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Editorial

The Welfare of the Elderly

by *A. A. Sandosham*

IN THE editorial column of the Medical Journal of Malaysia we had occasion to broach the subject matter of the increasing life span of Malaysians in 1966. The topic came up for discussion again at the International Gerontological Symposium held in Singapore in February this year.

Statistics

According to available statistical information the expectation of life of the average Malaysian has been increasing steadily over the past decades and is now 67.2 years compared to 57 twenty years ago. There is every prospect of this tendency continuing over the years with the country's sound economy leading to higher living standards, better nutrition and the improving health services.

Retirement

The retiring age in Government service here is 55 at which age he may expect to live for another 21.4 years. At 55 a man is often still physically and mentally capable of carrying out his duties efficiently and to condemn him as unfit for further service is grossly unjust and a loss to society.

In most advanced countries there is a fuller recognition of the contribution that the older people can make to the life of the community and a further raising of the present retiring age of 65 is being seriously considered. A reappraisal of our attitudes towards retirement is called for. To be abruptly cut off from his livelihood and converted overnight from a work oriented person to that of an unoccupied old man is a most traumatic experience and calls for considerable powers of adjustment. Post-retirement

problems are becoming a growing concern in the country today. The thought of getting up in the morning not knowing what he is going to do can be most frustrating.

Community Attitude

The attitude of the community towards their old folks has varied with different circumstances and different cultures and has been undergoing changes continuously. Early nomadic tribes finding their elders no longer productive and useful and too heavy a burden, abandoned them to die. The old folks fared better in settled agricultural communities. In ancient China the old people were held in veneration and even after death were revered as honourable ancestors. In the industrialised and materialistic West the accent has been on youth.

Traditionally, the old folks in the Orient have been housed and cared for by their children. This has been true for Malaysia but the increasing westernisation in outlook and the rapid rate of urbanisation and industrialisation in the country are beginning to change that state of affairs. The multigeneration households are rapidly disappearing and the old folks are finding themselves more and more dependent on themselves. Many modern countries accept their responsibility to support the aged in dignity and comfort by providing adequate old age pensions and properly-run old folks' homes.

A Society for the Welfare of the Elderly

'Old folks' conjures up the idea of an impoverished, debilitated and depressed group of people. In reality, only a small fraction of old

people are or ought to be confined to nursing homes and institutions. Government and various charitable organisations cater for this group.

The other elderly people will fall into two categories, the rich and the middle-income groups. The rich old person can fend for himself providing himself with the necessary geriatric care and facilities. The middle-income group will constitute a big majority and will require assistance.

In Western countries there exists a large number of organisations, sponsored both by Government and the public, to cater for this group. In Malaysia a Society for the Welfare of the Elderly can achieve much to study their needs and promote measures for their well-being. The membership of the Society need not be confined to the aged, although self help should be encouraged. The objective of the Society would be, not to increase the average life span, but to enable individuals to remain healthy and relatively active during their final years. Healthy old age can be a most satisfying period of life. An elderly person should be able to look back with satisfaction on a lifetime of work, recreation and interests; its friendships and its affectionate family relationships. It should be a period of tranquility when the "rat race" has ceased and when one can have time to think and to do those things formerly denied by lack of time and other commitments.

Retirement

One reason for post-retirement difficulties is the lack of preparation for the fundamental life changes involved. The Society could help popularise the idea and help to run pre-retirement classes with the object of improving attitudes towards the coming change and preparing the individual for the new life. He could be taught to develop hobbies and train himself for the sort of jobs that may be available and that he was suited to undertake. The Society could make large employers, like the Government, to realise that their responsibilities do not cease with the retirement of their employees. It could also help arouse the social conscience of the public which is sadly lacking today. A re-employ-

ment bureau could be set up by the Society to maintain a register of people trained in one skill or another and secure part-time jobs for retired people. They could even join a voluntary agency and give free service.

Housing

The Society should be able to assist with the problem of residence for the elderly. The multi-generation households are rapidly disappearing. Ideally old couples who can maintain themselves should live independently in their own homes. The Society could give advice on the type, size and the furnishing of the bungalow specially adapted to the limitations and handicaps of the elderly. Boarding out for single old folks is a possibility and the Society could assist by careful placement and matching of hosts and boarders. The next best thing to living in their own homes is independence within a group in Grouped Dwellings or Sheltered Houses. The Society could design a colony with houses fitted to meet the requirements of old folks and with communal facilities.

Clubs

The Society may be able to organise the visiting of lonely and housebound old folks by volunteers. It could also carry out a neighbourhood survey and organise a Club where groups of elderly people, leisured by retirement could foregather during the day to talk, play cards, read or smoke in amiable silence according to need. The Society could organise a volunteer transport system for those requiring it.

Education

Prevention is better than treatment. Older people themselves have to be educated by disseminating information by Newsletters, magazines, etc. on the maintenance of health e.g. accident prevention. This could be undertaken by the Society.

Thus, it would appear a Society for the Welfare of the Elderly will have a useful role to play in Malaysia and we recommend its formation.

Food habits and malnutrition

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INTRODUCTION

MALNUTRITION is the end-point of a vast number of dietary as well as non-dietary factors which have been diagrammatically outlined by Williams (1962). Basically malnutrition may be due to conditions in the body such as congenital defects, increased needs, malabsorption and other diseases, or it may be due to defective food intake. Defective food intake itself may be due to a series of factors chief among which are poverty and traditional food habits.

In the following paper, only the contribution of tradition and food habits as causative factors of malnutrition will be discussed. This does not mean that other factors are unimportant nor does it imply that tradition and food habits are not related to other factors such as poverty, illiteracy, maldistribution of wealth and general underdevelopment. On the converse, it is against such a background that tradition and food habits must be discussed. In order to provide the perspective from which food habits can be understood, the classification of food in terms of cultural beliefs will be examined.

FOOD CLASSIFICATIONS

Each culture has evolved over the centuries a series of cultural beliefs concerning foods. Not all items are eaten, some foods being classified as non-foods, others as super-foods and yet others as taboo foods.

Non-foods

Not all foods available are eaten by any one culture. All cultures classify potentially edible

material into foods and non-foods. Thus while rats, edible toads, water snails and porcupine are foods to the Semai Orang Asli, the Semai will not normally kill or eat those animals, such as wild boar, that they have kept as pets or have reared, in the belief that it is morally wrong to feed and rear an animal and having gained the animal's trust, subsequently deceive it by killing it (Bolton, 1972). On the other hand while wild boar is food to some town folk, rats, toads, water snails and porcupine are non-foods to most towns folk.

Cultural super-foods

In all cultures, one or two foods become elevated to cultural super-foods. Thus among the Iban of Sarawak (McKay, 1970), the Thais, Chinese and Malays of Peninsular Malaysia, rice is considered essential in all the main meals of the day. Because of its importance it may acquire a semi-divine status and its name may become synonymous with "meal". Thus among the Malays rice is not only the staple food but appears at all ceremonies concerned with vital events. For example, among Malays it is used at weddings to bless the bridal couple, at traditional healing ceremonies such as the *main puteri* when it is sprinkled by the *bomoh* (medicine-man), and is fed to the newborn infant soon after birth.

"Heating" and "cooling" foods

Some foods are classified as "heating" while others may be classified as "cooling". Thus among the Chinese, meats, fried foods and roasted nuts are "heating" while vegetables and most fruits are believed to be "cooling". Among the Malays "cooling" foods such as papaya and other fruits

must be scrupulously avoided by women in the puerperium. Women in the puerperium are required to confine themselves to the "heating" foods such as spices and salted fish. The result is often a simple and nutritionally deficient diet of rice, spices, salted fish, coffee and biscuits (Chen, 1973).

Similarly many fruits and vegetables that are a good source of beta-Carotene are avoided by Malay children since it is believed that these "cooling" foods will harm them by causing *cacing halus* (fine worms) to rise into the eyes thus causing night blindness (Chen, 1972).

Medicinal foods

In many cultures, one or more foods are classified as medicinal foods. Among the Chinese crysanthemum flowers in the form of a tea is an example. Among the Malays the *buah jering* (*Pithecellobium jiringes*) has been used as a treatment for diabetes mellitus. Investigations have shown that although it is a hypoglycemic agent, it also contains an alkaloid which is a hepato-renal toxin (Chen, 1975). In Trengganu the liver of the dog-fish, sheep or chicken has been used by the Malay *bomoh* as a therapy for night blindness due to vitamin A deficiency – a beneficial indigenous practice that can be further exploited in the Applied Nutrition Programme that is being implemented there.

Ceremonial foods

All cultures associate certain foods with specific rituals or ceremonies. Among the Chinese in Malaysia, oranges are always exchanged during the Chinese New Year. Thus the recent suggestion by a member of Parliament that bananas, instead of oranges, should be exchanged during the Chinese New Year, is ridiculous and quite absurd to the Chinese, since oranges, unlike bananas, symbolise a sweet, rounded and complete year. Among the Malays, *pulut* (glutinous rice), stained yellow with tumeric, is ritually used at all important ceremonies such as during marriages, naming of a child, and circumcision.

Such ceremonial foods may be so basic to the ritual that appeals to have the ceremonial food replaced by a cheaper or more nutritious food item will more likely fall on deaf ears. Thus in the Muda Irrigation Scheme, in spite of the introduction of new varieties of high-yielding padi, it has been essential to continue to provide for a small amount of *pulut* to be grown to meet such ceremonial needs, even though yields are relatively low when compared with the new varieties of padi.

Animals may be sacrificed as ritual offerings. Thus among the Kadazan of Sabah, the ceremony of *magambaon*, performed when a child is about

four months old, entails the slaughter of a pig which is subsequently cooked and eaten (Bair, 1966).

Prestige foods

Prestige or status foods are recognized by all cultures. The relative status of each food item is often unrelated to its nutritive value. For example, imported fruits such as apples, pears and grapes have a higher prestige value than many equally and more nutritious local foods such as papayas and pineapples. As a result, it is common to see poor families bringing such prestige fruits to a sick member of the family when they can ill-afford to buy basic food items. A nutritionally equivalent quantity of a low prestige vegetable such as *kangkong* would cost only a fraction of the cost of a high prestige food such as cauliflower. The bamboo rat, which is a good source of protein for the deep-jungle Semai, is avoided by the jungle-fringe Semai as a result of the prejudice of sophisticated towns folk who associate rats with sewers. Urban peoples do not realise that the 12 species of forest rat in the Malaysian jungles are as clean as many farm animals eaten by urban people. There should be emphasis on the valuable elements in indigenous diets.

Taboo foods

Some foods are taboo as a result of religious injunctions and beliefs. For example, beef is taboo to the Hindu while pork is taboo to the Muslim. Some other foods may also be taboo not as a result of religious beliefs but as a result of other traditional beliefs. A great variety of dietary taboos are in fact practised by rural Malays and will be described in detail when their food habits are examined. Some Orang Asli will not eat eggs for fear that infertility may result (Williams-Hunt, 1952). The deep jungle Semai will not eat tiger since they believe that tigers sometimes eat man and might thereby contain a human spirit. They will also not normally eat the meat of panther, leopard, and elephant (Bolton, 1972).

Communication foods

Foods are sometimes used as a means of communication. Thus gifts of food may symbolise love or concern. For example, the custom of bringing a gift, *buah tangan*, when one is home-visiting is a well known custom among Malays and Chinese. A gift of fruits when visiting the sick is another well established custom. The Malacca Malay custom of taking home some food from the wedding feast, quite commonly in a "China basket", is a custom observed by the Malays of Meningkabau descent.

Sympathetic magic foods

Some foods are eaten in the belief that sympathetically its purported properties will be thereby

acquired. For example, brain may be eaten in the belief that it will increase the intellect. A cockrel's head may be eaten under the impression that it will cause an individual to be an early riser, while the sexual organs of a bull may be consumed in order to increase virility.

In other words, man has not only learnt to eat some edible materials in order to stay alive but has also in a variety of different ways given symbolic meaning to many of these foods and it is essential for the health worker to bear these in mind if he is to successfully manage the diet of his patient or that of the community he serves.

SIGNIFICANCE OF FOOD CLASSIFICATIONS

Where there is an abundance of a wide variety of foods, the idiosyncrasies of a few absurd food customs will probably be of little significance. In protein-rich countries of the developed world, the classification of a home reared pet as a non-food is not important. On the other hand, the avoidance of fish by the Malay toddler can often lead to malnutrition.

From the point of view of malnutrition, our primary concern is with the most vulnerable groups in Malaysia, namely, pregnant and lactating women, infants and the young toddler. Bearing in mind that potentially edible material may be viewed quite differently by different cultural groups and that food habits are deeply tied to traditional belief systems, the food habits of the major rural peoples of Malaysia will now be examined in relation to malnutrition.

FOOD HABITS

The Pregnant and lactating mother

Although the infant and maternal mortality rates for Malays have fallen over the years, they have always been higher than similar rates for the other ethnic groups. The WHO Expert Committee on Nutrition in Pregnancy and Lactation (1965) notes that "It seems reasonable to conclude that undernutrition and malnutrition among mothers, especially in the developing countries, contribute towards impaired maternal, foetal and infant health and vitality". Undernourished women produce smaller babies which have a higher death rate. Chong *et al.* (1968), investigating the nutritional status of one hundred pregnant mothers from lower-income urban groups, noted that their diets were most deficient in thiamine, iron and riboflavine, and that niacin, ascorbic acid and calcium were also inadequate. The situation among rural pregnant women would be even worse.

After childbirth, dietary restrictions are far more severe than during pregnancy when there are in fact very few restrictions. For example, among rural Malays during the first forty-four days after childbirth, it is believed that the mother's body is especially vulnerable to "cooling" foods (Chen, 1973) such as pineapple, citrus fruits, cucumbers, papayas and most green leafy vegetables which are in effect good sources of carotenoids (Chong and Soh, 1969). In addition, foods that are said to be *bisa-bisa* ("poisonous") such as prawns, catfish, cuttlefish, cockles, *belachan* (anchovy paste) and certain types of fish, as well as foods that are reputed to "carry wind" such as cassava, cassava tips, sweet potatoes, pumpkin, taro, maize and jackfruit are avoided. On the other hand, "heating" foods such as pepper, chillies, smoked or salted fish, eggs, and coffee are advocated.

In practice, the resulting diet, especially in remoter areas of the east coast of Peninsular Malaysia, consists of rice, pepper, chillies, dried or salted fish, and coffee. Such a restricted diet has been found to result in low serum levels for folic-acid, carotene and iron (Wilson *et al.*, 1970). This is not surprising in view of the generally deficient diet even without these taboos (Chen, 1972).

Wilson (1973), compared the nutrient composition of food consumed by a rural Malay woman 28 days after confinement and noted that the intake of calcium, thiamine, riboflavine, vitamin A and ascorbic acid was low and a cause of concern.

Among the deep jungle Semai Orang Asli, the pregnant woman has strict food taboos. She may eat rat, squirrel, porcupine, edible toads, smaller birds, fish and water snails but is not to eat the larger animals including wild pig (Bolton, 1972). After childbirth, the mother normally eats only a gruel for a week, and must eat alone for six weeks. Bolton has also shown that, as a result of food taboos observed by women, their plasma albumin levels are significantly lower than those of men.

Among the Bateq Negritos of Ulu Kelantan, a pregnant woman must not eat meat or fish. After delivery, she must not eat meat, fish or salt for 44 days (Khadizan and Abdul Razak, 1974).

A new Kadazan mother is not allowed to eat any "hanging" fruits or vegetables, particularly blackberries, jackfruit, cucumber and breadfruit, and must avoid all deer meat. These foods are supposed to cause a new mother to have pains, fevers, ulcers or leprosy. Pork is considered "too oily" as is the flesh of duck (Williams, 1969). All these dietary restrictions cannot but help in contributing to malnutrition.

The infant

Breast milk together with bodily stores is all that the infant needs for the first six months of life. Breast milk provides the correct dosage of all nutrients at low cost, protects with anti-infective agents, and ensures emotional support at a time when mental development is rapid and critical (Harfouche, 1970; Jelliffe and Jelliffe, 1971). It has been noted (Kanaaneh, 1972) that malnutrition among breast-fed infants is almost absent whereas 30% of bottle-fed infants have been found to be malnourished. It has also been noted (Plank and Milanese, 1973) that bottle-feeding is associated with three times as many deaths as those wholly breast-fed.

Traditionally, rural mothers have preferred to breast-feed their children for the first two years of life. Thus McArthur (1962) noted that of the 150 Malay women she knew well all had tried to breast-feed their infants. McKay and Wade (1970) noted that among the Ibans of Sarawak breast-feeding was reported to be universal and prolonged (usually to two years often to three or four, unless a new sibling appears). Among the Kadazan of Sabah, Williams (1969) noted that most children are breast-fed for about two years. Dentan (1968) noted that among the Semai Orang Asli in the east, the child may be breast-fed until it is four or five years old. He also noted that the Semai in the West, who are more open to modern Chinese and Malay influences, breast-feed for about two years.

It is encouraging to note that in Perlis (Teoh, 1975) 92.5% of Malay mothers breast-fed their children, whereas only 58% of Chinese mothers did likewise. Nevertheless, he also noted that only 43.5% of mothers with their first child breast-fed for six months or more whereas 65–68% of the multipara did likewise indicating that there was a recent trend to shorten the period of breast-feeding. On the other hand, Coenegracht (1973) noted that 10 out of 67 rural Malay children in Trengganu had never been breast-fed. Jackson (1970) observed that although breast-feeding was usually begun, it was often partially replaced by artificial feeding even before six months and that breast-feeding had been terminated by six months amongst rural Malay infants in Kuala Langat, Selangor. The WHO Expert Committee on Nutrition in Pregnancy and Lactation (1965) noted with regret the trend towards shortening of the duration of lactation and more extensive use of breast milk substitutes in the developing countries and emphasized that the trend must not be encouraged.

The toddler

The toddler is perhaps the most vulnerable of the whole family. He is the subject of a dietary

transition when the breast is to be denied to him while he is expected to fully participate in adult meals. During this transition he is faced with several problems.

Not all adult dietary items are available to the toddler. Many are taboo. Among Malays of the west coast, there is a belief that fish and eggs are bad for the toddler since he may develop worms (Chen, 1970a). McArthur notes that vegetables are not given to toddlers until their molars appear, "otherwise they might choke". Many fruits and vegetables which are good sources of carotene are not given to children since these foods are believed to be "cooling".

Among the Orang Asli it is believed that the flesh of animals believed to have strong spirits is the cause of *sawan* (convulsions) if eaten by pregnant women and children. Thus children are allowed to eat the flesh of fish, toads, pigeons, small birds and water snails. However when a large animal is caught (monitor lizard, porcupine, wild pig, deer, larger bird, etc.) normally only the men and elderly women benefit from this protein boost (Bolton, 1972).

Another problem that faces the toddler during this transition phase is that he is often mistaken to be a "mini-adult", and is served small portions of the adult diet which is usually too spicy and too tough for him. He needs his foods sufficiently ground up to be digestible. He also needs to be introduced to spices in a more slow and staggered fashion.

During this transition stage, malnutrition is often enhanced by the fact that the toddler may be allowed to replace many of his meals with snacks and cakes which are generally high in carbohydrates but low in protein and vitamins. McArthur (1962) noted that many Malay school children went to school without breakfast and that virtually all the children spent pocket money on snacks. Rosemary Firth (1966) noted that children ate a great quantity of snacks, and that the Malay parent often realised that he was extravagant in spending money on sweet meats: "If I am hungry, and there is no money, I keep quiet. But Mahamat, he must have his every day." "Every now and again I am presented with a bill for our son." Wilson (1971a) notes that in Trengganu some women makes cakes and carry them from house to house to sell, especially in the morning and that all these snacks provide a considerable amount of food energy.

