the ancient medical concepts and practices, and correspondingly, the use of such knowledge and cultural resources by the mentally sick in their psychiatric expressions and manifestations. Another important fact to note is the avoidance of any mention of mental illness in diagnosis by the traditional healers. Any reference or inference to a psychiatric illness is not only most unwelcome but may be fiercely rejected. The attribution to spirit possession, witchcraft, and the work of the wrath of offended gods or ghosts is culturally sanctioned and is more acceptable.

In addition, we must also realize the important role played by the traditional healers in our nation's mental health care – an area where our modern Western-Style psychiatric care is not only limited in facilities and availability, but also much hampered by the language and cultural barrier to effect meaningful or successful psychotherapeutic procedures except drugs and electro-convulsive therapy. Teoh (1973) acknowledged that the traditional healers not only shoulder the brunt of the mental health care in our country but also supplement our modern western-style psychiatric care. In this regard, therefore, and for the time being at least, the traditional and the modern, must go hand-in-hand to provide the best for our mentally sick.

4. The customary practice of the expectant mother refraining herself, or advised to refrain herself, from certain strenous duties, like moving house or furniture,and certain exciting entertainments, like watching horror movies, though for superstitious reasons, is beneficial, for it affords both mother and baby with a period of rest which is needed. This together with the Chinese customary practice for the mother to rest for the whole confinement moon-month, with the special high protein diet of chickens, ginger, and rice wine, is certainly to be encouraged.

5. The stress of folk medical practice on food and avoidance of certain foods during an illness can be used to advantage in our modern scientific medical treatment of certain illnesses in that one can be quite certain the instructions will be followed. Examples are:-

   (a) Low salt diet in congestive cardiac failure, nephrotic syndrome, and certain cases of hypertension.

   (b) Low cholesterol and low animal fat diet in hypertension, coronary heart disease and conditions of hypercholesterolaemia.

   (c) Low protein diet in renal and hepatic failure.

   (d) Avoidance of precipitating foods like crabs, prawns etc. in asthma and other allergic conditions; and sometimes in infective inflammatory conditions, the practice of modern medicine can be so much more acceptable, and the patient so much more satisfied, if advice on avoidance of "poisonous" foods is given.

6. Certain terminology like "wind pain" can be very handy when coming to the conveyance or explanation of illnesses to the patient. Especially for rheumatologic and orthopaedic conditions like rheumatoid arthiritis, osteoarthritis and gout, etc., it is almost impossible to explain them in any other terms.

Examples of folk beliefs and practices which are harmful and dangerous and which we should help to discourage and abandon are:-

(1) The employment of oil to rub and massage children with fever or convulsions, and then covering them up with thick clothings, as a way of getting rid of the causal agent, wind, and preventing it from re-entering the body again, is definitely harmful and dangerous. The oil forms an insulating layer over the body which prevents any escape of heat and sweat. This is aggravated by the thick clothings and will cause the already high temperature to rise further. This will either precipitate a febrile convulsion or aggravate the existing convulsion. The author had seen several children who had died because of this treatment.

(2) Needling employed in the treatment of 'ba'an' or 'Chu Mo Dang' is also harmful and dangerous because the needle used is usually not sterilized, and the chances of the practice giving rise to tetanus and other bacterial infection are high, and in many instances keloid formations are common sequelae.
Leeching shares these dangers and harms.

(3) Acupuncture, although has gained recognition as effective in producing analgesia for surgery and in the treatment of certain illnesses, is to be discouraged in its use by untrained and non-experienced people. As it is, anyone, who possesses a set of acupuncture needles, can practise acupuncture. The risks of infection and injury to nerves are always present. In the opinion of the author there should be some form of legislation to govern its practice.

(4) The abuse of western drugs in self prescription and self medication by the lay public, the inclusion of their use as an added form of cures by the traditional medical practitioners, and the easy availability and acessibility of drugs to the public are fast becoming public health problems. Because of the wrong information on the pharmacology of the drugs and non-education in their use, the dangers of side effects (sometimes very dangerous) are not considered. Antibiotics and sulpha drugs are not usually taken as a course, and usually for the wrong reason. The indiscriminate, uncontrolled, and unsupervised use of steroids have ended in many fatalities. The development of resistant strains of bacteria and hypersensitivity reactions are other dangers. Indeed, this is an area of folk medical practice which we in the medical profession must understand and deal with.