During illness

Many of these foods, whether they be "cooling" or "carry wind" are eaten with impunity during

good health but are carefully avoided when the individual becomes ill (Chen, 1970b). Thus among Trengganu Malays, Wilson (1971b) notes that peanuts and eggs are *bisa* (poisonous) for people with open sores; cashew nuts should not be eaten if one has scabies; egg plant, chicken or fried bananas are *bisa* for people with stomach troubles; mutton is not good for a cough; soursop is bad for influenza; beef, mutton, mackerel, cucumbers and watermelon are bad for boils; vinegar and soya sauce are bad for asthma; and that fish soya sauce, peanuts, duck and prawn are dangerous for *seduan* (a Malay-defined disease resembling sinus trouble). McKay (1971) records that in Ulu Trengganu, it is believed that *langsats* (*Lansium domesticum*) together with other sour-tasting fruits are bad for malaria and that *langsats* and fern shoots are bad for worms. Thus many carotene-rich foods that are potentially available to the child are denied to him particularly at times when he most needs it. For example, the child with night-blindness, an early symptom of vitamin A deficiency, is immediately denied all sources of carotene-rich foods when he is in greatest need for such foods.

CONCLUSION

Malnutrition is the end-point of a vast number of factors, chief among which are tradition and food habits. Food habits are strongly influenced by the cultural beliefs that govern the classification of foods. Thus not all potentially edible materials are eaten by any one culture. Some are classified as non-foods, others as cultural super-foods, "heating" and "cooling" foods, medicinal foods, high and low prestige foods and yet others as taboo foods. Based on this, the food habits of the major rural ethnic groups in Malaysia are quite often unsatisfactory from the nutrition point of view in particular the food habits of the vulnerable groups, the pregnant and lactating women, infants, toddlers and the sick.

However, it is vitally important for the health worker concerned with the application of nutrition programmes to be fully aware of these local traditions and food habits if he is to be successful in achieving the necessary change that he wants. To quote David Morley (1973), if one is to succeed in the field of nutrition, one must:

"Go in search of your people,
Love them,
Learn from them,
Plan with them,
Serve them,
Begin with what they know,
Build on what they have."

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Malaria in South-east Asia*

by A. A. Sandosham

SENIOR SCIENTISTS and physicians working on various aspects of malaria in Southeast Asia met in Bangkok from 18th to 22nd August, 1976 a report of which under the editorship of Tranakchit Harimasuta, H. M. Gilles and A. A. Sandosham has just been printed. The following are extracts which may be of interest and use to our readers.

CURRENT STATUS

Malaria occupied a prominent position in the disease hierarchy in the pre-DDT era in the countries of this region. Many countries started an eradication programme which initially edged out the disease. It has now staged a comeback in some of the countries and in others it is just gaining ground. The increase in population and the need for economic development have led to more and more land being opened up for agriculture with an increase in malaria. These areas are not readily accessible and conditions unsettled; the farmers and their families are in constant movement living in temporary shacks. In these circumstances DDT spraying cannot be carried out with the degree of efficiency needed to assure interruption of malaria transmission.

Even if all houses can be regularly sprayed it is doubtful, for various reasons such as outdoor transmission, constant movement of population, etc., if eradication can be achieved by use of DDT alone. Owing to political instability, lack of funds from curtailment of foreign aid, economic recession, etc., most Southeast Asian countries have been forced

to abandon the concept of eradication in favour of control especially in highly malarious areas hoping to reduce malaria incidence to a level where it ceases to be a serious public health problem.

Malaysia is an exception in that an eradication programme was started only in 1967. There is some optimism of greater success here because of politically stable conditions, a Government willing and able to finance the project, an excellent infra-structure of health services for integration, etc., It remains to be seen.

For most of the countries of the region the best prospects lie in the development of the health infra-structure and in areas relatively free of malaria integration with the general health services. In areas of high endemicity a variety of methods should be deployed to reduce the prevalence of malaria and prevent its spread to clean areas. A mobile team of anti-malaria workers should be available in each district to act speedily on receiving information of an outbreak of malaria in any locality to contain and eliminate its spread.

TREATMENT

The working group advocated the following lines of treatment in Southeast Asia:—

Treatment of vivax malaria

Day 1 – Chloroquine base 900 mg. orally in three divided doses (e.g. 300 mg. four to six hourly)

Day 2 – Chloroquine base 300 mg. (two tablets)

Day 3 – Chloroquine base 300 mg. (two tablets)

plus
Primaquine 15 mg./day for fourteen days

* Extracted from Southeast Asian Journal of Tropical Medicine and Public Health Vol. 7, No. 4 with the kind permission of the Editor-in-chief.

The course of primaquine can be started simultaneously on Day 1 with the beginning of chloroquine treatment. A weekly 45 mg. dose of Primaquine for eight weeks is a safer regimen in G-6-PD deficient patients whenever this is practical.

Treatment of falciparum malaria

(1) Uncomplicated disease

- a. Quinine sulphate 650 mg. (salt: 2 tabs.) every 8 hours for three days plus Sulfadoxine 1.5 g. with Pyrimethamine 75 mg. (three tablets Fansidar).

The dose of Fansidar is administered on the first day together with the first dose of quinine. The cure rate of this combination is over 90% and the early control of symptoms provided by quinine is highly desirable. Ideally, this regimen should be given in hospital but in certain circumstances it can be given to out-patients.

- b. An acceptable alternative when the above regimen is not feasible logistically or economically is a single dose of 1 gm. sulfadoxine with 50 mg. pyrimethamine (two tablets Fansidar) – cure rate 80 – 90%.
- c. Parental therapy should not be given to out-patients.
- d. Symptomatic therapy: Standard supportive treatment (e.g. antipyretics) should be given, but it is important to be aware that any immunosuppressive or anti-inflammatory drug (including aspirin) may prolong the duration of parasitaemia.
- e. In areas where control or eradication programmes are underway the use of primaquine is advocated as a public health measure (gametocytocidal effect) on the completion of the curative courses (a or b) mentioned above as follows:–

Primaquine 15 mg. daily × 5 days

or

Primaquine 45 mg. single dose

(2) Complicated or severe disease

A. Chemotherapy

1. Quinine 650 mg. (salt) intravenously in 500 ml. of saline (or any preferred infusion fluid) given over $\frac{1}{2}$ to two hours, repeated 8-hourly until the patient is able to take oral medication.

- a. Occasionally a very ill patient may require 2–3 days of intravenous quinine; in such a case, quinine 650 mg. (salt) in 500 ml. fluid should be given 8-hourly, administered over a 4-hour period. The daily dose of quinine should not exceed 2.0 gm.
 - b. Patients must be observed for signs of toxicity or idiosyncrasy, and the dosage reduced accordingly.
 - c. The dose of quinine in children should not exceed 5 mg/kg/dose.
2. The dose of Fansidar may be given via gastric tube. An intramuscular preparation is also available and is an acceptable alternative to the oral form when required.
 3. When the patient is able to take medication by mouth, oral therapy should proceed as outlined above. [See (1)a.]

NOTE: The use of intramuscular quinine is not advocated by the group for the following reasons: (a) the injection is painful and in some cases causes sterile abscess, (b) absorption of the drug is relatively poor—blood levels achieved are less than those following oral administration, (c) unless sterility is guaranteed pyogenic abscess and even tetanus occur, particularly when the drug is used outside of hospitals and in private clinics, (d) there is a possibility of injury to the sciatic nerve.

B. Management of complications

The management of the patient with complications is as important as chemotherapy which of course is *mandatory* in all cases. The most common severe manifestation of falciparum malaria seen in Southeast Asia are:

- i. cerebral malaria
- ii. renal failure
- iii. haemolysis with severe anemia (mostly in children).
- iv. blackwater fever, malarial haemoglobinuria
- v. pulmonary oedema

Blackwater fever is rare while disseminated intravascular coagulation is still most controversial. Until the status of DIC in malaria is definitely determined it is *un-*

justified and dangerous to use heparin routinely in the treatment of severe falciparum malaria.

- i. **Cerebral malaria:** In addition to the conventional management of convulsions or coma, corticosteroids probably help by reducing cerebral oedema when this is present and possibly by improving vascular permeability and tone. Parasite clearance may be prolonged as with any other anti-inflammatory drugs.

Dexamethasone should be given intravenously, at a dosage of 6–8g. m every six hours, until consciousness is regained. If dexamethasone is not available alternative corticosteroid preparations may be used.

N.B. Occasionally in endemic areas of malaria a patient presents in coma; and a presumptive clinical diagnosis of cerebral malaria is made but the blood smear is reported as negative.

In these patients the routine advocated is as follows:

- (a) Give the initial dose of parenteral anti-malarials as above [(2)A 1a].
- (b) Investigate for other possible causes of coma. Lumbar puncture and examination of urine are necessary.
- (c) Repeat blood smear every four hours and act accordingly.

It is vital in these cases that one is satisfied with the competence of the reporting laboratory.

- ii. **Renal failure:** Many patients with severe falciparum malaria are dehydrated. If a history of diminished urinary output is elicited (less than two cups on the day before admission) and/or physical signs of dehydration are present, the first dose of quinine should be diluted in 1,000 ml. of infusion fluid and given over the period of one hour to two hours.

If evidence of oliguria persists 2,000 ml. of fluid should be given over a period of two hours followed by an intravenous injection of furosamide 80–100 mg.

If within the next six hours oliguria persists or anaemia occurs repeat the intravenous infusion of 2,000 ml. as above followed by 100 mg. of furosamide. Steroids may also be given at this stage. If no response occurs after all this, the patient should be dialysed-peritoneal or haemodialysis. If this is not available conservative conventional treatment is given.

- iii. **Haemolysis and severe anaemia:** These are among the commonest complications in children. Parasitaemia is not uncommonly scanty and a malarial aetiology has often been based on the following factors:
- a. Haematological evidence of haemolysis – e.g. reticulocytosis
 - b. Normocytic anaemia
 - c. Presence of malarial pigment (thin film) and/or gametocytes
 - d. Excellent response to specific anti-malarial therapy

The anaemia can be severe enough (2.0 g) to result in heart failure. The management is as follows:

- a. Transfusion of packed cells (or whole blood if former not available) to raise haemoglobin to Hb 6–7 g. or hematocrit 20%.
- b. Conventional treatment of heart failure (if this is present).
- c. Steroids may have a place because immunological factors may be involved in the pathogenesis of anaemia.

- iv. **Blackwater fever:** This term which is now redundant was introduced many years ago in clinical malariology and at the time it denoted certain specific diagnostic criteria which were as follows:

- a. It occurred in areas where malaria was endemic.
- b. It occurred in non-immunes, usually in those taking quinine irregularly as a suppressive or using spasmodic inadequate curative treatment.
- c. Parasitaemia was scanty or even absent in most cases.
- d. An antigen-antibody reaction triggered by quinine was thought to be responsible for the massive haemolysis.

Cases of **malarial haemoglobinuria** are occasionally still seen and the circumstances are usually as follows:

- a. The condition occurs in non-immunes usually living in highly endemic areas of malaria.
- b. It may be associated with heavy or with light parasitaemia.
- c. It has no connection with irregular intake of quinine.
- d. Undetermined immunological factors are probably involved.
- e. Patients should be G-6-PD normal. When acute haemoglobinuria occurs in *non-immune* G-6-PD deficient patients in malarious areas it is difficult to be certain whether the aetiology is due to the enzyme-deficiency or whether it is malarial in origin. A useful but not absolute differential criterion is the Coomb's test. This is negative in cases of drug induced G-6-PD deficiency but usually (though not invariably) positive in malarial haemoglobinuria. When acute haemoglobinuria occurs in semi-immunes in malarious areas it is almost certainly due to G-6-PD deficiency with drug sensitivity and should not be labelled either blackwater fever or "a malarial haemoglobinuria".

Malarial haemoglobinuria: This is now a very rare complication in Southeast Asia. The majority of cases of acute haemoglobinuria are usually associated with G-6-PD deficiency and not with malaria.

The treatment is similar to that advocated for haemolysis or severe anaemia above. The use of quinine and Fansidar are not likely to increase the haemolysis and in any case are mandatory in the presence of parasitaemia.

- v. **Pulmonary oedema:** This condition is usually fatal within 24 hours of onset. It

often occurs when parasitaemia is resolving and may be confused with "uraemic lung".

- a. A careful balance must be attempted between early rehydration in severe malaria and limitation of fluids to prevent pulmonary oedema.
- b. Conventional management of pulmonary oedema as seen in other conditions, eg. congestive heart failure.
- c. Steroids may be a useful adjunct.

CHEMOPROPHYLAXIS

- a. **Chloroquine** is effective against vivax malaria and against falciparum malaria in areas where the parasite is still sensitive.
Dose: 300 mg. base weekly.
- b. In chloroquine-resistant areas, a few regimens are available but it is emphasized that at present none are completely satisfactory nor conclusively proven effective in all areas especially in *non-immunes*. Possibilities include the following:
 1. Proguanil 200 mg + Dapsone 25 mg daily. (Black 1973)
 2. Dapsone 100 mg + Pyrimethamine 12.5 mg (Maloprim) once weekly.
 3. Sulfadoxine 1 g + Pyrimethamine 50 mg (Fansidar: 2 tabs) once fortnightly.
 4. Sulfadoxine 1.5 g + Pyrimethamine 75 mg (Fansidar: 3 tabs) once monthly.
 5. Proguanil 200 mg daily: less effective than (1). (Black 1973).

Fansidar is best reserved for therapy, but may be considered in certain situations, e.g.

- a. Labour forces in endemic areas during the months of high transmission.
- b. Short term traveller (three months or less).
- c. Other carefully selected and supervised groups, e.g. Students engaged in field work.

Medical psychology in Malaysia: A developing profession in a developing nation

by *John E. Carr*
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IN ESTABLISHING training programs for health care professionals, developing nations inevitably must determine which professions will be given the country's finite educational resources over a limited period of time. Instead of a uniform evolution of an integrated system of health care delivery, this assignment of priorities results in idiosyncratic interrelations among professions and a unique health care system which may appear to be quite confusing, especially when viewed from the "outside".

Malaysia is a rapidly developing nation of 10 million people in Southeast Asia. It is blessed by an abundance of natural resources and, through sound economic planning, has gained recognition as one of the most progressive nations in Asia. Considerable effort has been devoted to the development of its educational system and the training of much needed professionals in the various health care specialties. Government scholarships are made available to train students at home and abroad and through various granting agencies and collaborative arrangements with institutions overseas, Malaysian universities enjoy a constant stream of visiting lecturers and professors.

The training of psychiatrists has been assigned a high priority by the Ministry of Health. Whereas only a handful of psychiatrists could be found throughout the country less than a decade ago, at the present time approximately 20 specialists in this field are on assignment with universities or government clinics and hospitals. Almost half of this number are located in the Department of Psychological Medicine at the University of Malaya Faculty of Medicine in Kuala Lumpur. It is one of the

larger departments and has responsibility for two wards of 28 beds each, a large outpatient clinic and a day care unit. In addition, it plays a major role in medical student training and offers a post-graduate training program in Psychological Medicine leading to a masters degree. This program is one of three postgraduate programs offered by the Faculty of Medicine.

In contrast, medical psychology does not enjoy a priority status in Malaysia's development plans. There are no clinical training programs in any of the higher institutions of learning in the country, although there are educational psychologists and a few counselling psychologists located in individual posts in various schools.

Since the vast majority of medical and educational specialists in Malaysia have been trained in foreign settings, these individuals are not only familiar with the role of medical psychologists but have been trained to utilize psychological services and skills in the exercise of their own clinical specialties. Thus, foreign training establishes certain expectations which are incompatible with the Malaysian scene as it actually exists.

The impact of these expectations and their incompatibility with reality is revealed in the clinical activities of the country's only medical psychologist for the calendar year 1973. The psychologist was an Indian woman holding an MA in Medical Psychology received in the United Kingdom. In addition to her clinical activities, she carried teaching responsibilities for 1st, 2nd, 3rd and 4th year medical students, 1st year nurses, and postgraduate psy-

chiatrists. She also served as a consultant to several schools and local agencies for children, and did behavioral therapeutic consultations for the departments of Pediatrics and Psychological Medicine. The clinical activities were carried out on two clinic half-days per week. An exact number of total cases seen was difficult to determine since a high proportion of scheduled cases failed to appear (about 20%) and many of those that did appear were follow-up consultations (about half). Of the more than 200 patient contacts for the year, 54 were "new" cases in which an initial comprehensive psychological evaluation was conducted and a formal psychological report prepared.

Age and ethnic group. The majority of cases seen were children, 80% being 15 years or younger and over half being under the age of 10. While Malays constitute 53% of the population of Malaysia and Chinese and Indians 35% and 11% respectively, cases referred for psychological evaluation included a greater number of Chinese (35%) and Indians (31%) than Malays (24%). This not only reflects the urban location of the hospital where the majority of the country's Chinese and Indians are located, but also reflects the health care practices of the various ethnic groups. Being distant from medical centers, the urban Malays tend to rely more upon traditional indigenous practitioners. Thus, the kinds of problems generally referred to psychologists in more developed countries are seldom identified as "medical" or "psychological" among rural Malays but instead may be viewed as the result of external influences, e.g. spirits. Those Malay patients who were referred tended to be either in higher socio-economic levels, more highly educated and familiar with western medical practices, or referred in from rural area by district health officials.

Education. Because of the age and socio-economic bias, it is not surprising that the majority of cases seen were in the primary (30%) and secondary (43%) levels. The small proportion of illiterate patients seen reflects both the higher socio-economic and urban locale of the hospital and the higher literacy rate of Malaysia in comparison with other Asian nations. The age/education parameters also reflect the fact that many of the cases referred are in response to parental or school concern with educational failure.

Language. Fifty percent of the evaluations completed were conducted in English, while 11% were conducted in Malay, 4% in Hokkien (a Chinese dialect), and 7% in Tamil. The high proportion of English medium evaluations is attributable to the fact that in the majority of cases English may be the one language the psychologist and patient had in

common, regardless of cultural background. Twenty-two percent of the cases referred had no language indicating that the second largest number of cases were referred for various forms of communication disability or for a primary disorder where communication disability was a secondary characteristic (e.g., mental retardation).

Sex. Seventy-two percent of the cases seen were males while only 28% were female. This remarkable discrepancy in utilization of psychological services by sex reflects an important characteristic of Asian culture, namely that males are more important than females. Therefore, when sons are ill or experience school disabilities, parents are more likely to be concerned and seek consultation with specialists than if the same difficulties are experienced with their daughters. Throughout Asia and especially in Malaysia success and achievement are very much education related and education is highly competitive. If parents are to look forward to a comfortable old age where they shall be supported by their sons, they must insure their son's ultimate success early on.

Sources of referral and referral questions. The majority of referrals for psychological evaluation came from three departments: Psychological Medicine; Pediatrics; or Ear, Nose and Throat. The patients from ENT tended to be young children with sensory disabilities while those from Peds tended to manifest developmental delays or neurological impairment.

The predominant referral question had to do with the patients' intellectual capabilities or, more precisely, "Is this patient retarded?" In many instances the retardation was of suspected genetic or pathological origin. In other cases, language disability was the presenting problem with selective intellectual impairment the suspected cause (e.g., dyslexia). In only a small minority of cases was personality disorder the basis for referral. Not surprisingly, the test findings confirmed a high incidence of mental retardation and related sensory deficit or language disability. Even among those cases referred for "personality disorder" a high proportion were found to be retarded.

Recommendations, follow-up, and outcome. Based upon her test findings, the psychologist had made several categories of recommendations. In 35% of the cases tested no specific recommendations were made, primarily because no recommendations were sought. In the remainder of the cases seen, recommendations had to do with special education (24%), communication therapy (15%), behaviour therapy (9%), or treatment programs that could be carried

out at home (4%). The remainder of the recommendations had to do with administrative changes, i.e. school changes, different teachers, alterations in program, etc.

The recommendations made by the psychologist were followed in only 22% of the cases. Follow-up on the psychologist's recommendations was reported in only 26% of the records reviewed and progress reported in only 17% of those cases.

Expectancy. Obviously, the medical psychologist was perceived as a professional whose expertise was most closely associated with the evaluation of intelligence and learning disabilities in children. The nature of the referrals further suggests that the psychologist was seen as being able to provide reliable and valid test findings, and that her professional role was viewed as somewhat similar to that of other specialists who provide important "laboratory data", such as EEG, Radiology, etc., regardless of the age, education, ethnic background or language of the patient. Thus, expectancies concerning professional role reflected a certain degree of naivete with regard to what the psychologist could be expected to do given the limitations and sources of error inherent in behavioral measurement in a multi-ethnic, multi-lingual culture.