(5) In addition the common folk practice of taking drugs and herbal tonics (like Beh-Din-Chao cooked with chicken) during pregnancy can cause congenital deformities and malformations and expectant mothers should be properly advised.

(6) The avoidance of foods to the extreme, like during puerperium in the Malay custom, is not a healthy practice. Mothers who are already under-nourished become so much so that they become inflicted with serious syndromes of avitaminosis, including nutritional neuropathy and paralysis.

However, besides the beneficial side and the harmful side of folk medical practice there are some beliefs and practices which are neither harmful or beneficial. Yet, because they are so ingrained in the custom and tradition of our people that any attempt to discredit them or to break them down will be met with open rebuff and antagonism. It is best to leave these as they are. Examples of these practices are:-

1. The practice of classifying foods into the 4 types "heaty" or "hot", "cooling" or 'cold', 'poisonous', and 'neutral' – and their avoidance and use in the treatment of illnesses.
2. Cupping and Snapping.
3. Various religious rites and rituals and the use of talismans, amulets and charms papers or 'hoo'.

Conclusion

Folk medical beliefs and practices in Sitiawan are very primitive. Indeed some can be traced back to as early as the Stone Age. However, the fact that they persist to this day and are still popular with our people, despite the adequate modern medical and health facilities and services, must mean that they must still serve their purpose and usefulness. In this study the author reveals that although the concept of illness causation and the reasoning for the various treatments are wrong, some of their practices employed in therapy to get their desired results are not so different from our modern medical practices. In fact because of the cultural barrier that impedes the delivery of Modern Medical care to the people, something learned from the folk medical beliefs and practices may help us penetrate the barrier and gain acceptability for the modern scientific medicine, which will no doubt help and benefit our people more than the folk medicine can. There has, as a result, recently, grown an awareness of the need for all medical practitioners, and particularly those involved in primary medical care, to be equipped with a sound knowledge and understanding of the folk medical beliefs and practices.

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Postgraduate training in anaesthesiology in Malaysia – The Past, the Present and the Future

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POSTGRADUATE TRAINING in Anaesthesiology in Malaysia can be considered in 3 phases.

Phase 1 (before 1965)

From the fifties until 1965, our doctors, choosing the field of Anaesthesiology, were sent on Government-sponsored scholarships to the United Kingdom where they trained, studied and sat for the English and/or Irish Fellowship examinations. Before going abroad, the training and study had to be self-motivated and self-organised. There were no formal, organised study courses in Malaysia then.

Phase 2 (1965 to 1975)

The Department of Anaesthesiology, University of Malaya, Kuala Lumpur, was established in 1965. The Government continued from 1965 to 1973, to send doctors abroad (i.e. to the United Kingdom and Australia) to finish their training and to attempt the Fellowship examinations. In 1973 the Australasian Primary examination was held for the first time in Kuala Lumpur and the Australasian Final Fellowship examination was held for the first time in 1975, in Kuala Lumpur, Malaysia.

The stage had arrived whereby our trainee-doctors in Anaesthesiology could be trained, prepared and certified for a postgraduate examination, albeit a foreign qualification, without having to leave the country.

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Phase 3

The Faculty of Anaesthesiologists, College of Surgeons of Malaysia, was established in April 1975, exactly a year ago.

At this infant stage, plans are being made to organise a curriculum and preparatory courses leading up to postgraduate certification in Anaesthesiology in Malaysia (a local qualification). As it has been shown that we can train locally our doctors to obtain a postgraduate qualification without their having to go abroad, logically, we should aim and organise our own postgraduate certification.

Phase 3 will be elaborated on later after going into more details regarding the present status of Postgraduate training in Anaesthesiology in Malaysia.

Current Status and Training

Today there are 36 qualified anaesthesiologists in the country holding recognized postgraduate Fellowships (i.e. English, Irish or Australasian).