Another set of expectations had to do with the implications of the psychologist's findings and recommendations as well as the implications of the original referrals. The primary presumption behind

most of the referrals for psychological evaluation was that they had some meaning with regard to clarifying current diagnostic vaguery or future prognostic plans. The reality of the situation was that in the majority of cases they did neither. Not because the psychologist was inept or incompetent, but rather because (a) the referral had been an "academic exercise", well learned during the referring doctor's training, but minimally relevant in the present setting, and (b) the outcome and recommendations were moot since back-up resources in the community were severely limited. A frequent example of (a) was the referral of school age children with a history of gross developmental delay, lack of speech, poor motor coordination, and established mental retardation, to "determine the IQ". An example of (b) was the referral of the same child for "evaluation to assist in special school placement" when there were limited or no special schools or institutions available to the child or family.

While it has achieved a high standard of academic excellence in medical training, Malaysia, like other developing nations, faces the task of making its highly regarded training programs increasingly responsive to the special needs of the country. While Medical Psychology is deserving of attention as a new priority in many developing nations it must evolve as a uniquely indigenous phenomenon. The application of behavioral principles and clinical skills evolved in western settings must be made relevant to the realities of local life.

A survey of 47 opiate dependent persons who sought treatment

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Introduction

THE PROBLEM OF drug abuse is a universal one that is both a social and a medical disease that has spread rapidly in the past decade. While the growth of this disease has been dramatic in itself the increase in the incidence of opiate dependence has been indeed phenomenal. The U.K. Home office figures for the decade 1959-68 show that in U.K. in 1959 there was no registered users of opiates below the age of 20 in 1964 there were 753 (of which 342 were Heroin users). In 1968 the figure was 2782 (2240 using Heroin). While such early figures for Malaysia are not readily available a recent survey (E. Tan, 1972) concludes that there is an increasing demand for medical treatment of drug dependence mainly from Narcotic users.

V. Navaratnam (1975) in a preliminary report of the problem in the state of Penang states that nearly 90% of the patients he interviewed abused either Heroin or Morphine or both. The opiate of choice was Heroin.

With drug abuse becoming a major problem the Malaysian government in September 1975 set up a number of treatment (or detoxifying) centres and rehabilitation centres under the Welfare Ministry with a view to combatting this growing threat to society. The University Hospital's Psychological Medicine Unit has since its inception in 1967 been treating a number of drug dependent persons in its psychiatric Unit. By and large most of these persons are dependent on opiates and it is this category of dependence that this paper intends to study.

Aim of Study

To study characteristics of opiate dependent persons and their dependence among all opiate addicts admitted to and treated in the male ward of the Psychological Medicine Unit of the University Hospital from 1st January 1975 to 31st December 1975. The study concentrates on characteristics such as age, ethnic group, types of opiates used, family characteristics and marital and employment status.

Method

All medical case notes of (47) persons who were admitted for treatment of opiate dependence during the period of the survey were reviewed and data collected and analysed two months or more after their discharge from the ward.

Treatment of opiate dependence

All known opiate abusers who are admitted to the Unit undergo a period of testing of their motivation on an outpatient basis where they are seen regularly on at least two occasions. During this period they are treated with tranquillisers which help them reduce but not necessarily withdraw their dependence of the opiates they have been abusing. All patients who fulfill this motivational test are admitted for inpatient withdrawal from their opiate dependence.

Treatment

Treatment consists of withdrawal and psychological treatment including family therapy where indicated or possible. Withdrawal is by controlled substitution by use of Methadone. For the first

24 hours of the patient's admission to the ward he is given 5 mg Methadone when needed (PRN) and in this way the total Methadone he needs in a 24 hour period ascertained. The next day this total dose is given in equally divided doses and on subsequent days this dose is gradually reduced 5 mg at a time until he is completely withdrawn from the drug. He is then observed for 2-3 days in the ward and discharged for follow-up as an outpatient. At the time of this survey (1975) there were no government rehabilitation centres for drug addicts.

Results and Discussion

The Person

Age: Of the 47 opiate dependent persons treated in the male ward 32 or (68%) were below the age of 25 and 41 (87%) below the age of 30. The largest number 24 (51%) were between the ages 21-25. The youngest was a 15 year old boy. (See Figure 1).

Ethnic Group

By ethnic groups the largest number of opiate addicts were Chinese 24 (51%) followed by Malays 17 (36%) and Indians 4 (8.5%). However most of the Malays were below 25 years old (15 out of 17) whereas only 14 out of 24 of the Chinese were below 25 years of age. One American and one Eurasian were also treated in 1975 for opiate dependence. (See Figure 1).

Marital Status

Most of the 47 addicts were single 36 (76%) while the rest 11 (23%) were married.

Employment

While the general picture held by most lay people of a drug addict is that of an unemployed youth this study does not support that view. Thirty-two (68%) out of 47 addicts were fully employed, one held a part time job and 3 were students (2 school boys and one a University student). Only 11 (23%) were unemployed.

Occupation

Thirty-six (76%) were skilled or semi-skilled. Only 2 held an unskilled job. Of the rest 3 were professionals, three students, and 3 held clerical jobs.

His Family

The need to understand the background an addict comes from is important from the sociological as well as management points of view. The data on this was not easily available but the study revealed that the addict often came from difficult if not problem homes.

Size of Family

Thirty five (74%) out of 47 addicts came from families with 5 or more children and therefore would be considered large families.

Fig. 1
1975 - Opiate Dependent Males - Age/Ethnic Group Relationships

Age Groups in Years	ETHNIC GROUPS													
	Malay		Chinese		Indian Pak., Cey. (excl. Sikhs)		Sikh		Caucasian		Eurasian		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
10 - 15	1	2.13	0	0	0	0	0	0	0	0	0	0	1	2.13
16 - 20	2	4.26	4	8.51	0	0	0	0	0	0	1	2.13	7	14.89
21 - 25	12	25.53	10	21.28	1	2.13	1	2.13	0	0	0	0	24	51.06
26 - 30	0	0	8	17.02	0	0	0	0	1	2.13	0	0	9	19.15
31 - 35	2	4.26	1	2.13	0	0	0	0	0	0	0	0	3	6.38
36 - 40	0	0	0	0	0	0	1	2.13	0	0	0	0	1	2.13
41 - 45	0	0	1	2.13	0	0	1	2.13	0	0	0	0	2	4.26
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	17	36.17	24	51.06	1	2.13	3	6.38	1	2.13	1	2.13	47	100.00

Fig. 2(a)
1975 - Opiate Dependent Males - Marital Status

Marital Status	No.	%
Single	36	76.60
Married	11	23.40
Total	47	100.00

Fig. 2(b)
1975 - Opiate Dependent Males - Occupation

Occupation	No.	%
Professional	3	6.38
Skilled Workers	21	44.68
Semi-skilled Workers	18	38.30
Unskilled Workers	2	4.26
Student	3	6.38
Total	47	100.00

Sibship

An abnormally large number of the addicts were within the first 4 in their families. Twenty one (44%) of them were either first or second in their families and a full 38 (80%) of them within the first four in their families. The traditional pressure on the elder male siblings on any Asian family may be a contributory factor to the large number of addicts

Fig. 2(c)
1975 - Opiate Dependent Males - Employment Status

Employment	No.	%
Full-time	32	68.09
Part-time	1	2.13
Unemployed	11	23.40
Students	3	6.38
Total	47	100.00

who fall in this category. Sibling rivalry may also be a contributory factor though this factor was not looked for in this study.

Absence of Parent or Parents

The established role of parents in moulding an adolescent's life is well documented. In this group of 47 addicts, 21 (44.7%) had an absence (prolonged or permanent) of one or both parents (absence of father 16 (34%), absence of mother 2 (4.3%) and both parents 3 (6.4%).

Poor Family Relationships

Poor family relationships were noted in 13 (27%) out of the 47 addicts. Of these 5 did not get on well with father, 4 with wife and 2 with step mother or mother. Two others had poor relationships with more than one relative.

Fig. 3

1975 - Opiate Dependent Males - The Family Background

Size of Family			Sibship of Drug Addict			Poor Family Relationships			Absence of Parent Figure(s) for 3 or More Years. Before Age of 18		
No. of Family Members	No.	%	Sibship	No.	%	Family Member	No.	%	Parent	No.	%
Less than 5	12	25.53	1st	11	23.40	Father	5	10.64	Father	16	34.04
						Mother	2	4.26	Mother	2	4.26
5 - 8	25	53.19	2nd	10	21.28	Wife	4	8.51	Both	3	6.38
						2 or more members	2	4.26	Both parents present	26	55.32
9 - 12	10	21.28	3rd	7	14.89	No significant problem	34	72.34			
						4th	10	21.28			
			5th - 10th	9	19.15						
Total	47	100.00	Total	47	100.00	Total	47	100.00	Total	47	100.00

His Addiction

Preferred Opiate by Age Groups

(See Figure 4.) Of the 47 addicts 37 (78.7%) smoked Heroin, 6 (12.77%) Morphine, 2 (4.26%) Opium and 2 (4.26%) took more than one type of opiate.

The Heroin takers were mostly in the under 25 age group (30 (63.82%)) while Opium and Morphine dependent addicts were above 26 years old (6

(12.77%)). Of the 15 addicts above the age of 26 only 7 were Heroin addicts and the rest dependent on Morphine, Opium or more than one opiate.

How did they start the habit

(See Figure 5.) Thirty nine (82.8%) of the 47 addicts started their habit out of curiosity or "for fun" when introduced by friends. Only 3 (6.38%) said pushers first introduced them to drugs. One

Fig. 4

1975 - Opiate Dependent Males - Age/Opiate Relationships

Age Groups in Years	OPIATE OF DEPENDENCE									
	Herion		Morphine		Opium		Mixed		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
10 - 15	1	2.13	0	0	0	0	0	0	1	2.13
16 - 20	6	12.77	1	2.13	0	0	0	0	7	14.89
21 - 25	23	48.94	0	0	1	2.13	0	0	24	51.06
26 - 30	3	6.38	4	8.51	0	0	2	4.26	9	19.15
31 - 35	3	6.38	0	0	0	0	0	0	3	6.38
36 - 40	0	0	1	2.13	0	0	0	0	1	2.13
41 - 45	1	2.13	0	0	1	2.13	0	0	2	4.26
46	0	0	0	0	0	0	0	0	0	0
Total	37	78.73	6	12.77	2	4.26	2	4.26	47	100.00

Fig. 5

1975 - Opiate Dependent Males - The Addiction

Source of First Contact		Period of Dependence Before Admission			Days for Withdrawal			Use of Other Drugs			
Source	No.	%	Months	No.	%	No. of Days	No.	%	Drugs	No.	%
Friends	39	82.98	1 - 6	4	8.51	2 - 4	2	4.26	Marijuana	17	36.17
Medical Advice	4	8.51	7 - 12	11	23.40	5 - 7	12	25.53	Other Opiates	5	10.64
Pusher	3	6.38	13 - 18	2	4.26	8 - 10	14	29.79	Methadone	1	2.13
Hospital	1	2.13	19 - 24	9	19.15	11 - 13	5	10.64	None	12	25.52
			25 - 30	2	4.26	14	3	6.38	Unknown	4	8.51
			31 - 36	9	19.15	AOR	11	23.40	Mixed (Opiates, Marijuana, MX pills)	8	17.02
			37	7	14.89						
			Unknown	3	6.38						
Total	47	100.00	Total	47	100.00	Total	47	100.00	Total	47	100.00

started his habit after being prescribed Morphine in hospital for pains following an operation. Four said they were told by friends to take opiates for medicinal purposes for intractable pains for which they could not get relief with proprietary drugs.

Period of dependence before seeking help

Only 15 (31.91%) sought help within the first year of dependence. The rest came anywhere between a year and 15 years after starting on the opiate.

What it cost the addict

The amount of money it cost the addict to maintain his habit is but one of the many costs the addict incurs. Among the addicts studied there appeared little relationship between the money spent and the severity of withdrawal symptoms or dosage of methadone used for withdrawal. However, the average amount spent by an addict was about \$10.00 a day but varying between \$3.00 to \$40.00 a day.

Abuse of other addictive or dangerous drugs

Only 12 had never experimented with other drugs (including other opiates) before becoming dependent on the opiate in question. Among the rest Marijuana was used by 17 of the addicts before present addiction. Only 1 had experimented with Methadone. Five had tried other opiates before becoming dependent. There were 8 who had experimented with more than one other drug. No reliable data was obtained from 4 others.

Dose of Methadone used for withdrawal

There was a wide variation in the dosage of Methadone used for withdrawal and it bore no relation to the alleged amount money spent on the addiction, e.g., an addict who said he spent \$40.00 a day only took 175 mg of Methadone during 9 days of withdrawal. Whereas another addict who claimed he spent \$3.00 on his habit a day took 32 mg of Methadone over a 14 day period to complete withdrawal.

Discharge at own risk

During the hospitalisation, 11 (23.40%) of the addicts discharged themselves against medical advice. Of these 7 (14.89%) were Heroin addicts, the rest being Opium (1), Morphine (2) and more than one drugs (1). Six out of these 11 left within 24 hours.

Number of days for withdrawal

The addicts took anything from 2 – 27 days to be withdrawn from their addiction. Twelve of them took between 5 and 7 days while 14 took 8 – 10 days and 5 took 11 to 13 days to give up their habit. Eleven discharged themselves at their own risk before completing withdrawal.

Conclusions and Summary

This survey of opiate addicts who were admitted to a male psychiatric ward during the year 1975 produced both picture of addiction the addict and his background. The addict is usually a young male Chinese or Malay who has a skilled or semi-skilled job, single and comes from a large family of which he was usually among the first four. He may have poor relationship with his family and may have had an absence of one or both parents during his early life. He smokes Heroin and uses about \$10.00 a day on his habit. He most often started his habit out of curiosity when introduced by friends. He usually sought treatment within two years of starting addiction.

Drug abuse in general and opiate abuse and dependence in particular seems to have grown dramatically in the past 5 years. This brief survey points to the highly vulnerable young population that is open to opiate dependence. The family background especially the absence of one or both parents in 21 out of 47 of the addicted persons appears to point to likely emotional problems in childhood and adolescence. The disproportionately large numbers of addicts who are among the eldest in their generally large families also points to the possible problems of stress that is often seen in the elder males of most Asian families. Large families too that most addicts come from do seem to contribute to emotional problems (be they problems of omission or commission) that the addicts face in childhood and adolescence. These areas would be worthy of further studies to root out possible factors that influence the vulnerability of our young population to opiate addiction.

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Ornithosis in peninsular Malaysia (In Man and Pigeons)

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INTRODUCTION

ORNITHOSIS or psittacosis, as the disease is called in psittacine birds, is a zoonotic disease and usually presents itself as an influenza-like illness with a sudden onset of fever, pains in back and limbs and a severe headache after an incubation period of about 10 days. Many cases are mild or even subclinical. The severe cases show signs of pneumonic involvement towards the end of the first week. There is usually a dissociation between the pulse rate and the temperature, and a rising pulse rate of over a hundred in the second week indicates poor prognosis. In severe cases, a typhoid state develops in the second week but in patients who are going to recover, the temperature falls by lysis towards the end of the second week. Coma, a rising pulse rate and cyanosis usually precedes death.

Man gets infected with ornithosis through handling infected birds, inhaling air-borne dried infected droppings or bite wounds. However, many people have antibodies in their sera which cannot readily be accounted for. Transmission can also be from person to person (Hansen & Sorensen, 1955) and some nurses tending to infected patients have been known to contract the disease from their patients. Middle-aged or older people appear to be more highly exposed to the infection, being more likely to acquire birds as pets and to spend more time in closed households with their birds, especially

during the winter seasons. The susceptibility to ornithosis/psittacosis, however, is much the same for both sexes and all age groups although the mortality rate may be higher in the very young and the aged. In the outbreaks of 1929-30, the case fatality rate was nearly 20%, but since the advent of the antimicrobial drugs it has fallen to 0.5% with early diagnosis and treatment.

The causal agent of ornithosis is *not* a virus but is classified with the rickettsiae as an intracellular parasite descending from bacterial ancestors; it is, therefore, a bacterium. It represents a member of a family of organisms which shares a common antigen which is called the Psittacosis-Lymphogranuloma Venerium (P-LGV) agents. Some refer to them as *Bedsoniae*, after Sir Samuel Bedson, whose studies of these organisms form the basis of present-day knowledge. Being bacteria, the agents are susceptible to antibiotics, especially the tetracycline group, aureomycin in particular.

HISTORY AND EPIDEMIOLOGY

Psittacosis was first recognized in Switzerland in 1879 by Ritter who described an outbreak in a household in Ulster in which were kept exotic birds. Further outbreaks in the next 20 years were described in Germany, Italy, Switzerland and France. In 1929 and 1930, extensive epidemics occurred in 12 European countries involving about 800 persons. The main source of the infection was found to be parrots shipped from South America (Meyer, 1942). Imported exotic birds were not the only source of infection, however, because in Australia psittacosis was found also among psittacine birds living in the bush (Burnet, 1935).

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In Asia, as far as is known, except for Japan (and now, Malaysia), the distribution of ornithosis has not been studied, and even in Japan the incidence was practically nil, only one case having been reported between 1876 to 1950 (Meyer, 1953).

In extensive epidemiological studies, ornithosis was found in 133 species of birds including psittacine birds, canaries, finches, linnets, fulmars, seagulls, pigeons, doves, pheasants, chickens, ducks, egrets and turkeys (Meyer and Eddie, 1964). In infection of birds other than psittacines, the turkey is most important and many cases of ornithosis have occurred in people handling them. Pigeons, wild and domestic, are potential sources of ornithosis and have been reported by almost every country, where studies have been made, to be widely infected (Meyer, 1959). Fortunately, they are usually infected with less virulent strains which are less likely to infect man (Andrewes, 1967).

Ornithosis is normally latent in birds but may be activated under conditions of stress. Most important among these are over-crowding during shipment abroad, rearing under unhygienic conditions and nesting, during which the host-parasite balance is upset. Under normal circumstances, birds harbouring the agent can be apparently healthy and therefore act as carriers.

ORNITHOSIS IN P. MALAYSIA

Background

In Malaysia, ornithosis is not regarded as a common cause of pyrexia of unknown origin (PUO) or respiratory infection as it is in western countries, and is therefore not routinely included as one of the infections usually investigated in PUO. Unlike countries in the west where bird rearing, mainly that of the parakeet family, is common especially among elderly women, Malaysians do not commonly make pets of birds. Even if they do, they seldom keep them constantly in close proximity with themselves and usually enclose them in cages placed outside the house or in the garden.

However, this does not preclude the existence of the infection in this country. The first recorded incidence of ornithosis in Malaysia was made by the Institute for Medical Research (IMR) in 1959. A German missionary lady-doctor, in May of that year, reported cases of fever, headache and cough in a Chinese family of seven in Grik, North Perak. She suspected that the illness might have been connected with that of several pigeons which the family was rearing, and ornithosis was considered a possibility. Blood specimens from the patients were collected for serological studies and three of

the semi-domestic pigeons were brought back to the laboratory for bleeding and attempted isolation of the ornithosis agent from their faecal droppings.

Although all the patients were found negative, all the pigeons were positive for completion fixation antibodies at titres of 1:20. However, no viruses were isolated from the faecal samples of the pigeons either by mouse (intraperitoneal) or egg embryo (yolk sac) inoculation. A follow-up of the disease in Grik indicated that it had not spread beyond the pigeon population, so no action was taken except to advise the owners of the infected pigeons to eliminate the birds as early and completely as possible.

Present Study

Interest in ornithosis was revived in 1970 when the authors of this paper agreed on a collaborative study of the disease in PUO cases in Peninsular Malaysia, B.B. doing the complement fixation tests (since the reagents were not readily available in bulk to the IMR) and DSKT collecting random paired acute and convalescent phase sera from Malaysian PUO patients for the tests.

During the process of this examination, a lady doctor (S.P.) who was acting as a volunteer medical officer for the Pure Life Orphanage-cum-School in Puchong (about 10 miles from Kuala Lumpur) was found positive. As the orphanage she frequently visited had many stray pigeons which sometimes were seen to fall ill; the pigeons, volunteer teachers, supervisors and orphans of the Orphanage were also examined.

Another study was carried out in 1972 at the Batu Caves Hindu Temple, about 7 miles from Kuala Lumpur, where a Tamil school sponsored by the Temple was situated. Here, also, were many stray pigeons attracted by the food left over by the temple devotees. In both the Pure Life Orphanage and the Batu Caves Temple, the pigeon population has been steadily increasing. However, no report of illness, respiratory or otherwise, had been received from any of the contacts.

MATERIALS AND METHODS

Sera (a) *Human*

(i) A total of 119 paired sera was collected from PUO patients throughout P. Malaysia during the acute and convalescent phases of the febrile disease.

(ii) Thirteen single serum specimens from normal human contacts of pigeons in the Pure Life Orphanage in Puchong were collected.

(b) *Pigeon*

(i) Sera were collected from 5 apparently healthy pigeons captured from the Pure Life Orphanage.

(ii) Sera from 12 healthy pigeons captured from the Batu Caves Hindu Temple were also collected.

All the sera were tested by the complement fixation (CF) test.

Faecal Samples

For virus isolation the faecal droppings from each pigeon were suspended in 10 ml. buffered saline in proportions of approximately 1:3 by volume. The suspension was shaken thoroughly using glass beads to disperse the solids, and centrifuged at 300 g for 10 minutes. The supernate was then passed through a Millipore filter (pore size: 0.42). No antibiotics were added.

About 0.05 ml. of the filtrate was instilled intranasally into groups of 6 lightly anesthetized mice, which were then observed for about 10 days. On the 10th day, the mice, healthy or otherwise were killed and their lungs examined for pneumonic foci. One blind passage was performed. Smears made from lung segments were stained with Macchiavello's stain. Demonstration of elementary bodies in the smears was the criterion of virus isolation.

RESULTS

Of 119 PUO patients investigated, only 2 (1.7%) showed significant rises in antibody titres in their paired sera. The following describes the details of the two patients:

1. In May, 1970, G.R., an Indian man of 69 years residing in Seremban (40 miles from Kuala Lumpur) complained of severe vomiting and pain in the right hypochondrium. He had a fever, jaundice and a palpable liver. No history of contact with birds was available.

The CF titres of his paired sera obtained on the 9th and 15th days of illness were 1:8 and 1:64, respectively.

2. Also in May, 1970, S.P., an Indian lady doctor, aged 40 years and residing in Kuala Lumpur, had a fever and chills, severe headache, malaise, generalised body aches and conjunctivitis. She had no respiratory or abdominal signs or symptoms.

She gave a history of indirect contact with pigeons at the Pure Life Orphanage in Puchong where she worked as a volunteer medical officer for several years.

The CF titres of her sera collected on the 1st and 14th day of illness were 1:4 and 1:64, respectively.

Of 17 pigeons captured from both the Pure Life Orphanage and the Batu Caves Temple, 10 (59.8%) were positive serologically (Table) although no viruses were isolated from their faecal samples. 40% (2/5) pigeons from the Pure Life Orphanage and 66.6% (8/12) pigeons from the Batu Caves Temple were positive. Their CF titres were 1:4 (2), 1:32 (4), 1:64 (3) and $\geq 1:256$ (1). All the human contacts from the Pure Life Orphanage were negative for antibodies.

Table
Ornithosis CF Antibodies of Pigeons and Normal People

Species	Locality	No. Examined	No. Positive	% Positive
Pigeons	Pure Life Orphanage	5	2	40.0
	Batu Caves	12	8	66.6
Total	-	17	10	59.8
Human	Pure Life Orphanage	13	0	0

DISCUSSION

Ornithosis would probably not have been brought to the attention of the IMR had the doctor who treated the pigeon owners in Grik in 1959 been a locally trained medical officer. The fact that she was German and was trained to recognize ornithosis as a possible cause of PUO was instrumental in her notifying the IMR, thus initiating studies on this disease in Malaysia.

The consistent finding of ornithosis CF antibodies in pigeons and not in any of their normal human contacts seems to indicate a low index of transmission of the infection from pigeon to man. This could be attributed to a less virulent strain excreted by pigeons and to the relative inattention Malaysians pay to pigeons even though they may occasionally feed them with left-over food.

It is noteworthy that none of the pigeons' faecal samples yielded any isolates although both egg embryos and mice were used as hosts in initial isolation attempts. Perhaps, if more than one blind passage had been carried out some isolates might have been obtained. On the other hand, excretion of the agent might have been intermittent and the isolation attempts might have been made during

the non-excreting intervals. Furthermore, the virulence of the agent might have been too low to infect the laboratory hosts effectively.

Whatever the reasons, it would seem that ornithosis in these free-flying pigeons is in latent form and will remain so provided they are not submitted to overcrowding, unhygienic conditions or other forms of stress. However, their numbers should not be allowed to increase beyond control and any ill pigeon should be treated immediately. As it is customary for Buddhist temples in Malaysia to collect hundreds of pigeons together to be released on Wesak Day annually, ornithosis could be reactivated during the period of captivity when overcrowding cannot be avoided. If this period has to be necessarily long, it would be advisable for antibiotics to be added to the feed of these pigeons during captivity.

Birds imported into Malaysia include mainly poultry (at the stage of one-day-old chicks) usually from Thailand and Singapore and occasionally from Holland and the United States. Exotic birds like the budgerigars, parrots, canaries etc. are also imported but more by the Games Department and private dealers.

A certificate of health is required from exporters of all birds into Malaysia. When they arrive at the various ports, they are inspected by a government veterinarian who has been notified by the customs officials and allowed into the country only after they have been certified healthy. Birds which fall ill while being held by bird dealers are usually treated, sometimes with antibiotics mixed with their feed.

Although under normal circumstances pigeons and exotic birds in Malaysia do not seem to pose a significant public health problem to human contacts, the fact that ornithosis do exist in Malaysia and 2 human cases have been detected warrants further studies of this infection in other species of birds especially fowls which man has much more affinity with in his daily run of life. It is hoped that with the aid of the Veterinary Department such studies can be carried out in the near future.

SUMMARY

Ornithosis in Malaysia was first discovered by the IMR in 1959 through a German missionary lady doctor in Grik, N. Perak, who notified the Institute regarding the possibility of the infection having been transmitted from several pigeons to a Chinese family, the owners of the pigeons. Labora-

tory investigations showed that none of the patients were positive for CF antibodies but all the 3 pigeons captured from Grik were, although their faecal samples did not yield any isolates.

In 1970, the authors agreed on a collaborative study of ornithosis in PUO patients in Malaysia. Of 199 studied, only 2 (1.7%) showed significant rises in CF antibody titre in their paired sera. One of them had indirect contact with pigeons at the Pure Life Orphanage-cum-school in Puchong where she worked as volunteer medical officer for several years. Blood specimens of 5 pigeons and 13 human contacts from the Orphanage were examined. Once again, only the pigeons were positive (2/5 or 40%).

Another survey was done in 1972 on pigeons alone at the Batu Caves Temple where a Tamil school was situated. 8/12 or 66.6% of the pigeons were positive.

Ornithosis, therefore, appears to be widespread in pigeons in P. Malaysia although its transmission to human contacts seems uncommon. An account of the disease is given and the implications of its presence in Malaysia, discussed. It is hoped that further epidemiology studies on other species of birds, especially fowls, can be carried out in the near future, preferably with the assistance of the Veterinary Department.

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Amoebic liver abscess a review and study in 167 cases

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THE CONCEPT that most of the cases of amoebiasis seen in the tropical countries is in the form of acute amoebic dysentery is untrue. Despite the availability of oral amoebicidal drugs and the feasibility of microscopic examination of the faecies, inadequate nutritional status, poor sanitation, coupled with a prevalence of alcoholic in-take especially illicit liquor has caused the patient with amoebic disease to come into the realms of the abdominal surgeon many a times. According to Goldberg and Steigmann, (1954) many number of cases of intestinal amoebiasis are incorrectly treated as cholelithiasis, cholecystitis, peptic ulcer, cirrhosis of the liver, appendicitis, functional diarrhoea, psychoneurotic disorders etc. Perhaps this might constitute the prime reason for the disease to pass into the hands of the surgeon from the physician.

The following is the observations in a study of 167 cases of amoebic liver abscess.

Amoebic Liver Abscess:

Before going into the study of amoebic liver abscess, the concept of Rogers (1922) of the dubious entity of "amoebic hepatitis" raises a question about its existence or not. A small group of patients with the clinical picture of amoebic liver abscess get relieved of their symptoms with a short course of amoebicidal drugs. The morphological studies of the liver conducted in these patients showed no actual necrosis but very mild changes which included anisonucleosis of the hepatocytes and accumulation of lipofuscin pigment. From these studies it appears that this group of patients should actually be categorised as suffering from "amoebic prehepatitis"

and not actually amoebic hepatitis because we feel that most of latter cases land into necrosis of the liver tissue. It is very rare for a surgeon to come across a case of amoebic prehepatitis, because in the three stages of the formation of amoebic liver abscess such as:

1. Amoebic pre-hepatitis,
2. Amoebic hepatitis and
3. Amoebic liver abscess.

the transition from stage 11 to 111 is undefinable.

Clinical Features:

The observations are based on our study in 167 cases of amoebic liver abscess.

The classical feature of amoebic liver abscess is a tender hepatomegaly with an antecedent history of diarrhoea or dysentery. But this picture even though very often met with, it is the multivarious clinical syndromes which the amoebic liver abscess manifests which puts the surgeon in a dilemma about the diagnosis.

The clinical picture presented by the liver abscess depends upon its site inside the liver (Paul 1960, Alkan et al 1961). In his study of 203 cases he was able to show the various features presented with varying position of the abscess anatomically inside the liver. (Paul, 1960).

In abscesses situated in the right lobe of the liver which are more common than the left lobe lesions, a tender hepatomegaly of the right hypochondrial

region is associated with intercostal tenderness. Features of right basal pneumonitis, are very common with this syndrome.

Abscess situated at the superior surface of the liver very often produces a silent syndrome and the patient's only complaint may be right shoulder pain. Hence in tropical countries, when a patient with acute abdomen complains of the right shoulder pain it carries a different connotation as against the western countries.

On the other hand, abscess situated at the left lobe, presents a clinical picture of an epigastric lump without producing any of the diaphragmatic irritation or pulmonary symptoms.

Similarly various syndromes have been described for liver abscess situated in various anatomical locations (Ramachandran et al 1976).

The above mentioned clinical pictures does not pose any problem to the diagnostician but it is only the unusual manifestations with which this condition manifests which require stress.

Unusual manifestation:

The first and foremost of these manifestation, is the presentation with fever of unexplained origin, where routine investigations for other specific causes have turned out to be non contributory to the diagnosis. This presentation was met with so commonly in our series (112 cases) that a strong suspicion of amoebic liver abscess should be entertained in any case of prolonged fever in the tropics. A scan is very much helpful in such cases but if it is not available, a laparotomy is mandatory. It must be stressed that during laparotomies for such conditions a careful palpation of the liver for deep abscess and needling of suspicious areas in the liver should be the essential feature. A history of chills and malaise may be concomitant.

Intra-abdominal lumps may be present and if present in the right hemiabdomen may simulate a mucocele or empyema of the gall bladder or hydro or pyonephrosis of the kidney. (Paul 1960).

Presentation with marked icterus is also not unusual. Severe jaundice may give an indication that the abscess is situated at the porta hepatitis if the jaundice is obstructive in nature or it may indicate multiple large or small abscesses (Kapoor and Joshi 1972).

Biliary peritonitis was the feature of presentation in two of our cases, one following unsuccessful needling (closed) of the liver.

Acute pancreatitis may be the manifesting feature in certain cases and even rarer syndromes of presentation have been met with in cases with situs inversus (Ansari et al 1973).

Three unusual methods of presentation was met with in recent years (Rangabshyam et al 1976).

One patient was admitted with acute dyspnoea in the medical unit and two days following admission showed signs of liver abscess and further investigations revealed that the abscess was situated at the summit of the right lobe of the liver. Similar instances causing confusion with tuberculous pericarditis have been reported before (Kapoor & Shah 1972).

Another patient was admitted with a history of hematemesis and when he was submitted for surgery for a possible bleeding peptic ulcer, it was found that the lesser curve of the stomach was adherent to the amoebic liver abscess situated at the inferior aspect of the liver and a gastrotomy revealed a communication between the liver abscess and the stomach. Most of the contents of the abscess had drained into the stomach. The communication was dissected out and the opening in the stomach was sutured. The liver abscess was drained with a malecot's catheter. The area wherein the abscess had burst open was found to have been eroded and the site was found to be the cause of the gastric bleeding.

The third patient sought hospitalisation for pain in the back and a plain X-ray of the abdomen was suggestive of subphrenic abscess. Fluoroscopy in the lateral position localised the abscess as supra hepatic and a diagnostic needling was done. Purulent material was aspirated and open drainage was instituted. During the procedure it was found that the subphrenic abscess was an amoebic abscess of the liver which had burst into the subdiaphragmatic space and got loculated with secondary infection.

A picture of paralytic ileus with toxemia is another method of presentation to be kept in mind. A syndrome of "Prerupture" presenting with acute abdomen has been described (Ramachandran and Goonatilake 1974).

A hepatic rub has also been described as a palpatory or auscultatory finding but it is very often intermittent in nature (Madanagopal, 1975).

At this context, it must be mentioned that diagnostic pitfalls in diagnosis of a case as one of liver abscess when it is not so is also met with. In our experience, a patient was referred to us because

of a failed closed aspiration by the medical unit of a provisionally diagnosed liver abscess. The patients general condition deteriorated following needling

and on the suspicion of intraabdominal bleeding, a selective hepatic and renal angiogram was performed. It was found that the hepatic arterial tree was normal and a right renal tumour blush was demonstrated in the angiographic pictures. An emergency celiotomy revealed a hypernephroma of the right kidney.

Radiographic signs

The most consistent radiographic finding was one of screening in which restriction of mobility of the right hemidiaphragm is highly indicative of the underlying lesion. The second most common finding was raised right dome of the diaphragm. Hepatomegaly could be made out in plain X-ray of the abdomen even though clinically it was not so in some cases.

Certain percentage of cases (30%) show a basal infiltration of the lungs and minimal effusion. In empyema secondary to liver abscess bursting into the pleural cavity there is vertical collection of fluid leaving the base comparatively free because of the adhesion of the lung to the diaphragm (R. Subramaniam 1968).

A picture of generalised ileus is not uncommon, The one particular instance already referred to showed signs of subphrenic abscess in the plain X-ray picture.

In the initial stage, widespread invasion of the liver occurs by the amoeba. At this stage only microscopic changes could be made out. Later the localisation of the necrosis occurs by a process of colliquative necrosis i.e. the amoeba liquefy the liver cells. Though technically it is called an abscess, it is not an area of suppuration but only an area of liquefied live tissue, the amoeba being present only at the walls. Unusually it is a solitary abscess but it can be multiple.

Biochemical changes:

No biochemical test can be defined as definitely indicative of amoebic liver abscess. Although authors like Longerbean et al have shown pronounced leucocytosis in 100% of their cases, it is not demonstrable feature in the tropics. The alkaline phosphatase level was elevated in 102 patients in our series and the Bromsulphalein retention test was positive in 35 out of the 120 cases in which it was performed. The fallibility of the liver function tests in the diagnosis of amoebic liver abscess has also been previously reported (Ramachandran et al

1972). But a consistent finding in the majority of the cases is low plasma protein value (137 out of the total) and a low haemoglobin value is also seen (98 cases below 12 gms%). SGOT AND SGPT levels were elevated in minimal percentage of patients (24 cases).

Serological tests:

Among these, Fluorescent antibody test (Agarwal et al 1971), Gel diffusion preceptin techniques (Powell 1968) and immuno electrophoretic (Savanat 1968) test have been hailed as useful but their limitations are inhibitory to routine use.

Of the two further investigative procedures which are useful in deciding the diagnosis and site of the lesion such as selective hepatic arteriogram and hepatic scan, our experience convinces us of the more usefulness of the former as a diagnostic tool.

Selective hepatic arteriogram is a useful adjunct in large tumours namely renal or hepatic as the one we had already referred to, or the ones with subacute onset wherein a hepatoma or a hydatid cyst cannot be confidently ruled out. The second use of selective hepatic arteriogram is that it is a prerequisite if the patients are to be managed only by repeated aspiration or percutaneous catheter drainage, since the experience of our series has shown that blind aspiration management of presumptive single abscess have led on to the leaving of "Cold amoebic abscess" which may exacerbate later.

Selective hepatic arteriographic pictures are not very much different from demonstrating any avascular lesion, but one diagnostic clue is that in the case of liver abscess, one is not able to demonstrate complete avascularity as seen in cyst but on the contrary, a "Marginal Blush" probably due to the granulating tissue can be made out.

Serial selective arteriographic pictures are useful in the study of the healing of the liver abscess.

When available, radioisotope scanning can be the most useful diagnostic tool (Otero 1968) but it would fail to make out lesions which are smaller than 2 cm in diameter and some times false negatives can occur. Nevertheless they have completely revolutionised the screening of the patients with liver abscess presenting only with fever of unexplained origin.

Ultrasonic scanning has also been advocated as useful to differentiate an abscess from the hepatomas (Monroe et al 1971). Echography is a less useful adjunct in the diagnosis and management.

Nature of Pus:

The nature of the so called "pus" which is contained by the liver abscess is different in nature from the purulent material obtained from pyogenic liver abscess. It is chocolate coloured, thick and characteristically defined as "anchovy sauce" in resemblance. The purulent material is only the liquefied liver tissue and the chocolate colour of the material is not due to the liver tissue because the liver tissue if it contains no blood is only white in colour. The chocolate colour of the material is only dependent upon the blood contained by it even though it is altered in nature (Paul 1960).

Management:

It is absolutely essential that the diagnosis is firmly established before consideration can be given to the type of management one can assign to the patient. The management thereafter should be considered in a semi-emergency manner.

In addition to the management of the amoebic lesion, these patients who are more often prone to other diseases such as pulmonary tuberculosis and peptic ulcer should be investigated for those conditions and concomitantly treated (Subramaniam 1968).

The three modalities of management are:-

1. Closed repeated aspiration
2. Closed percutaneous catheter drainage
3. Open drainage.

The clinician who comes across the individual case has to use his discretion in the choice of the method and might have to change over to another mode during the course of the disease, according to the nature of the progress. At the outset, it can be said, an uncomplicated, fairly localised single abscess is the ideal condition wherein the method of repeated aspiration gives its best results. Some authors defer the time of aspiration to a few days since the placement of the patient on antiamoebic therapy for a few days liquefies the aspirate and makes the matter easier. Any way the principle that at every time as far as complete removal of the aspirate to be done as possible should be adhered to, since unwise, early abandonment of aspiration after striking "pus" may lead on to continuous seepage into the peritoneal cavity and peritonism. In this series, 80 cases were managed only by repeated aspiration. It must be said that one must not be hesitant to switch over to one of the other two modalities of management when the course of healing of the abscess appears to be protracted.

Closed percutaneous catheter drainage has been a very useful method of management of amoebic liver abscess. Cases, which require repeated aspiration or cases in which open drainage is not possible for various reasons, are ideally managed by the above method. This has been a definite improvement over the method of repeated aspiration as it saves the patient the pain of repeated needling. In this series, 53 cases have been managed by percutaneous closed catheter drainage. Comparison with the healing time along with the cases treated by repeated aspiration has definitely shown that healing and resolution time is shorter with this method. The theoretical disadvantage of increased incidence of secondary infection has not been met with in our series.

The technique of open drainage has had very enthusiastic proponents. The procedure which was depreciated in 1966 by Turrill and Burnham found an ardent proponent in 1973 in Balasegaram. It has its definite place in the management when the patient is in a state of prurupture or has already ruptured into the pericardial, peritoneal, and pleural cavities or into a hollow viscus. The disadvantages claimed for open surgical drainage are that it increases the period of hospitalisation and it increases the incidence of secondary infection. But we are unable to find any supporting evidence to this contention in any of our cases which underwent open surgical drainage. We feel that excision of amoebic liver abscess is a concept not to be shuddered at the very thought of it, but a method which would be definitely useful in selected case. With refined methods of hepatic surgical techniques, it needs no longer any depreciation.