Distribution of qualified Anaesthesiologists in Malaysia

	Number
Total (1975)	36
Employed in 11 Government General Hospitals (1 Anaesthesiologist per hosital in each of the 11 different States; 6 Anaesthesiologists in the Government Hospital in Kuala Lumpur).	17
Employed in University Hospital, Kuala Lumpur.	6

In Private Practice	13
(in 3 different towns – 8 in Kuala Lumpur	
– 3 in Penang	
– 2 in Ipoh)	

The training in Government General Hospitals is hampered by the tremendous service load and shortage of personnel and is consequently variable according to the enthusiasm and efforts of the individual consultant anaesthesiologist in each hospital. Excluding the Government Hospital in Kuala Lumpur, the General Hospital in each State has one qualified Anaesthesiologist. On the average for every 1000 beds, 8000 anaesthetics (general and regional) are required annually; most of these hospitals have 2 – 4 trainee-doctors to assist the consultant in the running of the anaesthetic service. Obviously very little examination preparation by way of formal, organised lectures/tutorials/discussions is possible. Time-off for study is non-existent. Training is basically by example.

To elaborate on Phase 3 (the future), the Faculty of Anaesthesiologists, College of Surgeons of Malaysia, has recommended an Exchange Scheme whereby trainee-doctors in the Government hospitals should be sent to the University Hospital, in Kuala Lumpur, for a period (6 months) prior to an available postgraduate examination to give him an opportunity to prepare for the examination away from the environment of overwhelming anaesthetic-service. The environment in the University Hospital is obviously more conducive and tuned toward training and examinations; the service commitment is less, organised lectures/tutorials/discussions are being conducted, and library and reading facilities are excellent. The Department of Anaesthesiology, University of Malaya is functionally examination- and academically-orientated.

The Exchange Scheme recommends that the University trainee-doctor be sent out to a Government General Hospital as a replacement after he has passed the Primary (Basic Sciences) examination. The experience gained by the University doctor in the busy, predominently service-orientated, Government hospital will be of benefit for the Final examination. The experience will also expose the University trainee-doctor to the conditions and requirements of anaesthesia pertinent to those prevailing in the country. He will be the richer for such an experience and will be a more useful anaesthesiologist in fulfilling the needs of the country.

As far as Postgraduate Certification in Anaesthesiology in Malaysia is concerned, our Faculty is planning and working toward the following format:-

Proposed Postgraduate Certification in Anaesthesiology in Malaysia

4 year training period – Medical Officer
(including 1 year of non-anaesthetic experience)

Examination	*Method of Assessment*
I. *Preliminary Examination* (after 1 year of anaesthetic practice)	Viva-voce
II. *Primary Examination* (Basic Sciences – Physiology (including clinical measurements and physical concepts) – Pharmacology (including elementary statistics)	Essay-type and multiple choice papers + viva-voce
III. *Final Examination* (Theory and Practice of Anaesthesia, related clinical medicine/ surgery/anatomy, clinical measurements)	Essay-type and multiple-choice papers + viva-voce in medicine (Clinical cases)

Anaesthesiology in the developing country of Malaysia is evolving. We have reached a stage of development beyond which we must tread with much care, thought and planning. Our further steps will have crucial bearings, particularly, on the future of postgraduate training and certification in Anaesthesiology in our country. Our Faculty is hopeful that the path chosen will be of benefit to the needs of the country.

The main purpose of presenting this paper lies in the hope that our more-experienced colleagues in other parts of the world will help and guide us in establishing training and certifying examinations which are relevant to the needs of our country and of a universally acceptable standard.

Summary

The history of the training of Anaesthesiologists in Malaysia is traced. Eleven multi-disciplined hospitals, located in different parts of the country and administered by different authorities, conduct training courses in Anaesthesiology. A Faculty of Anaesthesiologists was established in April 1975 to co-ordinate activities and facilities for the training of Anaesthesiologists in Malaysia. The objects of training, the curriculum, the method of assessment and examination and the role of the Anaesthesiologist in Malaysia are presented for information and discussion.

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Mass casualty organisation in burn disasters

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Summary:
THE ORGANISATIONAL PROBLEMS related to the management of large numbers of burn casualties are reviewed. The key to the problem is the effective categorization of casualties on the basis of the extent of injury and the urgency of needed treatment. This allows for the proper routing of the patients to appropriate treatment centres and a more efficient employment of specialized medical and subsidiary personnel.

Introduction:

The recent spate of fires around the country, especially those involving large high rise buildings and those occurring in factories and squatter areas where there are large concentrations of population, has brought into mind the necessity for detailed planning to enable effective mobilisation of resources and proper handling of patients during large scale burn disasters.