It is important to stress that all the cases should have a full blown regime of antiamoebic therapy during the local management of the liver lesions.

Multiplicity and Site of Liver Abscess

One other feature of this series is that we noticed a considerable percentage of cases wherein the abscess were more than one. In 62 patients the lesions were more than one and in fifteen of them only was it manifest in the first clinical examination. This shows the fallibility of relying too much on one clinical examination alone in managing these type of cases. Of the total number of cases, 123 patients had their abscess in the right lobe and in 44 patients in the right lobe.

Healing of liver abscess:

In order to evaluate the comparative worthiness of the various methods of management and to follow the course of the treated amoebic liver abscess, a

study was undertaken and observations compiled. The total number of cases studied was 52. In each case sigmoidoscopy and smear from the mucosa was taken and studied for amoebic and it was ensured that only uncomplicated amoebic liver abscesses were included for the study. Culture studies were done only in a few cases because of the nonavailability of facilities but any case with a positive culture report for pyogenic organisms was excluded from the study.

The cases were submitted either to repeated closed aspiration or to open drainage with a Malecot's catheter or percutaneous catheter drainage according to individual criteria of the cases and not by random sampling. As the main reason of the study was to ascertain the nature of healing of the liver abscess no measures were taken to institute random sampling techniques.

The cases were studied by either one of the following or a combination of the following techniques.

Air Cavitogram:

After aspirating as much as possible of the amoebic pus nearly 50 to 100 ml of air is injected into the cavity and pictures are taken. This manoeuvre was repeated with each aspiration.

Contrast Cavitogram:

Here either after a closed aspiration or open drainage, ultrafluid was put into the cavity and pictures are taken in the anteroposterior and lateral views.

Hepatic Arteriogram:

In few cases serial selective hepatic angiograms were taken and course of the healing of the abscess was studied.

During this period all the cases were put on Metronidazole 400mg thrice daily.

At the outset, the purely medical management of the dubious medical entity called amoebic hepatitis which verges on the abscess stage should be depreciated because in a few of the cases in which selective hepatic angiography was undertaken and who have undergone previous medical treatment for amoebic hepatitis/abscess showed the presence of few cold nodules. Even though they can be passed off as incidental tombstones of previous pathology, at times their innocence cannot be satisfactorily excluded and also they may form a diagnostic dilemma to the radiologist and the clinician.

During the serial study of these techniques it was found that there is a rapid phase of healing initially followed by a lag phase and once again a fairly continued rate of healing. This initial apparent rapid phase of healing may be just due to the falling off a scaffolding and not exactly due to the starting of the healing process.

Even though there was not a statistically significant difference in the healing of abscess treated either by the closed aspiration method or open drainage, it was found the healing was a little faster and more complete in cases which have undergone open drainage.

Summary:

A series of 167 cases of Amoebic Liver abscess are studied. The importance of a clinical awareness of amoebic liver abscess in many pyrexial conditions of acute abdomen is mentioned. A review of the management is discussed with the light of experience in 167 cases.

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Filariasis in Perlis, Peninsular Malaysia

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INTRODUCTION

PENINSULAR MALAYSIA shares a common boundary with Thailand in the North. Health problems like vector-borne diseases in one country may affect a contiguous region. This is true of diseases like malaria and filariasis. Where control or eradication programmes are being carried out, it is necessary to ensure that these are not jeopardized by conditions in a neighbouring country. The Malaria Eradication Programme in Malaysia started in 1967 (Talib, 1973) and the Filariasis Control Programme since 1961.

Filariasis is endemic in Southern Thailand (Iyengar, 1953; Harinasuta *et al.*, 1970a) but for a pilot control programme in a village in Surathani province (Harinasuta *et al.*, 1964), no organized control work is carried out.

Perlis, the smallest (about 315 square miles), northern-most State in Peninsular Malaysia has a population of 120,991 (Malaysia, 1972). It has been sprayed twice yearly with DDT at a dosage of 2 grammes per square metre since the Malaria Eradication Programme started in 1967. Since 1974, the whole State except for the two mukims bordering Thailand entered the consolidation phase. In line with normal practice there is no regular spraying except in the buffer zone adjacent to the border with Thailand (Malaysia, 1974). No organized filariasis surveys have been carried out before in the State. However, during a malaria survey in Perlis by Sandosham *et al.*, (1963), 2 out of 108 thick blood films taken in the day in Kampong Chantek and 1 out of 166 taken at night in Kampong Titi Tinggi were positive for *Brugia malayi* infections.

As part of the study to assess the importance of filariasis at the border areas, it was decided to conduct a proper night blood and entomological survey in Perlis towards the later part of 1975.

MATERIALS AND METHODS

Eight kampongs were chosen for the survey (Figure 1). Previous to this, publicity to the survey was obtained through the local Medical Officer of Health and local village leaders. The purpose and necessity of the survey were explained and in each kampong a central point was chosen where the villagers were to meet for the blood survey. Villagers and village elders were questioned about the presence of people with elephantiasis. Signs of filariasis infection like elephantiasis and lymphoedema were asked and looked for.

20 mm³ thick blood smears were taken from finger pricks after 1900 hours. Those six months old and above were examined. During the day the team travelled around to look for and take 60 mm³ thick blood smears from domestic cats.

Entomological surveys were carried out during the blood surveys at each kampong. Three days were spent in each kampong where resting and bare leg catches were carried out at the place of survey and also in some of the houses. Mosquitoes caught were identified and dissected for filarial infections. Anophelines were also dissected for evidence of malarial infections.

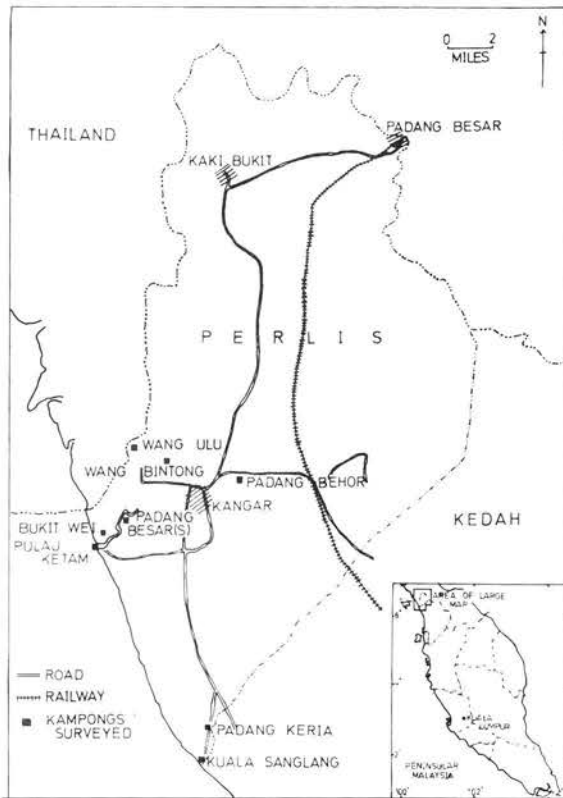


Figure 1

Location of kampongs surveyed for filariasis in Perlis, Peninsular Malaysia, 1975.

RESULTS

Parasitological Findings

A total of 858 people from 8 kampongs were examined (Table 1). Eight people were found to have periodic *Brugia malayi* microfilaremia. Of these 6 were males and 2 females. Their ages range from 17–40 years and the microfilarial count/20 mm³ thick blood smear 1 to 32 (Table 2). These positives came from 2 kampongs, Kampong Wang Ulu with a microfilarial rate of 9.7% (7 out of 72) and Kampong Kuala Sanglang with a rate of 0.7% (1 out of 148).

In addition, 61 domestic cats from these kampongs were examined and found to be negative for microfilaraemia.

All blood films taken were negative for malaria parasites (100 fields examined in each smear at oil immersion magnification).

Clinical filariasis

A 50 year old woman in Kampong Repoh, Kangar was found to have elephantiasis below the knee in the right leg. Another 60 year old man from Kampong Padang Behor also had elephantiasis below the knee in the right leg. As far as could be determined both patients had stayed in their respective kampongs since birth and had not been travelling around. Both had elephantiasis for more than 15 years. Both patients were amicrofilaraemic.

Entomological Surveys

Entomological surveys were carried out at the same time as the blood surveys at all the 8 kampongs. In all, 1,348 specimens were collected, made up of 10 species of anophelines and at least 19 species of culicines (Table 3). Of these, 1,161 were dissected and examined for infections. Anophelines were also dissected for malaria infections as numerous anophelines were collected from both Kampong Wang Ulu and Kampong Wang Besar. The parous rate of 34.8% was very low at the time of the survey, the majority of the mosquitoes being very young and therefore unlikely to have any infection. No filarial or malarial infections were seen in the mosquitoes.

DISCUSSION

Reports of filariasis cases have been very few from Perlis and no previous organized survey for the infection have been carried out there. In contrast, *B. malayi* infection is known to be endemic in Kedah and also in Southern Thailand. During surveys for malaria by the Institute for Medical Research, Kuala Lumpur, 1963, *B. malayi* infections were seen in Kampong Cantek and Kampong Titi Tinggi (Sandoşham *et al.*, 1963). Since then no further survey has been carried out and thus the position of filariasis in the State had to be evaluated. The present survey carried out in 1975 nine years after the Malaria Eradication Programme started in Perlis has shown some interesting results.

The night blood survey among 858 people in the eight kampongs showed that although filariasis is still present in Perlis, it is at a very low level. Only two kampongs were found to have microfilaraemic patients, these being Kampong Wang Ulu with a microfilarial rate of 9.7% and Kampong Kuala Sanglang with a rate of 0.7%. The overall microfilarial rate was 0.9% (8 out of 858). The infections were due to periodic *B. malayi*. This was expected as the terrain where the kampongs were situated was typically flat rice-fields with some open swamps. The absence of any infection in 61 domestic cats from these kampongs is to be expected in this form of *B. malayi* infection.

Table 1
Results of *Brugia malayi* infections seen in 20 mm³ peripheral thick blood smears taken at 1900 hours in Perlis, 1975

Age group (years)	Number of Persons Examined					
	Males		Females		Total	
	Positive	Negative	Positive	Negative	Positive	Negative
0 - 4	0	19	0	20	0	39
5 - 9	0	66	0	70	0	136
10 - 14	0	120	0	98	0	218
15 - 19	1	50	0	45	1	95
20 - 24	0	32	1	28	1	60
25 - 29	1	25	0	20	1	45
30 - 34	1	26	0	27	1	53
35 - 39	0	27	0	17	0	44
40 - 44	3	22	1	24	4	46
45 - 49	0	19	0	16	0	35
50 - 54	0	11	0	19	0	30
55 - 59	0	10	0	5	0	15
60 - 64	0	6	0	11	0	17
> 65	0	10	0	7	0	17
Total	6	443	2	407	8	850

Table 2
Details of microfilarial carriers of periodic *Brugia malayi* detected in 20 mm³ nocturnal, peripheral, thick blood smear examination in Perlis, 1975

Name	Age (years)	Sex	Kampong	Microfilarial count/ 20 mm. ³ blood
M.M.	27	Male	K. Sanglang	2
A.J.A.	30	Male	Wang Ulu	1
S.B.	40	Male	Wang Ulu	12
M.H.	40	Female	Wang Ulu	21
I.D.	40	Male	Wang Ulu	1
M.A.	17	Male	Wang Ulu	32
B.I.	40	Male	Wang Ulu	5
C.S.	20	Female	Wang Ulu	2

Table 3

Mosquitoes caught in 11 nights during blood survey (resting and bare leg catches) and dissected for filarial and malarial infections, in Perlis, 1975

Mosquito species	Caught	Dissected	Parous
<i>Anopheles (Anopheles) argyropus</i>	52	48	7
<i>campestris</i>	6	5	2
<i>(indiensis) nitidus</i>	22	21	2
<i>nigerrimus</i>	140	121	26
<i>peditaeniatus</i>	99	86	12
<i>sinensis</i>	51	46	10
<i>A. (Celia) aconitus</i>	3	3	0
<i>philippinensis</i>	1	0	0
<i>subpictus</i>	5	4	1
<i>vagus</i>	4	2	1
<i>Culex annulus</i>	30	24	11
<i>binaeniorhynchus</i>	17	17	5
<i>fatigans</i>	24	23	2
<i>gelidus</i>	92	67	29
<i>nigropunctatus</i>	3	1	1
<i>pseudovishnui</i>	25	20	4
<i>sinensis</i>	4	4	1
<i>sitiens</i>	5	5	0
<i>tritaeniorhynchus</i>	113	109	50
<i>C. (Lophoceromyia) sp.</i>	2	0	0
<i>Aedes albopictus</i>	2	2	1
<i>aegypti</i>	4	4	4
<i>amesii/fumidus</i>	5	4	2
<i>Mansonia annulifera</i>	22	9	5
<i>indiana</i>	50	12	6
<i>uniformis</i>	559	522	220
<i>Armigeres subalbatus</i>	1	0	—
<i>Falcaria luzonensis</i>	4	1	1
sp.	3	1	1
Total	1,348	1,161	404

Only 2 cases of elephantiasis were seen and in both patients they were below the knee at the right side. Both were in old patients and had the infection for more than 15 years. The youngest microfilaraemic patient was 17 years old and the absence of the microfilaraemia in the 275 children below 10 years is encouraging (Table 1). In our inquiries among the villagers and through our observations it is also noted that elephantiasis have not been seen in the younger people.

It is interesting to note that entomological studies showed anophelines common in rice fields were still abundant in most areas except for *Anopheles campestris*, the typical house feeder and vector for both malaria and periodic *B. malayi* (Reid *et al.*, 1962). Only 6 out of 1,348 (0.4%) of the mosquitoes caught were *A. campestris*. *A. campestris* is probably the most endophagic and anthropophilic of all the Malayan anophelines. It is also endophilic and in a malaria eradication pilot project using residual spraying with DDT at a dosage of 2 grammes technical per square metre at 6 monthly intervals, Moorhouse and Chooi (1964) found *A. campestris* rapidly disappearing from the pilot area. The diminishing numbers of this mosquito in Perlis is therefore probably an effect of the Malaria Eradication Programme.

Mansonia mosquitoes accounted for 631 out of 1,348 (46.8%) and *M. uniformis* alone 559 out of 1,348 (41.5%) of all mosquitoes caught. 88.6% (559 out of 631) of *Mansonia* mosquitoes caught were *M. uniformis*. *M. annulifera* and *M. indiana* were also caught but in very few numbers these being 22 and 50 respectively. These three *Mansonia* mosquitoes together with *A. campestris* have been implicated as vectors of periodic *B. malayi*, with the latter being the more efficient (Reid *et al.*, 1962). The relative abundance of *Mansonia* mosquitoes present even after 9 years of residual DDT spraying at 6 monthly cycles is similar to the findings of Wharton *et al.*, (1958) who found that spraying with dieldrin at a dosage of 100 mgm per square foot twice yearly over 2 years had no apparent effect on the numbers of *M. dives/bonneae* caught blood fed in sprayed houses, nor the number of mosquitoes coming to bite man out of doors in the evening. In contrast Iynegar (1953) found that indoor spraying with DDT at a dosage of 1.8 grammes per square metre effectively reduced not only anophelines but also the various species of *Mansonia* 21 days post-spraying. He also showed that the infection rate among vectors dropped from 7.6% during the pre-spraying to 0% three weeks after spraying. Reid and Laing (1959) reported no significant reduction in infection rates among the human population attributable to 5 years of residual spraying with dieldrin at a heavy dosage

of 100 mgm per square foot twice yearly. In our present study none of the 1,161 mosquitoes dissected showed any filarial infection. None of the 336 anophelines dissected had malarial infection.

The present as well as previous parasitological and entomological studies have shown that filariasis due to periodic *B. malayi* is present in Perlis. However, as the youngest microfilaraemic patient is 17 years old and as elephantiasis is present only in two persons who have had the infection for at least 15 years, we can postulate that active transmission is probably not occurring to any appreciable extent. This we believe, is due to the drastic reduction of *A. campestris* by the indoor spraying with DDT under the Malaria Eradication Programme in Perlis since 1967. Villagers are of the opinion that there has been a reduction in the number of nuisance mosquitoes since then. Notified cases of malaria have also dropped from 516 in 1964 and 611 in 1965 to 98, 82 and 40 in 1970, 1971 and 1972 respectively (Martinez, 1966; Talib, 1973). Although *Mansonia* mosquitoes are still present in appreciable numbers, they are probably not as important as *A. campestris* in the transmission of periodic *B. malayi*. Harinasuta *et al.*, (1970b) in a six year filariasis pilot control programme in Southern Thailand found *M. uniformis* to have some endophilic characters and DDT spraying resulted in significant decrease in the numbers of mosquitoes caught. Transmission of the disease was also thought to be reduced by the spraying. In Perlis the indoor spraying with DDT under the Malaria Eradication Programme since 1967 has a beneficial effect on filariasis control and we believe that transmission is very much reduced due to a reduction in *A. campestris* which is the more important vector of periodic *B. malayi* even though *Mansonia* sp. is still abundant.

In Kampong Wang Ulu where the microfilarial rate was 9.7%, of the 181 mosquitoes caught, 50 (27.1%) were *M. uniformis* and 1 (0.6%) *A. campestris*. It is therefore possible that transmission can take place there and mass chemotherapy with diethylcarbamazine citrate should be given.

SUMMARY

A combined parasitological and entomological survey for filariasis was carried out in Perlis in 1975. A total of 858 people and 61 cats from 8 kampongs were examined. Kampong Wang Ulu was found to have a periodic *B. malayi* infection of 9.7% (7 out of 72) and Kampong Kuala Sanglang a rate of 0.7% (1 out of 148). None of the cats was infected. Two cases of elephantiasis of the lower limbs were seen. A total of 1,348 mosquitoes were caught of which only 6 (0.4%) were *A. campestris* and 631

(46.8%) *Mansonia* sp. None of the mosquitoes were infected with filarial parasites. Transmission of filariasis has probably been reduced to a very low level due to the reduction of *A. campestris* through the spraying of DDT since 1967 under the Malaria Eradication Programme. This can be seen by the fact that the youngest microfilaraemic patient was 17 years old and no clinical cases seen in the younger population.

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Indirect fluorescent antibody tests for *Plasmodium falciparum* infections

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INTRODUCTION

SEROLOGICAL TESTS have been used as an aid for diagnosis of many parasitic diseases in recent years. These tests have also been increasingly used for the detection of parasitic infections and in sero-epidemiological studies especially in infections with malaria. Among the various test methods used for malaria, the Indirect Fluorescent Antibody (IFA) test has been the most investigated test and one of the most reliable and reproducible tests (Wilson *et al.*, 1971; 1975; Collins & Skinner, 1972). Recently, Wilson *et al.* (1975) have described the IFA test as the preferred test throughout the world for obtaining serological evidence of malarial infection.

In the present work, IFA tests were performed on serum samples collected from 3 groups of donors. A single stained thick and thin-film made concurrently with the collection of blood, was examined. Agreement between microscopic diagnosis and IFA titres in these samples was studied. The value of IFA tests in the diagnosis of *P. falciparum* infection and in the sero-epidemiological studies were discussed. The degree of cross-reactivity to heterologous antigens was also estimated using *P. vivax* and *P. brasilianum* (for *P. malariae*) antigens.

MATERIALS AND METHODS

Serum samples

A total of 289 sera were tested. Sera were collected from 3 groups of donors. Group I consisted of 98 patients (Malays, Chinese and Indians) who presented themselves to various clinics in West Malaysia with slide-positive *P. falciparum* infection

for treatment. Blood was taken before the treatment was administered. Group II included Orang Asli adults who lived all their lives in endemic areas but who at the time of blood collection showed no patent parasitaemia. Group III comprised of 95 medical students who have never had any history of malaria.

Five to ten ml of blood was withdrawn for the tests. Serum was separated and stored frozen at -20°C . A parasite survey was done by examining a single, stained thick and thin film made concurrently with the collection of blood for sera. Every serum sample was titrated in parallel tests with washed-cell thick-smear antigens of *P. falciparum*, *P. vivax* (whenever available) and *P. brasilianum* (for *P. malariae*).