The problems related to the handling and care of large numbers of people suffering from burns have been recognised as a result of the horrible experiences of the last World War. Burn cases present difficult administrative problems even in peace time. Anyone with some hospital experience is well aware of the chaos that might be caused in a non-specialised hospital by the arrival of even a few patients with moderately severe burns because of the urgent and continuous care they need, therefore, making heavy demands on facilities and personnel.

The technical and administrative problems that can result from the admission of large numbers of burn casualties are such, therefore, that a pre-arranged plan is all the more imperative. In the United States of America, a number of disasters have occurred in the past 30 years, resulting in large scale burn injuries. These include the Coconut Grove fire in Boston (1942); the circus fire in Conneticut (1949); the Texas City explosion in 1947 and the USS Bonnington fire in 1945. In each of these situations, prior planning and the rapid and effective management of survivors have made possible the salvage of a high percentage of cases. By contrast, the circus fire in Niteroi, Brazil, in 1961, resulted in a large scale loss of lives among those rescued from the fire. This was attributed to the insuperable administrative problems encountered due to absence of prior planning, as well as the relative inexperience of nearby hospitals in the treatment of burns.

Operation Planning:

The overall management of large scale burn disasters revolves around 4 stages of operation:-

1. The setting up of first-aid stations.
2. The sorting of patients according to the extent of their injuries and the urgency of treatment needed.
3. The transport of these patients to various treatment centres which are appropriately equipped for the management of their injuries.
4. Treatment.

First-Aid Stations:

These should be set up as near to the site of disaster as is operationally possible. These stations should be equipped to deal with the waves of stretcher cases and walking wounded that will be present. As the number of cases, mainly burns and multiple injuries, may be in the region of a few hundreds, the function of the first-aid stations must be limited to dispensing only the most essential treatment needed. This should follow a pre-established plan which fits in with subsequent treatment to be given at a higher level in the burn centres. In many instances, the immediate first-aid care will have to be carried out by paramedical personnel and will have to be limited to the following manoeuvres:-

1. Management of airway and respiratory problems.
2. Protection of the burn wound.
3. Commencement of antishock treatment with i/v infusions for the severe cases of burns.
4. Immobilisation of fractures and the control of bleeding from open wounds.
5. Anti-tetanus prophylaxis.
6. Administration of analgesics if indicated.

Medical Sorting:

This involves the categorisation of casualties on the basis of the urgency and type of condition encountered, for the purpose of routing them to medical units appropriately situated and equipped for therapy (Figure 1). It forms the key to the effective management of a large number of burn injuries. Without it, an orderly and efficient utilisation of available medical facilities becomes impossible. This process should be continued through each stage of patient care and should be directed by the most experienced surgeon in that area. Without proper sorting, hospitals close to the disaster area will be swamped by the less severely injured who can effectively be treated on an out-patient basis or transported safely to more distant points of medical care. Decisions on the disposal of patients should be based on:-

1. The condition of each particular patient as assessed by the extent and depth of his injuries and his ambulatory status.
2. The availability of facilities and personnel in the adjacent hospitals.

The cases seen at the first-aid stations should be graded into the following categories (Table 1):-