Antigens

P. falciparum antigen slides were prepared in Malaysia from *in vitro* cultures using the techniques already described by Thomas and Ponnampalam (1975). The *in vitro* culture techniques used were those of Rieckmann *et al* (1968). *P. vivax* and *P. brasilianum* washed-cell thick-smear antigen slides were supplied by the kind courtesy of Dr. A. J. Sulzer, Center for Disease Control, Atlanta, USA. All antigen slides were stored frozen at -70°C .

P. brasilianum antigen has been shown (Collins *et al*, 1966) to give a high FA response in patients infected with *P. malariae*. Butler *et al* (1973) considered this simian species antigenically identical to *P. malariae*. In this study, *P. brasilianum* antigen is considered antigenically similar to *P. malariae*.

Conjugate

Anti-human-gamma-globulin (rabbit) conjugated with fluorescein-isothiocyanate was prepared at the Center for Disease Control. Measured amounts of 0.02 ml each of the conjugate were stored frozen at -70°C in individual vials until required.

Performance of the tests

The test methods were those described by Sulzer *et al* (1969). The antigen slides were removed from storage, placed in staining racks until they had reached room temperature, and washed for 10 minutes in distilled water on a slowly moving slide rotator. The slides, were then removed from the bath and allowed to dry. After drying these slides were labelled. The serum samples to be tested were diluted with phosphate-buffered saline (PBS) PH 7.6 in 4-fold steps, starting at a dilution of 1:4. A measured quantity of 0.05 ml of each dilution was dispensed on a labelled antigen mount. The antigen slides with various dilutions of antisera were placed in a moist chamber, covered and incubated at 37°C for 30 minutes.

After incubation, the excess serum was removed from each slide with a gentle stream of the phosphate buffered saline. The slides were placed in a staining rack in saline on a slowly moving slide rotator for 15 minutes. They were then dried. Required amount of the conjugate was removed from the

freezer and diluted and 0.05 ml of a 1:200 dilution of the anti-human-gamma-globulin conjugate containing Evans blue counter-stain was distributed over every antigen mount. The slides were covered and incubated again at 37°C for 30 minutes in a moist chamber. The excess conjugate was removed by a gentle stream of PBS.

The slides were dried and a drop of buffered glycerol of pH 9 was placed on each mount and covered with a coverslip. After mounting in the buffered glycerol, labels on all test slides were covered. The slides were then randomised and coded to eliminate all possible prejudice during reading. A positive control serum, a negative control serum and a PBS control were included in each day's test.

The slides were read on a Leitz Ortholux fluorescent microscope using BG 12 and UG 1 exciter filters and a Leitz 470 ocular filter. In this series of tests, only those sera which showed reactions at a titer of 1:64 or at higher dilutions were considered positive.

RESULTS

Table I summarises the results of tests with three species of *Plasmodium* antigens on the serum samples from 3 groups of donors.

Table 1

IFA Titres for Sera From 3 Groups of Donors With *P. Falciparum*, *P. Vivax* and *P. Brasilianum* Antigens

Group	Antigen	No. of sera tested	No. and percent of sera with end point titres of				Total No Positive	Percent Positive
			Negative	1:64	1:256	1:1024		
I. Donors with slide positive <i>P. falciparum</i> infections	<i>P. falciparum</i>	98	2 (2%)	35 (35.7%)	38 (38.7%)	17 (17.3%)	6 (6.1%)	96 98%
	<i>P. vivax</i>	98	58 (59.2%)	27 (27.6%)	12 (12.2%)	1 (1%)	—	40 40.8%
	<i>P. brasilianum</i>	98	65 (66.3%)	32 (32.7%)	1 (1%)	—	—	33 33.7%
II. Slide negative donors from endemic area	<i>P. falciparum</i>	96	10 (10.4%)	29 (30.2%)	36 (37.5%)	20 (20.8%)	1 (1%)	86 89.6%
	<i>P. brasilianum</i>	96	38 (39.6%)	45 (46.9%)	11 (11.4%)	2 (2.1%)	—	58 60.4%
III. Known negative donors - (Control)	<i>P. falciparum</i>	95	95 (100%)	—	—	—	—	—
	<i>P. vivax</i>	95	95 (100%)	—	—	—	—	—
	<i>P. brasilianum</i>	95	95 (100%)	—	—	—	—	—

Out of a total of 98 serum samples from Group I, two samples (2.0%) showed negative reaction. These sera did not react with *P. vivax* or with *P. brasilianum* antigens. The remaining 96 serum samples (98.0%) reacted with the homologous antigens at various dilutions from 1:64 to 1:4096. The number and percentage of sera that reacted with *P. falciparum* antigen is given in the table. The detection rate of known *P. falciparum* infections with the homologous antigen was 98%.

None of the stained blood films from this group showed mixed infection with *P. vivax* or *P. malariae*. However, there was a high rate of cross-reaction with *P. vivax* and *P. brasilianum* antigens. Forty serum samples (40.8%) showed positive reaction with *P. vivax* and 33 samples (33.7%) showed positive reaction with *P. brasilianum* antigens. Of these, 13 sera (13.3%) reacted with all antigens and 27 serum samples (27.6%) with *P. falciparum* and *P. vivax*. Similarly, 20 sera (20.4%) reacted with *P. falciparum* and *P. brasilianum*. Only 36 sera showed a specific positive reaction with homologous *P. falciparum* antigen alone. Among those sera which cross-reacted with the heterologous antigens, none showed higher titres with those antigens, although 8 samples reacted at the same titre levels with the homologous antigen and with *P. vivax* antigen. The remaining 88 sera reacted at higher titres with the homologous antigen. Thus using at least a four-fold greater titres as the minimum difference between the titres obtained with the homologous and the heterologous antigens, it was possible to differentiate correctly about 89.8% of the infections to species.

When sera from Group II were tested, 86 samples (89.6%) showed reactivity with *P. falciparum* antigen and 58 (60.4%) samples with *P. brasilianum* antigen (Table 1). *P. vivax* antigen was not available. Unlike those sera from Group I, two samples (2%) from this group reacted with only *P. brasilianum* antigen; and one sample gave higher titres with this antigen. Two other samples gave the same titres with both *P. brasilianum* and *P. falciparum* antigens.

None of the 95 control sera collected from medical students who were never exposed to malaria, reacted with any of the antigens tested (Table 1).

DISCUSSION

Plasmodium falciparum antibodies were detected in about 98% of the samples collected from slide-positive patients. Cross-reactions with *P. vivax*

and *P. brasilianum* antigens were also detected in many sera. Similar incomplete cross-reactivity to heterologous antigens in *Plasmodium falciparum* infections has been demonstrated in earlier studies (Diggs & Sadun, 1965; Gleason, *et al* 1971). Sixty-two serum samples cross-reacted with heterologous antigens. Due to this phenomenon of cross-reactivity, only 37.5% of the infections were diagnosed with certainty to *P. falciparum* species. However, if a minimum of a 4-fold difference in end-point titre levels between homologous (higher) and heterologous antigens is considered as the criterion for identification of species, about (89.8%) of active *P. falciparum* infections were correctly identified. Comparable results were reported earlier by Gleason *et al* (1971).

In a small proportion of cases, the titre levels of heterologous antigens were the same as with homologous antigens. Similar results were obtained in earlier studies by Diggs & Sadun (1965) and Gleason *et al* (1971) who have contributed this phenomenon to the residual effects of previous attacks by these species. Since many of these patients under present study came from areas where all three species are present, a previous infection probably with *P. vivax* or even with *P. malariae* species was possible.

Although malarial parasites were absent in thin blood films, 89.6% of the donors in group 2 from an hyperendemic group (Thomas & Dissanaik, 1977) had significant levels of antibodies to *P. falciparum* and 60.4% to *P. malariae*. Most of the sera, showed stronger reaction with *P. falciparum* antigen. This indicated that the predominant species among Orang Asli donors was *P. falciparum* which showed cross-reactivity with *P. brasilianum* antigens. However, a small number of those sera showed the same or higher degree of reactivity with the latter, indicating a small foci of *P. malariae* infection among Orang Asli as reported earlier by Sandosham (1965).

None of the sera from known negative donors showed reactivity or "false positive" reactions with any of the antigens tested. This showed the specificity of *Plasmodium* antigens and the reliability of the IFA tests.

The IFA technique seems to be very useful in detecting malarial antibodies, not only in slide-positive current malaria infections, but also in sera from donors who have had past infections. However, it should be emphasised that it was not possible to differentiate a past infection from a current infection. Neither was it possible, in most cases, to identify the species with certainty. Therefore IFA test is not a very efficient technique in diagnosing

individual cases of slide-positive malaria. For this purpose, microscopical examination is still the method of choice. However, the IFA technique seems to be a very useful aid in estimating the malaria experience of a population and the type of endemicity especially when the parasites are present at very low-levels. The value of IFA in the study of malarial endemicity rates, including species prevalence, has already been shown by Bruce-Chwatt, *et al*, 1972; WHO, 1974 & 1975. These tests were shown (WHO, 1974) to be of immense value to exclude malaria in patients with symptoms such as pyrexia of unknown origin, hepato-splenomegaly, anaemia and other syndrome.

Thus the IFA technique is a very useful tool in detecting malaria antibodies and malaria infection. However, those who use this technique must be aware of the inherent limitations of these tests which have already been discussed above.

SUMMARY

Sera from 289 donors were tested with *P. falciparum*, *P. vivax* and *P. brasilianum* (for *P. malariae*) antigens. Thick and thin blood-films which were made concurrently with collection of blood for sera were also examined. The donors included 98 patients with slide-positive *falciparum* infection and 96 Orang Asli adults who lived in endemic areas, but who at the time of serum collection, showed no parasitaemia. Sera from 95 medical students who had never been exposed to malaria were also tested as negative control. Results were tabulated and conclusions made. Detection rate was high, but there was high rate of cross-reactions with heterologous antigens and therefore identification of species was not easy. False negative rate was about 2% only among known positive sera. The sera from group two were also reactive with both the antigens. None of the serum from the negative control group however, gave positive reactions. The value of IFA technique for malaria has been discussed.

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Nasopharyngeal Chordoma

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NASOPHARYNGEAL CHORDOMA is a rare but distinct entity. The terms *ecchondrosis sphenoccipitalis*, *ecchondrosis physalifora* and *chordopithelioma* are synonymous.

The purpose of this paper is to present a case with uncommon clinical features and discuss this condition and consider the differential diagnosis.

Case Report

S.H., an eight-year-old Malay female, complained of progressive nasal obstruction worse on the left side for six months. The nasal obstruction had got more severe in the last month. She also complained of mucopurulent nasal discharge which was stained with blood when she blew her nose hard. There was anosmia in the left nasal cavity. There was no history of headache, diplopia or loss of weight. The past and family histories were non-contributory and her general examination and routine laboratory investigations did not reveal any abnormality.

Clinical examination revealed that the nose was expanded with splaying of the nasal bridge. There was also obliteration of the left naso-labial furrow (Fig. 1). Anterior rhinoscopy showed that the cartilaginous part of the nasal septum was pushed to the right side. Mucopurulent discharge was seen in the floor of the left nasal cavity. There was an irregular mass completely filling the left nasal cavity. This mass was greyish-red in colour and bled easily on manipulation and did not shrink when sprayed with 10% cocaine solution. The right nasal cavity was narrowed. Examination of the post nasal space showed that there was a mass filling the left posterior choana and protruding slightly into the nasopharynx.



Fig. 1
Front view of patient showing splaying of the nasal bridge and obliteration of the left naso-labial furrow.

A smaller mass of adenoids was seen in the nasopharynx. Examination of the ears, throat and neck were normal. There was no sign of intracranial extension and eye signs were conspicuous by their absence.

Radiological examination showed a large soft-tissue mass in the nasal cavity with destruction of the nasal septum, lateral wall and floor of the nasal cavity consistent with a space-occupying destructive lesion on the left side. The mass was seen to extend forward from the posterior choana. Another soft-tissue mass was seen in the post nasal space consistent with enlarged adenoids. The left maxillary sinus was uniformly opaque (Figs. 2, 3 & 4).

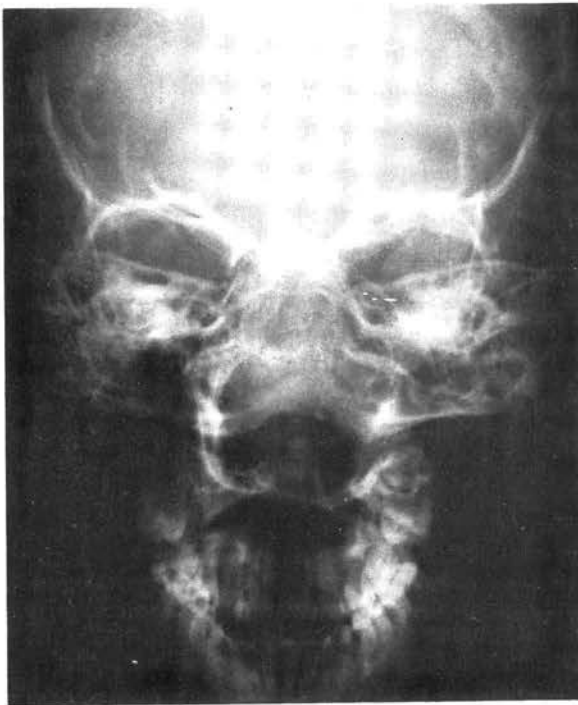


Fig. 2
Showing destruction of the Nasal Septum.

In view of the fact that the lesion tended to bleed easily, the patient was given a general anaesthetic and the pharynx was packed. An intravenous drip was started. The lesion in the left nasal cavity was soft and bled easily. The lesion appeared to be arising from the posterior part of the roof of the left nasal cavity and protruding through the left posterior choana. A portion was removed for histopathology. The portion that was removed appeared like jelly and felt gritty in parts. A BIPP pack was put in the left nasal cavity to arrest haemorrhage.

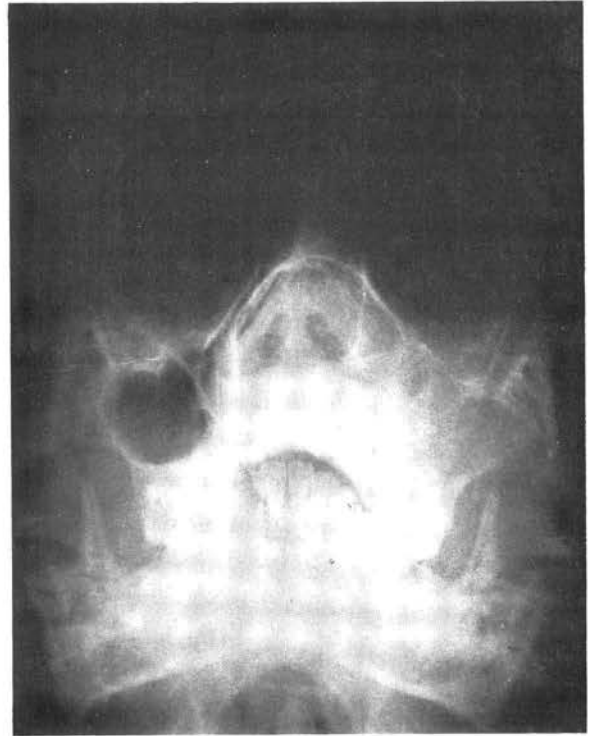


Fig. 3
Showing expansion of nasal cavity together with destruction of lateral wall of Maxillary Sinus. The left antrum is opaque due to secondary sinusitis.

Histopathological report (Figs. 5, 6 & 7).

The specimen consists of small fragments of soft gelatinous tissue and bone fragments. Microscopically, the tumour was composed of myxoid and mucoid stroma in which spindle-shaped and stellate cells were present. Also seen were several "physaliphorous cells", that is, large cells with vacuolated, bubble-like cytoplasm. There was also evidence of bone invasion by the tumour. The appearances are consistent with a chordoma.

The patient refused any form of treatment and went home.

Discussion

A chordoma is a tumour developing from embryonic remains of notochord. Hence, these tumours may arise anywhere along the axis of the notochord. Occasionally, fragments of the notochord become isolated, then chordomas may be found in unusual positions such as the alveolar process of the mandible, the maxilla, tonsillar region and superior portion of the occipital bone (Hass, 1934).

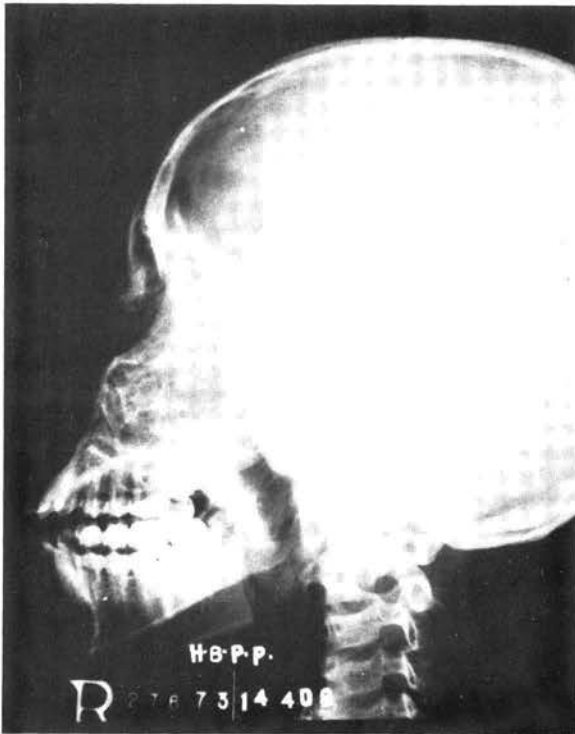


Fig. 4
Showing the chordoma in the nasal cavity and posterior choana. Also seen is a mass of adenoids.

Chordomas are usually more common in the sacro-coccygeal region than the cranial region and are three times more common in men than women. The incidence is less than one per cent of all central nervous system tumours (Poppen and King, 1952). The tumours are soft mucinous, slow growing but infiltrative and malignant. They are often large at the time of diagnosis. The histological picture is of an epithelioid or sarcomatous general architecture with a characteristic large vacuolated physaliferous cell containing an abundance of glycogen (Anderson, 1966). Local recurrence after surgical removal of this tumour is common. The tumour rarely metastasizes to lymph glands, liver, lungs, thyroid and skin.

The clinical picture of Cranial Chordomas depends largely on the direction in which the growth extends. Focal symptoms of the central nervous system owing to involvement of structures at the base of the brain are the usual presenting symptoms. In these cases, headache is a common symptom. The cranial nerves are commonly involved. The tumour may bulge into the cerebello-pontine angle and produce facial paralysis, unsteadiness, sensori-neural deafness and loss of corneal reflex with numbness of face on the corresponding side.