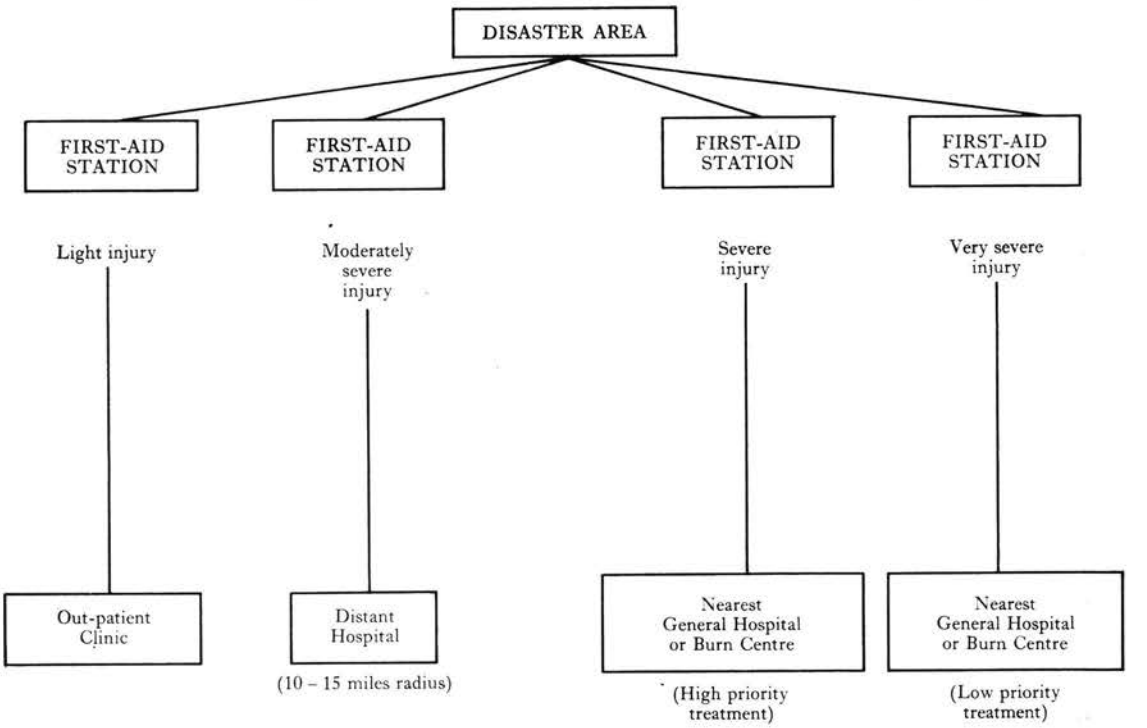

Figure 1

Medical sorting (triage) of patients mass casualty burn disaster

Table 1

Grading of Patients in mass casualty burn disaster

Grade	Degree	First-Aid Therapy	Triage (Sorting)
Light	First and second degree burns Less than 10% BSA	Local wound therapy Analgesics Antibiotics	Out-patient Clinic
Moderately serious	First and second degree burns of 10 – 30% BSA Small patchy areas of third degree burns	Sterile wound cover i/v therapy analgesics	Evacuation to distant hospital
Serious – salvageable by energetic measures	First and second degree burns of 30 – 50% BSA Third degree burns – various sizes	Sterile wound cover i/v therapy analgesics	Immediate evacuation to nearest hospital
Very serious – not salvageable in disaster situations	Second and third degree burns of more than 50% BSA	Sterile wound cover i/v therapy analgesics	Immediate evacuation to nearest hospital – admit to separate wards

A. Ambulant patients with less than 10% burns – local wound therapy is started at the first-aid stations. These patients are then asked to continue their treatment at the outpatient clinics nearest to their homes. Exceptions to the rule are cases at the extremes of age; cases with involvement of the head and neck, hands and feet and groin and perineum; cases with deep burns requiring subsequent skin grafting.

B. 10 – 30% burns. After first-aid treatment, these cases can be safely moved to more distant hospitals so as not to overload the nearby burn centres.

C. Serious burns involving 30 – 50% of their body surface area. These are the patients who may be saved by energetic and expert measures. They should be transferred to the nearest hospital immediately after commencement of antishock therapy. Included in this category are cases requiring urgent respiratory care.

D. Cases with more than 50% body surface area involvement. These patients are also transferred to the nearest hospital but should be admitted into a separate ward.

In any disaster, it is advisable to group similarly injured casualties in the same installations. Certain hospitals near the disaster area should be designated as 'burn centres' and all cases requiring immediate and intensive care should be sent to these institutions. Within the burn centres themselves, another phase of medical sorting may be necessary. After the shock period has been treated and the patient stabilised, a second stage evacuation of the less seriously injured to the more peripheral hospitals may be advisable so as to reduce the strain on the facilities and staff of the burn centres, especially during the period when frequent dressing changes and grafting are necessary. There should be a co-ordinated two-way traffic between the burn centres and the more peripheral hospitals. Cases requiring speciality care and extensive grafting procedures may be referred back to the burn centres. Treatment should therefore be integrated at all levels of hospitalisation and during all stages of the patient's recovery.

Transport:

The conveyance of the patients from the first-aid stations to the hospitals must take place according to priority – the more extensive the burns, the higher the priority. Most burn patients, however extensively involved, can be safely transported during the first 7 hours after injury, provided they are properly handled. After this period, because of the danger of impending shock, the more seriously injured cases should not be moved until their condition has been stabilised and competent medical personnel are available to accompany them. Patients with lesser degrees of injury may be moved at any time without harm.