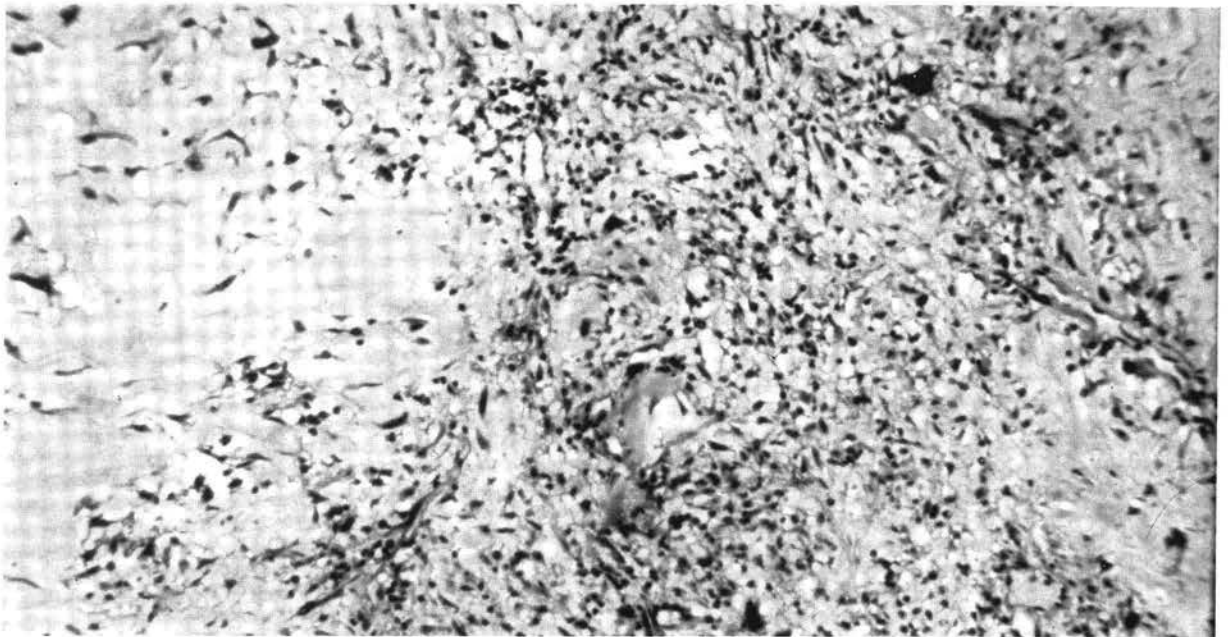


Fig. 5 Photomicrograph

Nasopharyngeal Chordoma ($\times 100$) – General appearance of the tumour showing many stellate cells and some physaliphorous cells interspersed within a myxoid stroma.

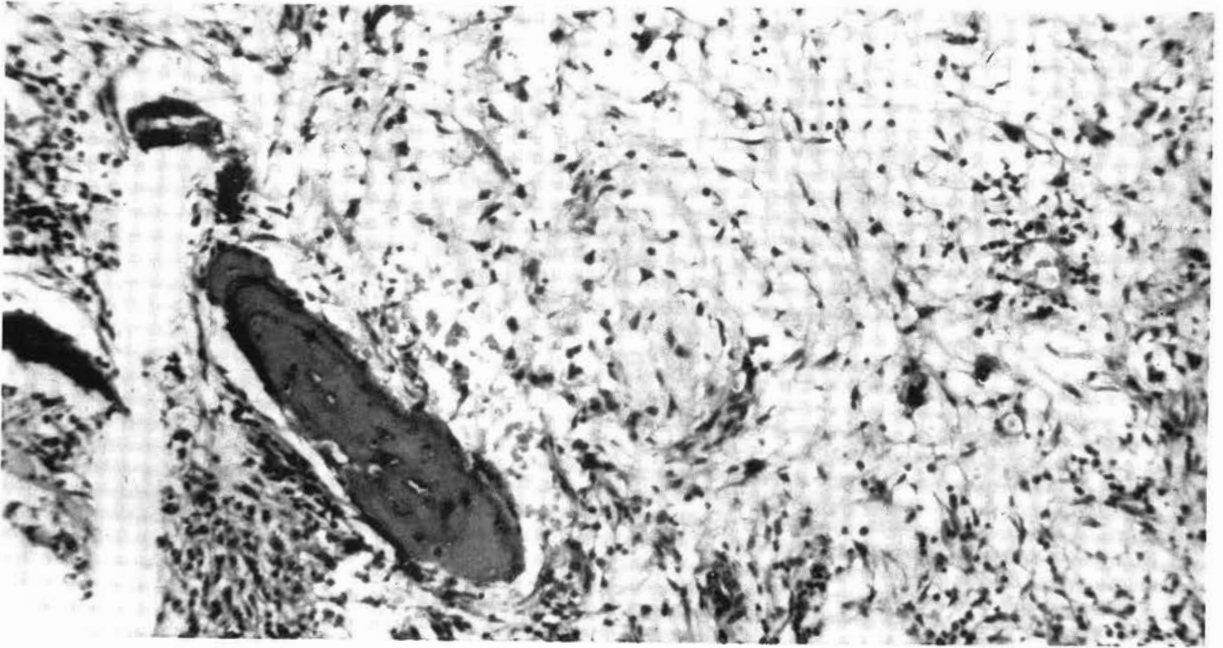


Fig. 6 Photomicrograph
Nasopharyngeal Chordoma ($\times 100$) - showing an area in which there is invasion of bone.

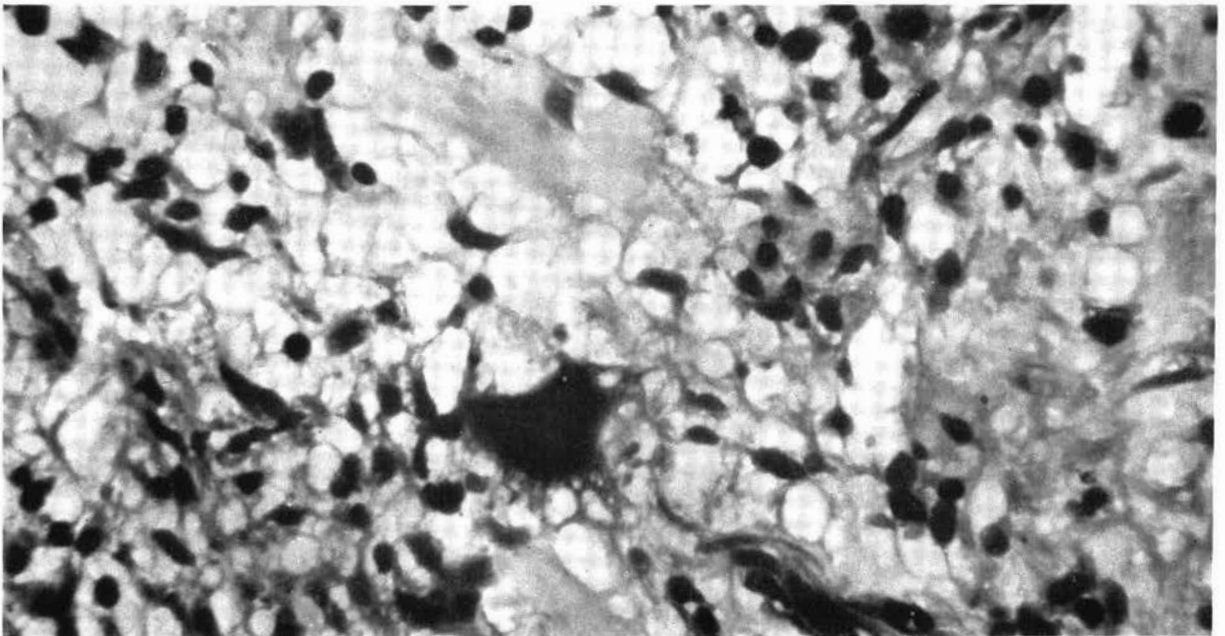


Fig. 7 Photomicrograph
Nasopharyngeal Chordoma ($\times 400$) - showing physaliphorous cells with their characteristic vacuolated ("bubble-like") cytoplasm.

Visual symptoms are very common. In a comprehensive review of the literature on chordomas, GIVNER (1945) stressed the ophthalmological findings. There may be visual impairment and episodic diplopia. The lateral rectus muscle is frequently paralysed due to involvement of the abducent nerve. Less commonly, the oculomotor nerve is involved with corresponding paralysis of the muscles supplied by it. Visual field defects occur and there may be papilloedema.

Involvement of the pituitary gland is uncommon and evidence of pituitary insufficiency is unusual and usually confined to females.

The tumour may grow into the nasopharynx. In these cases, there will be nasal obstruction. Infection is common and mucopurulent discharge which may be tinged with blood may occur. The infection may spread to the sinuses.

The orifices of the eustachian tubes may be obstructed and the patient may complain of tinnitus and deafness. The tympanic membrane is retracted and dull and its mobility is sluggish. Occasionally, a fluid level may be seen. The type of deafness in these cases is conductive.

Radiological study is helpful in the diagnosis of nasopharyngeal chordomas. Almost invariably, there is evidence of erosion of bone. When intracranial signs are present, ventriculography may be helpful. The final diagnosis is made on histology.

The case presented here is distinct because of the uncommon clinical features. The symptoms and signs were confined to the nose and nasopharynx. The patient is much younger than most of the patients reported. Only one other case below the age of ten has been reported in the literature.

In the differential diagnosis, the nasopharyngeal chordoma should be distinguished from juvenile angiofibroma and nasopharyngeal carcinoma.

Juvenile angiofibroma occurs in the younger age group and has a lobulated appearance with fine vessels coursing over its surface. It is firm in consistency. There is greater tendency to repeated severe epistaxis in juvenile angiofibroma. A carotid angiogram shows a dilated maxillary artery with the characteristic flush in the tumour. Bone erosion is very rare in juvenile angiofibroma.

Although progression of symptoms may be identical with that of nasopharyngeal carcinoma, lymphatic metastases are early and common in nasopharyngeal carcinoma but rare in nasopharyngeal chordoma.

The treatment of nasopharyngeal chordoma has been discouraging. The location of the neoplasm makes complete surgical extirpation a virtual impossibility. Irradiation appears to have beneficial effects in some cases.

Summary

A case of nasopharyngeal chordoma with uncommon clinical features in a young girl of eight years is reported. The condition is discussed and the differential diagnosis is considered.

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The treatment of intractable pain in hospitals (pain clinics), in private practice*

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Introduction

PAIN is one of the most common symptoms which warns the body that something is amiss. It is one of the first sensations the human body learns to recognise – it is a basic human feeling. The paradox of pain is that everyone knows what pain is but it defies definition. Definitions are usually vague and variable because pain is mainly a subjective feeling.

Sherrington (1906) attempted a definition: "Pain is a psychical adjunct to an imperative protective reflex." Dorland's Illustrated Medical Dictionary defines pain as "a more or less localized sensation of discomfort, distress or agony resulting from the stimulation of specialized nerve-endings". Beecher (1956) referred to the "perception" and "processing" components of pain experience which relate to the neural and psychic elements of pain: the "perception" component results in awareness of pain while the "processing" element evaluates its significance to the individual. Chapman (1975) describes pain as "a gestalt or pattern of experience in which sensory information is judged both qualitatively and quantitatively by the perceiver with regard to the environment in which it occurs, its purpose, its novelty and its physical consequences. The classic descriptive definition of pain was given by a Medical student, on being asked to describe pain – "Pain is painful!"

Intractable pain is an entity by itself because of its causes, nature and management. Intractable

pain can be defined as pain which is unmanageable or uncontrollable using the usual analgesics in their usual dosages or despite previous surgical intervention for the causative pathology; the pain experienced is longstanding and the disease process chronic, incurable or inoperable.

The common causes of intractable pain can be listed (Swerdlow M., 1967) as shown in Table 1.

Table 1: Common causes of Intractable Pain

1. Cancer giving rise to intractable pain
2. Post herpetic neuralgias
3. Post traumatic neuralgias
(including painful post surgical scars, phantom limb, painful post amputation stumps).
4. Trigeminal neuralgia
5. Intermittent claudication.
6. Osteoarthritis (nerve root trapped by arthritic process)
7. Causalgia
8. Coccidynia
9. Paget's Disease
10. Angina
11. Undiagnosed intractable pain.

The management of patients with intractable pain can be considered under two situations.

1. Management in a hospital with facilities – Pain Clinics.

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II. Management without hospital facilities e.g. in private practice.

I. Management of a Patient with Intractable Pain in a Hospital Pain Clinics

A Pain Clinic is an organised unit, usually within a hospital, to which patients with intractable pain are referred for symptomatic relief. It is not a diagnostic clinic (patients should be diagnosed before referral); its aim is to relieve patients of their prolonged painful suffering plus maintaining their mental morale. Ideally a Pain Clinic should be run by a team of consultants such as a Radiotherapist, a Neurologist, a Psychiatrist and/or a Psychologist, a Neurosurgeon and an Anaesthesiologist. (Wylie, Churchill-Davidson, 1972). The Pain Clinic also provides ideal opportunities for conducting clinical trials on analgesic regimes and facilities to demonstrate and teach medical students and/or trainee-doctors various regional nerve block procedures.

The basic function of an anaesthesiologist is to protect patients from experiencing the pain and discomfort associated with the surgical knife. With such a background in training the anaesthesiologist is ideally suited to take charge of a Pain Clinic. The idea of Pain Clinics is a relatively recent one (within the last 15–20 years) and today, in properly-run, well-staffed hospitals a Pain Clinic is an accepted entity. Besides Intensive Care Therapy, Resuscitation, Obstetric analgesic services, Pain Clinics have expanded the role of the anaesthesiologist taking him or her more and more out of the confines of the walls of the operating theatre (where his or her function is to administer anaesthesia for surgery).

Hospital Management

- I. *Detailed history of the Patient's complaint (intractable pain)*
 - Site (any referred areas?)
 - quality
 - stabbing?
 - burning?
 - pricking?
 - aching?
 - shooting?
 - intensity
 - does it interfere with sleep?
 - does it interfere with daily chores?
 - does it interfere with occupation?
 - duration and pattern.
 - is it constant?
 - is it periodic?
 - any bladder dysfunction?
 - any bowel (rectal) dysfunction?

2. Clinical Examination

- General examination
- Any sensory or motor deficits?
- Any muscle wasting?
- Any altered tendon reflexes?
- Any difficulty in walking due to pain?
- (must be distinguished from gait impairment due to motor weakness).
- Plot pain distribution on dermatome chart (serves as a guide to nerve roots which might require blockade).

3. Explanation to patient of procedure planned and the possible consequences

- obtain consent

Procedures available in management of patients with Intractable Pain (mainly incurable malignancy)

I. Physically fit patients

- i. Palliative surgery
- ii. Radiotherapy.
If i and ii are not satisfactory,
- iii. Neurosurgical procedures.
 - a. Posterior rhizotomy
 - b. Sensory root section (e.g. for Trigeminal Neuralgia)
 - c. Antero-lateral cordotomy.
 - d. Bilateral Cordotomy (e.g. for wide-spread pelvic cancer – high incidence of bladder dysfunction might result).
 - e. Stereotaxis (e.g. for Thalamic Pain).
 - f. Pre-frontal leucotomy (e.g. for cases with much emotional reaction to pain).
 - g. Electro-convulsive therapy (E.C.T.) or antidepressive drug therapy (e.g. for patients with marked depression).

2. Patients unfit for Anaesthesia and Surgery

- i. Neurolytic block denervation.
- ii. Electrical percutaneous cordotomy.

3. Patients Unfit for Nerve Blocks or any Surgery

- analgesic drug therapy (the last resort).

Procedures commonly used in Pain Clinics are as shown in Table 2.

The commonly used neurolytic agents are as shown in Table 3, and when used the general aim is a therapeutic one.

When the general aim is a diagnostic one non-neurolytic agents are used (see Table 4).

Table 2: *Showing common procedures associated with Pain Clinics*

1. Local infiltration
2. Injection around somatic nerves
3. Injection around autonomic nerves and ganglia
4. Intrathecal injection
5. Epidural injection
6. Osmolytic neurolysis and hypothermic subarachnoid irrigation
7. Percutaneous electrical cordotomy
8. General analgesic drug and adjuvant therapy.

Table 3: Commonly used neurolytic agents

1. Absolute alcohol
2. 5% Phenol in glycerine
3. 1 in 50 chlorocresol in glycerine

Table 4: Non-neurolytic Agents for diagnostic purposes

1. 1% lignocaine
2. 1% Prilocaine
3. 0.25% Bupivacaine

II. Management without hospital facilities e.g. in Private Practice

The Private Practitioner tends to treat a patient as a whole and not the disease or complaints separate from the patient. This should be true of all doctors including those in institutional or hospital practice. Unfortunately there is a tendency amongst some doctors in busy hospitals to treat the disease without paying enough attention to its effects on the patient as a whole.

Human pain is a complex symptom because it involves a sensory-discrimination dimension, a motivational-emotional dimension, a cognitive-evaluation dimension of experience. (Melzak and Casey, 1968); human pain has also a social dimension (Chapman, 1975).

The Private Practitioner has a definite role to play in the management of intractable pain. The role can be divided into two aspects: first, as an individual and secondly, as part of a team.

Individual Role

Patients presenting with certain causes of chronic, intractable pain (e.g. postherpetic intercostal neuralgia, painful surgical scars) can be managed with simple nerve blocks (e.g. intercostal nerve blocks), analgesic drugs (e.g. pentazocine), anti-depressives (e.g. amitriptyline or imipramine), reassurance and moral support. Patients who visit a particular Practitioner for their problems have tremendous faith in their "family doctor". This confidence and reliance on the particular private practitioner can be utilized for the emotional and psychological aspect of the management of chronic pain.

Acupuncture has over recent years posed the controversial possibility of its use as a means of providing anaesthesia for surgery. However, as an art, it has been used for thousands of years in traditional Chinese Medicine for the treatment of a wide spectrum of complaints and ailments.

Acupuncture, as an addition to the armamentarium of the anaesthesiologist for operative anaesthesia requires more investigations and studies for universal acceptance. Opinions and views vary from the convinced to the unconvinced, the cynical, the skeptical. Day et al (1975) in a recent paper (albeit in only 4 subjects) failed to demonstrate the effectiveness of acupuncture as provider of anaesthesia. Their results confirm and extend those of Clark and Yang (1974) who found that "the sole effect of acupuncture was to cause the subjects to raise their pain criterion in response to the expectation that acupuncture works." Day et al (1975) conclude that from a clinical point of view the hypothesis that acupuncture would be as effective as conventional anaesthetics should be rejected since the latter work virtually all the time in virtually all patients; they grant that acupuncture works in some persons sometime. Studies on acupuncture have so far revealed no evidence of neurological basis for analgesia; psychophysical studies have revealed that acupuncture prophylactically reduces pain only a little or not at all, since its effects on sensory functioning are trivial considering the surgical assault patients experience. Most such studies however take the unrealistic view that human pain is simple and uncomplicated. It is now recognised that human pain is a far more complex modality.

The success of acupuncture for chronic painful conditions (e.g. vague backaches and neuralgia) seems to be more promising. Such patients have had their complaints for a long-time despite various medication; quite often the cause of their condition remains undiagnosed. Such patients if they have

faith in a Private Practitioner and are emotionally tuned to accept the efficacy of acupuncture might be the ideal candidates for successful acupuncture therapy. Suggestion and subjective acceptance might make acupuncture a valuable addition to the repertoire of the Private Practitioner in the management of patients with chronic painful conditions outside a hospital.

The Private Practitioner has a place in the team involved in management of intractable pain in Pain Clinics within hospitals; the role is one of continuing management. In consultation with the hospital staff the Private Practitioner continues the regime advised and helps the patient adjust himself or herself to the usual environment of home and perhaps occupation.

The patient with intractable pain, particularly the patient with incurable, terminal malignancy, is indeed a pathetic sight. He or she feels a sense of abandonment – relatives, doctors, nurses, however hard they try, will have, often unintentionally, indicated to the patient that the only hope left is death. No active treatment is done and eventually addiction to narcotic analgesics is the final form of “treatment” – one should bear in mind that narcotic analgesics do not remove pain; they make pain more bearable.

The Pain Clinic offers such patients some hope in that their intense suffering can be relieved. To many of them the feeling of belonging returns when some procedure (e.g. a neurolytic nerve block) to alleviate pain is undertaken. Though they realize that death is inevitable they are grateful for the pain-relief. Depression can be counteracted by the judicious use of anti-depressive drugs. Condemning a patient to drug addiction is a negative approach to the problem. The Pain Clinic can offer a relatively positive approach to one of the major depressive

problems in medicine. Whether or not acupuncture can play a role in Pain Clinics poses an intriguing thought. Pain is always real; whether there is an organic or psychological basis, the patient requires treatment.

Summary

Definitions and general discussion of pain, intractable pain and pain clinics are outlined.

The management of patients with intractable pain is discussed from two approaches:

1. In hospital practice (Pain Clinics)
2. In private practice.

Acupuncture as a method of management is discussed.