Treatment:

In other disaster situations, the most seriously injured patients receive the greatest priority. However, such a priority system is based on an unfailing source of supplies and an abundance of medical and nnrsing personnel. In large scale burn disasters, some modifications of this priority system will have to be made. Available knowledge points towards the fact that in a mass casualty situation, the cases with burns involving more than 50% of the body surface area would not probably survive. In such a situation, therefore, it would be futile to divert a large proportion of the supplies and personnel to

the management of this category of patients when they can be more effectively applied to the care of the more salvageable cases. Patients with more than 50% burns should be admitted to a separate ward. They should be made as comfortable as possible by adequate doses of analgesics. However, they should not receive any definitive treatment until all patients in the higher priority, more salvageable groups are cared for.

The quality of therapy in the burn centres will vary with the number of casualties as well as the available personnel and supplies. Certain compromises in ideal therapy are therefore inevitable in a disaster situation.

1. Plasma and Blood

Supplies of these are difficult to come by even in normal situations. Therefore, in the presence of large numbers of casualties, their usage should be stringently supervised. Recent studies in burn physiology have shown that salt solutions (dextrose-saline or Ringer's lactate) can effectively satisfy the replacement needs of most patients in the first 24 hours. These electrolytic solutions are relatively easier to manufacture in large amounts and can be stored for a longer period of time without loosing their effectiveness. They should therefore form the basis of initial fluid therapy in mass casualty situations. Blood and plasma can then be reserved for cases with bleeding from associated trauma or for use in subsequent desloughing procedures.

2. Local Wound Care

The exposure method is used preferentially for certain regions of the body even in normal circumstances. Its use, in conjunction with a topical antibacterial agent, has been found effective in reducing the amount of nursing time required for each patient, as well as reducing the necessity for expensive dressing materials.

3. Grafting Procedures

One of the major problems in dealing with a large number of burn casualties is the availability of operating room space and time for the multiple grafting procedures that are necessary. Patients whose wounds can be closed by a single grafting procedure should be taken into the operating room first so that they may be discharged earlier. Since it might be difficult to cover massive burns cases with autografts, heterografts might be used for supplemental temporary cover until space becomes available in the operating room for definitive autografting.

Conclusion:

The handling and treatment of a large number of burn casualties is chiefly a problem of organisation involving an assessment of existing facilities, prior preparation and planning, and sensible execution. The following is a list of suggestions for overcoming the administrative problems in such situations:-

1. Obtain an up to date census of hospital and subsidiary facilities on a regional and state-wide basis.
2. Specification of the tasks that each organisational unit should perform in the event of an emergency.
3. Training of the highest number of medical and ancilliary personnel in the first-aid care of patients with burn injuries. This includes the planning and staffing of mobile medical units and the organisation of police, military and voluntary services.
4. Conduct an adequate campaign for instructing the whole population on the problems of burns and first-aid care.
5. Certain hospitals in each state should be designated as burn centres. These should be adequately and appropriately staffed. An organisational plan should be drawn up to meet with a disaster situation and regular periodic drills carried out to familiarised the staff with the plan.
6. A standardised system in the treatment of burns should be drawn up, keeping in view the requirements that might become necessary in an emergency situation.

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Knowledge of dental pathology in everyday medical diagnosis

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SINCE a large majority of patients with oral pathology appear inclined for a variety of reasons to seek the advice of a medical practitioner rather than a dental surgeon it is felt that some knowledge of dental/oral pathology will be of help in the diagnosis and management of their patients by the medical collegues. The purpose of this article is to describe some selected groups of patients who may be seen by specialists from many disciplines or by general practitioners in dentistry and medicine and to emphasise the need for greater communication between the doctor and the dental surgeon in the important role of patient management.

Facial Pain

The commonest cause of facial pain is dental disease. It is therefore essential that we rule out the presence of a dental cause by detailed examination and investigation before arriving at a diagnosis of other less common causes of facial pain. Clinical examination should include a thorough inspection of all teeth and supporting structures with the help of special instruments. Special investigations like tests for vitality and radiographic examination will provide us with valuable information. A dental radiograph especially the bite wing film will help to detect cavities and dental caries in inter proximal surfaces which may be the source of facial pain. Some patients with severe and paroxysmal pain precipitated by movement of jaw or on eating food have been diagnosed as cases of trigeminal neuralgia and these patients appear to have healthy teeth on clinical examination. Special procedures like radiographs reveal the presence of pathology and when the offending tooth is extracted the associated pain no longer exists. Referred pain especially the pain arising from the maxillary and mandibular third molar teeth can be referred to regions like ear, neck and temporal areas. Very often, patients with impacted molar teeth complain of vague and sometimes referred pain which can give the clinician difficulties in arriving at a diagnosis. Pain arising from posterior maxillary teeth tend to mimic pain of sinusitis and hence the necessity for special tests to arrive at the correct diagnosis. Patients suffering from maxillary sinusitis often complain of pain in relation to good teeth and in the absence of a correct diagnosis, possibility of unnecessary extraction of sound teeth cannot be ruled out.

Temparo Mandibular Joint Disorders

Patients with temparo mandibular disorders attend clinics held by specialists of many disciplines such as Orthopaedic, Ear, Nose and Throat, General and Dental Surgeons. Very often these patients complain of one or more of the following – Pain, difficult jaw movement and clicking or crepitus of the joint. Although the exact aetiology of this condition is not fully understood there appears to be two main features, a predisposing dental together with a precipitating factor. Dental factors include irregularities of bite or malocclusion, over closure of the mandible, and altered chewing, clenching, tooth grinding habits. Temparo mandibular dysfunction syndrome is a definite entity and is a common cause of oro facial pain. The patients are very often young females. Pain may radiate to temporal auricular and neck regions. There may be accompanying trismus or clicking. Dental disorders were thought to play a major role in this

condition but now studies show that there is a possibility of a psycogenic factor responsible or associated with it. Although correction of dental disorders may not lead to disappearance of symptoms, it is suggested that these patients should receive essential dental care and reassurance. A bite guard constructed of acrylic is found to be of help in some patients. This appliance helps to correct the mandibular over closure and eliminate occlusal interference.

Oral Mucosa in Disease

Inflammation of gingival tissue is apparent clinically in about eighty to ninety per cent of the people. Local accumulation of infected matter is mainly responsible for this condition and the patients usually present with complaints of bleeding from gum and tenderness on brushing. Halitosis and bad taste appear in advanced cases. Simple measures like removal of bacterial plaque and attention to oral hygiene usually result in considerable improvement. Uncommonly, gingival or oral mucosal change can be a manifestation of more serious systemic disease and hence the necessity for a thorough medical examination. Changes in oral mucosa are seen in conditions where there is low serum iron level. Changes include atrophy and the tongue appear to be devoid of papillae. Associated with this state there may be other effects like angular cheilitis commonly seen in very poor patients in developing countries.

Vitamin B12 and folic acid deficiency may give rise to oral symptoms particularly in elderly patients. It is known that states like pregnancy have a strong effect on the course of gingivitis and hence the necessity for routine or even extra dental care during this period. Vitamin C deficiency can be responsible for the condition scurvy characterised by the appearance of swollen and spongy gums with tendency to bleed easily. In Leukaemia and Agranulocytosis hyperplasia of gum is very common. Ulceration and secondary infection can complicate this condition. Uncontrolled Diabetis patients often present with gingivitis and advanced periodontitis and their condition is seen to improve when the level of blood sugar is corrected.

Conclusion

In developing countries like Malaysia it is very common to find patients with symptoms like bleeding gum or facial pain reporting in health centres manned by specialists of varying disciplines or general practitioners in medicine or dentistry. Since dental disease is very common, I feel we are correct to infer that symptoms like bleeding gum or facial pain are very often a result of local factors and should respond to local therapy. Uncommonly, these signs and symptoms can be a manifestation of systemic disease and hence the importance of greater communication between the doctor and the dental surgeon.

Book Reviews

HISTOLOGICAL TYPING OF INTESTINAL TUMOURS by B. G. Morson in collaboration with L. H. Sobin and other pathologists 1976. W.H.O. Geneva. pp. 137, 134 colour plates. US $32.00. Available through W.H.O. Representative, Room 1004, Fitzpatrick Building, Jalan Raja Chulan, Kuala Lumpur.

This publication is the 15th of the series dealing with the International Histological Classification of Tumours. These volumes are not intended to serve as text books but rather to promote the adoption of a uniform terminology that will facilitate communication among scientists working in the field of cancer and stimulate comparative studies on the incidence of various tumours, their natural history and response to treatment.

The classification is based primarily on the microscopic characteristics of the tumours and is therefore concerned with morphologically identifiable cell types and histological patterns as seen with conventional light microscopy.

This publication is a must to all those reporting and interpreting histopathological findings of intestinal tumours.

PRACTICAL OPHTHALMOLOGIST 1966/77 by Arthur Lim Siew Ming and Khoo Chong Yew. Published by P. G. Medical Books, Singapore 1976 pp. 251. 194 illustrations, 11 in colour.

This volume deals with the operating miscroscope and anterior segment surgery. Twenty-two authorities have contributed to this issue and emphasises basic techniques in the use of the operating microscope. It is pointed out that despite the fact that the operating microscope significantly improves the quality of ophthalmic surgery, only 30% of the ophthalmic surgeons in developed countries and less than 10% in developing countries are using it.

The book is divided into four parts namely Pt. 1 The Operating Microscope, Pt. II Corneal Grafts, Pt. III Glaucoma surgery, Pt. IV Cataract Surgery. Emphasis is placed on the work of leading Asian Ophthalmologists and the individual style of the contributors is retained.

This elegant volume is lavishly illustrated and its contents very practical. It maintains the high standard set by its predecessor, The Practical Ophthalmologist (1974).

Every ophthalmologist should have these volumes on their book shelves.

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The Medical Journal of Malaysia welcomes articles on all aspects of medicine of interest in this Region in the form of original papers, research notes, communications and correspondence. The Journal also welcomes brief abstracts, of not more than 50 words, of original papers, published elsewhere, concerning medicine in Malaysia. Articles are accepted for publication on condition that they are contributed solely to the Medical Journal of Malaysia. Neither the editorial board nor the publishers accept responsibility for the views and statements of authors expressed in their contributions. To avoid delays in publication, authors are advised to adhere closely to the instructions given below.

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All manuscripts should be submitted in duplicate to Professor Paul C.Y. Chen, Hon. Editor, Medical Journal of Malaysia, c/o Faculty of Medicine, University of Malaya, Kuala Lumpur, 22-11. Manuscripts should be typed on one side of quarto paper in double-spacing throughout (including tables, legends and references), with wide margins. The title page should include the title of the paper, initials and name(s) of the author(s), degrees, address and a short running title. Introduction, materials and methods, results, discussion, summary, acknowledgements and references should follow. Scientific names and foreign words must be underlined. Papers may be submitted in Bahasa Malaysia but must be accompanied by a short summary in English.

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All Tables, except for the simple ones, and all illustrations and diagrams should be in Indian ink on separate sheets of thick, smooth white paper or Bristol board or in the form of photographs printed on glossy paper and should be larger than the finished block, to allow for reduction. They should bear on the reverse side the author's name, short title of the paper, the figure number and an arrow indicating the top of each illustration. All illustrations and diagrams should be referred to as figures and given arabic numbers, while tables should be given roman numbers. Their approximate position in the text should be indicated. All tables and figures should be fully labelled so that each is comprehensible without reference to the text. Legends and captions should be typed on separate sheets and numbered correspondingly. The contents of all tables should be carefully checked to ensure that all totals and subtotals tally. All measures should be reported using the metric system. Illustrations and tables should be kept to a minimum.

References

References to the work of other authors should be cited in the text according to the following convention:

> Peck and Lowman (1970) demonstrated.....
> It was demonstrated (Peck and Lowman, 1970) that .....
> The survey (Meyer *et al.*, 1971) showed .....

For works written by more than two authors, the first author only is named followed by the words *et al.* as shown above. References should be listed, only when cited in the text, in alphabetical order, in the following form: Surname of author(s), initials; year of publication; title of paper; title of journal (abbreviated according to the World List of Scientific Periodicals and under-lined); volume number double underlined; first and last page numbers of the work cited:

> Peck, M. and Caster, V.A. (1965) Enterocolitis of infancy, *J. trop. Pediat.*, **28,** 155–160.

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SUBJECTS

AUTHORS