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Influence of fetal weight on mode of delivery in patients undergoing trial of scar

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Introduction

IT HAS BEEN shown that attempts at vaginal delivery in patients previously delivered by Caesarean section do not substantially increase the risk to the pregnant mother (McGarry, 1969; Chew and Lum, 1976). There are others who advocate elective repeat Caesarean section in these patients (Theobald, 1949; Greenhill, 1962). The main fear for allowing these patients who were previously delivered by Caesarean section an attempt at vaginal delivery is that of scar rupture. A few of the reported incidences of scar rupture are given in Table I. As could be seen the incidence of lower segment scar rupture ranges from 0.2 to 2.7 per cent. Thus the risk of scar rupture especially in lower segment scar is low.

The consensus of opinion is to allow these patients a "trial of scar" if there are no indications which warrant an elective repeat Caesarean section, especially mechanical factors. One of the mechanical factors is the size of the foetus.

Methods & Materials

In a survey of 39,613 deliveries at the Maternity Hospital, Kuala Lumpur over 3 years from 1973 to 1975, there were 454 patients who had a previous delivery by Caesarean section. Of these, 165 (36.3 per cent) patients had an elective repeat Caesarean section and the indications are reported elsewhere (Chew and Lum, 1976).

289 (63.7 per cent) patients were allowed a trial at vaginal delivery. Of these 179 of them had a

Table I
Reported Incidence of Rupture Of Previous Caesarean Section Scar

Another	Total		Ruptured Scar		Percentage	
	Classical	Lower Segment	Classical	Lower Segment	Classical	Lower Segment
Browne (1951)	16	76	0	1	0	1.3
Lawrence (1953)	400	449	4	2	1.0	0.4
Baker (1955)		100	—	1	—	1
Winchester and Brown (1954)	262	229	6	1	2.3	0.4
Dewhurst (1956)	84	635	7	3	8.3	0.5
McGarry (1969)		415	—	1	—	0.2
Chew and Lum (1976)	16	438	1	13	6.3	2.7

successful vaginal delivery and the remaining 110 patients had an emergency or non-elective repeat Caesarean section.

The present report is to find out whether the birth weight of the foetus has any influence on the mode of delivery in those patients allowed a "trial of scar".

Findings

Table 2 shows the mode of delivery and the birth weight of the infants. In patients who had vaginal deliveries, the majority of the infants (76.6 per cent) were between 2,500 gms. and 3,499 gms. This is in fact fairly similar to that in patients who had a non-elective repeat Caesarean section where 64.6 per cent of the infants delivered were between 2,500 gms. and 3,500 gms.

13.5 per cent of those who had a successful vaginal delivery had infants between 3,500 gms. and 4,500 gms. or above. Whereas in patients who had a non-elective repeat Caesarean section, 29 per cent of them had infants who weighed between 3,500 gms. and 4,500 gms. or more.

Conclusions

From Table 2, it could be seen that the infant weight has no influence in the majority of patients

who had a previous delivery by Caesarean section as regards the mode of delivery if the birth weights were less than 3,500 gms.

Only in infants who had a birth weight of 3,500 gms. or more are there a significant increase in the proportion of patients who had a non-elective repeat Caesarean section over those who had a successful vaginal delivery. (29 per cent had a repeat Caesarean section compared to 13.5 per cent who had a successful vaginal delivery). In fact nearly a third of the patients who had a failed trial at vaginal delivery had infants with birth weight of 3,500 gms. or more. Thus it could be said that if the foetus is 3,500 gms. or more, it is more likely that the pregnant mother who had a previous Caesarean section will need a repeat section for the present pregnancy.

Summary

In patients who had a previous delivery by Caesarean section, it is found that in patients giving birth to babies with birth weights of less than 3,500 gms., there is no significant increase in the proportion of patients who required a repeat Caesarean section and those who had a successful vaginal delivery. But in those patients who gave birth to babies weighing 3,500 gms. or more, there is a significant increase in the proportion of patients who had a non-elective repeat Caesarean section.

Table 2
Influence Of Baby's Weight On Mode Of Delivery In Patients Undergoing Trial Of Scar

Weight (grams)	Vaginal Deliveries				Total	Repeat C.S.
	Spontaneous	Breech	Forceps	Vacuum		
Less than 2000	4	—	1	—	5 (2.8%)	2 (1.8%)
2000 - 2499	10	—	3	—	13 (7.3%)	5 (4.5%)
2500 - 2999	41	5	11	2	59 (33.0%)	34 (30.9%)
3000 - 3499	49	2	24	3	78 (43.6%)	37 (33.7%)
3500 - 3999	12	—	6	—	18 (10.1%)	26 (23.6%)
4000 - 4499	4	—	1	—	5 (2.8%)	6 (5.4%)
4500 or more	—	1	—	—	1 (0.6%)	—
Total	120	8	46	5	19	110

Percentages in brackets.

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Extra-amniotic prostaglandin E₂ and intravenous oxytocin in termination of mid-trimester pregnancy and in the management of missed abortion and hydatiform mole

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INTRODUCTION

SURVEY OF the literature on pregnancy termination has shown that many attempts have been made by a number of workers to establish a safe and efficient method for termination of pregnancy in the mid-trimester. Each technique has its advantages and disadvantages. The long established method of abdominal hysterotomy is best avoided if possible because it leaves uterine scars and carries the risk of anaesthesia and surgery (Stallworthy et al 1971).

Medicated utus pastes were used for abortion induction in Germany in the early 1930's. The pastes are injected through the cervix and they cause direct ovum destruction and served as a stimulant for uterine contractions by causing endometrial necrosis and inflammatory reaction in the myometrium. This method is favourably reported by Lachelin and Burgess (1968) who were successful in inducing abortions in all of 182 cases. Pyrexia requiring antibiotic therapy developed in only 7 per cent of patients. However, complications such as generalised haemolysis, pulmonary embolism, septicaemia and local sepsis have been reported. In view of the recent reports of ruptured uterus and maternal deaths, this method is almost out of favour now. (Confidential enquiry into maternal death 1966-1969).

Intra-amniotic injection of hypertonic saline has been preferred by many workers. (Menzies et al 1968, Gillmer 1971). The solution could either be injected abdominally if the uterine size corresponds

to 16 weeks gestation or more, or transvaginally if it is less than 16 weeks. However, the induction-abortion interval in most published series is not very satisfactory. Rutlner (1969) had an interval of 26.5 hours whilst Gillmer et al (1971) had an interval of 39.7 hours. When the use of oxytocin is avoided altogether, the injection-abortion interval exceeded 72 hours in 11 to 14 per cent of patients, (Schulman et al 1971). Wagner et al (1962) reported that 6 percent of his cases failed to abort within 6 days, and Schulman et al (1971) found that 4.8 percent did not abort within one week. Watgatsuma (1965) reported serious complications following saline abortions in Japan. In 1948, there were 13 maternal deaths reported among 6,611 saline abortions and in 1950, after reports of another 12 maternal deaths, the technique was largely abandoned in Japan. Among the complications reported by him was fever in 14 percent, haemorrhage 3.7 percent. Other complications reported in other series include coagulation defects, water intoxication and hypernatraemia which could lead to fatal outcome.

Intra-amniotic injection of hypertonic glucose has been used with success by Lewis et al (1969). But severe infections and maternal deaths from the injection has been reported after the use of intra-amniotic glucose solution to induce labour, (Peel 1962, McDonald et al 1965) and it has not achieved much popularity in Britain. Greenhalf and Diggory (1971) described the use of intra-amniotic urea. They were successful in all the 10 cases of their series and comment that inadvertent intravenous or intraperitoneal injection of the material would be less likely to have harmful effects than hypertonic saline or glucose. However, the induction-abortion interval

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was long, varying from 30 to 96 hours. Craft and Musa (1971) reported considerable shortening of injection-abortion interval if concomitant intravenous infusion of oxytocin was used.

Several methods of mechanical stimulation of the uterus are currently popular among the Japanese. Menabe (1969) in his review of the use of Bougie and Metreurynter as mechanical abortifacients in Japan, found that 90 percent of 597 cases aborted with the use of Bougie, whilst 85.7 percent of 953 patients aborted with the use of metreurynter. Most of the patients required oxytocin stimulation and fever is very commonly encountered. The safety and efficacy of these methods are not clearly demonstrated.

Prostaglandins are currently very popular and many reports have appeared recently demonstrating its safety and efficacy for mid-trimester terminations (Wiqvist et al 1970, Embrey 1970, Karim et al 1970). It was Kurzrok and Lieb (1930) who first reported that fresh human seminal fluid when applied to isolated strips of human uterus produce either relaxation or contraction. A few years later, Goldblatt in England (1933, 1935) and Van Euler in Sweden (1934, 1935) independently observed and studied the stimulating activity of the human seminal fluid on smooth muscles. Von Euler (1935) thought that the active factor was secreted from the prostate gland and named it "prostaglandin".

The chemical structure of prostaglandins was later elucidated by Bergstrom et al (1949). Naturally occurring prostaglandins have 20 carbon atoms and the basic carbon skeleton from which they are derived is named "Prostanoic acid". Differences occurring in the structure of 5 carbon ring are used to subdivide the prostaglandins into four naturally occurring groups called E, F, A and B. Prostaglandins can now be synthesized in appreciable quantities from fatty acids and homogenates of the vesicular glands of sheep and other animals (Bergstrom et al 1964, 1967, Van Dorp et al 1964, 1967).

The oxytocic activity of prostaglandins on the pregnant uterus has now been well-established. The potential of prostaglandins as safe and efficient abortifacient has been vastly explored by many workers using various routes of administration and using different dosage schedules. Karim et al (1972) in a study of 139 women receiving intravenous infusion of PGE₂ for mid-trimester abortions found no significant change in the haematological, biochemical and hormonal status. Clotting factors and renal function were not altered.

Five routes of administration have now been tested, including intravenous, intra-uterine extra-amniotic, intravaginal, intra-amniotic and oral. Each route has its advantages and limitations. Excessive gastro-intestinal symptoms seem to be the most common side-effects. Karim and Filshie (1970) infused intravenously 52 patients with 5 ug./min. of PGE₂ and successfully induced abortion in 50. Vomiting and diarrhoea occurred in 14 of the patients. Hillier et al (1972) using higher dose levels (up to 20 ug./min.) encountered a much higher degree of side-effects with a lower success rate. Intravenous infusion of PGE₂ is also complicated by venous erythema and phlebitis. The intravenous route of administration is limited by a higher incidence of side-effects.

Intra-vaginal route of prostaglandin administration has been attempted to facilitate the ease of administration, to decrease side-effects and frequency of administration by a slow continuous release. Karim et al (1971) reported one failure out of 20 cases using PGE₂ with a mean abortion time of 18 hours. Side-effects were negligible. Brenner et al (1972) however reported higher incidence of vomiting, diarrhoea, fever and pain using PGF₂α solutions, tablets and suppositories. Wentz et al (1973) have confirmed these results reporting 95 percent incidence of abortion and 90 percent incidence of side-effects.

The oral route has been limited by unpalatability of the medication and by its induction of severe gastro-intestinal side-effects (Karim et al 1970). However, Labhsetwar (1972) has reported on the development of an orally active prostaglandin analogue (ICI 74,205) which demonstrated anti-fertility properties in hamsters without gastro-intestinal stimulation. This agent is not available for clinical trials as yet.

The intra-amniotic route has been studied by Karim and Sharma (1971). By using single dose of PGE₂ and PGF₂α, they effectively induced abortion in 11 patients with a mean abortion time of 11.4 hours. MacKenzie et al (1974) studied 82 patients using 4 different dosage schedules of intra-amniotic PGF₂α and PGE₂. The most successful results were obtained in 32 patients receiving 2 injections of PGE₂ at 6 hour interval. Thirty-one patients aborted within 24 hours with a mean abortion time of 12.6 hours. However, 22 out of 32 patients had vomiting and 3 had diarrhoea. The intra-amniotic route of prostaglandin administration appears to be promising. However, one should be cautious in the light of recent reports regarding untoward side-effects including sepsis, cervical laceration and cardio-pulmonary reaction (Wentz et al 1973).

The intra-uterine extra-amniotic route of administration was first reported by Wiquist and Bygdeman (1970) using a thin transcervical polyethylene catheter. They reported abortion in 88 percent of 70 women with low incidence of side-effects. Embrey et al (1972) using Foley Catheter gauge 14-16 with inflatable balloon into which 20-40 ml. sterile water was injected, reported good results. Of the 33 patients given PGE₂ extra-amniotically, 88 percent aborted within 36 hours with the mean abortion time of 19.5 hours and 27.3 percent had vomiting. Several workers including Strickler (1972) and Bruce (1972) had questioned the possible role of the inflated Foley balloon as a mechanical uterine stimulator.

The pharmacologic phenomenon of enhancement and potentiation of uterine response towards combined administration of prostaglandin and oxytocin was initially studied *in vitro* by Brummer (1971). It was Gillespie (1972) who applied this phenomenon clinically to induce mid-trimester abortions with the aim of reducing the dosage of prostaglandins and hence minimize the incidence of troublesome side-effects. However, he only obtained partial success and in more than half the cases, the induction-abortion interval was greater than 24 hours. Embrey et al (1973) reported induction-abortion interval could be significantly shortened with the concomitant use of extra-amniotic prostaglandins and intravenous oxytocin. The author's experience with concomitant use of extra-amniotic prostaglandin E₂ and intravenous oxytocin in 16 cases of mid-trimester abortions, one missed abortion and one hydatiform mole was described.

MATERIALS AND METHOD

Selection of patients

Eighteen patients were admitted for mid-trimester termination of pregnancy, of which 15 were induced because of psychosocial reasons, one because of rubella infection which was confirmed by rising titre of rubella antibody; of the remaining two cases, one had a missed abortion and the other a hydatiform mole. The diagnosis of missed abortion and hydatiform mole was confirmed by ultrasonic scanning.

All but one patient were under 30 years of age and three patients were under 15 years. Twelve patients were primigravidae, four were gravida two and two patients were gravida four. All but one pregnancy were between 15 to 19 weeks. The odd one was a case of missed abortion which was 27 weeks by dates but the uterine fundus corresponded to 16 weeks' gestation size.

Method of study

The method employed was similar to the one described by Embrey et al (1972). Prostaglandins E₂ were supplied by Upjohn Company. A small size Foley Catheter (French gauge 12 or 14) was inserted transcervically into the extra-amniotic space under aseptic condition. Sixteen patients had the Foley catheters inserted in the ward with premedication of Pethidine 100 mg. intramuscularly half-hour prior to insertion while two patients who were extremely apprehensive had the insertion done under general anaesthesia. The catheter balloon was inflated with 20 ml. of sterile water in all cases. In three patients, the catheters were expelled before abortion was achieved and reinsertion was done.

Dosage of Prostaglandin E₂ and intravenous oxytocin

The patients were divided into two groups according to the dosage regime of PGE₂ employed. In Group 1, which consisted of the first 12 cases, the dosage recommended by the manufacturer (Upjohn) was used. An initial dose of 200 ug. of PGE₂ was injected into the catheter after filling the dead space in the catheter with 5 ml. of sterile normal saline. Subsequent instillations of 100-200 ug. of PGE₂ were done hourly. If abortion was not achieved by 12 hours, intravenous oxytocin was commenced starting with 32 mU./min. and doubling the dose every half hour. Three patients in this group did not require intravenous oxytocin. The mean total dosage of PGE₂ required per patient was 2.02 mg.

In Group 2 which consisted of six patients, an initial dose of 500 ug. of PGE₂ was injected extra-amniotically. Subsequent instillations with 500 ug. of PGE₂ were done at four, six and eight hours respectively. If abortion was not achieved by six hours, intravenous infusion of oxytocin was commenced with a dose of 80 units at a steady rate of 30 drops per minute. All six patients in this group required the intravenous infusion of oxytocin. The mean total dosage of PGE₂ required per patient was 2.0 mg.

All the patients were carefully monitored by experienced medical and nursing staff. The blood pressure and pulse were recorded hourly while the temperature was charted every four hours. Analgesia with 100 mg. of Pethidine was given intramuscularly if the patient was distressed with pain.

RESULTS

Induction-abortion interval (Table I and II)

Abortion was achieved in all patients. Fifteen out of 18 patients (72%) aborted within 24 hours. The mean induction abortion interval was 17.4 hours.

Table I
Details of Patients – Group I

Case No.	Age (yrs)	Gravida	Gestation (weeks)	Total Dose PGE _T (mg.)	Induction – Abortion interval (hours)
1	15	1	16	1.6	5.5
2	19	1	17	4.0	42.5
3	15	1	18	2.0	34.0
4	14	1	18	1.2	14.5
5	16	1	17	2.0	27.5
6	31	2	18	1.2	7.5
7	19	1	15	4.0	42.5
8	19	1	19	2.0	11.5
9	19	1	16	2.0	17.5
10	17	1	16	2.0	24.0
11	28	5	16	2.0	14.0
12	20	1	16	3.0	53.0

Table II
Details of Patients – Group II

Case No.	Age (yrs)	Gravida	Indication	Gestation (week)	Total Dose PGE _T (mg.)	Induction – Abortion interval (hours)
13	14	1	legal abortion	19	2.0	11.5
14	25	2	legal abortion	16	2.0	13.0
15	27	2	hydatidiform mole	17	2.0	8.5
16	26	2	missed abortion	27	2.0	9.0
17	17	1	legal abortion	17	2.0	12.0
18	17	5	legal abortion	17	2.0	11.5

The mean abortion time for the Group 1 patients was 24.8 hours. However, the interval was much shorter in Group 2 patients, 11.0 hours.

Only 5 out of 18 patients had complete abortions (27%). Thirteen patients needed evacuation of uterus under general anaesthesia. One patient, Case 6, was initially diagnosed as complete abortion, but was readmitted one week later for evacuation of the uterus under general anaesthesia. Also included was a case of hydatiform mole who had uterine evacuation by vacuum aspiration.

Side-effects (Table III)

Nausea and/or vomiting occurred in 5 patients (27%). None of the patients vomited more than three times. All patients except one vomited once only. One patient had diarrhoea (6%) which stopped spontaneously. Two patients (12%) experienced transient attack of dizziness which lasted not more than ten minutes. Only one patient (6%) experienced severe uterine cramp immediately after extra-amniotic instillation of 500 ug. of PGE₂. This was however relieved by 100 mg. of intra-muscular injection of Pethidine.

Table III: Side-Effects

Side Effects	No. of Patients		Total
	Group I	Group II	
1. Vomiting	4	1	5
2. Diarrhoea	1	0	1
3. Dizziness	1	1	2
4. Uterine Cramps	0	1	1

Complications - Haemorrhage, Sepsis and Cervical Laceration (Table IV)

The average blood loss during abortion varied between 200 - 300 ml. However, 4 patients (22%) had blood loss of about 500 ml. or more. Only one patient needed transfusion of two units of blood.

Table IV: Complications

Complications	No. of Patients		Total
	Group I	Group II	
1. Haemorrhage (500 ml. or more)	1	3	4
2. Sepsis	0	0	0
3. Cervical laceration	0	0	0

No cases of pelvic sepsis or cervical laceration were noted in this small series of 18 cases.

DISCUSSION

The safety and efficacy of extra-amniotic prostaglandin E_2 with concomitant intravenous infusion of Syntocinon for inducing mid-trimester abortion, missed abortion and hydatiform mole, is demonstrated in this series of 18 cases. It is the author's impression that the use of larger doses of extra-amniotic prostaglandins E_2 administered at four-hourly intervals is more efficient in inducing abortions. The induction-abortion intervals of patients in Group 2 was only 11.0 hours as compared to 24.8 hours in Group 1 patients. MacKenzie et al (1975) claimed that administration of large extra-amniotic doses of PGE_2 produces marked reactions - that is transient severe uterine pain, pallour, nausea, shivering and hypotension - and has proved insufficiently reliable for inducing abortion within 24 hours. Radiological studies have suggested that possible reasons for these results could be rapid absorption of prostaglandins into the systemic circulation and leakage through the cervix uteri (Wiqvist et al 1972, MacKenzie and Hillier 1974, Read et al 1974). Leakage of prostaglandins and decidual absorption could be reduced by incorpo-

rating the PGE_2 in aqueous viscous gel. MacKenzie et al (1975) reported favourable results in 24 patients who received a single injection of 1.5 mg. PGE_2 incorporated into an aqueous viscous gel, with the mean abortion time of 13.5 hours. Vomiting occurred in 7 patients, transient severe uterine cramps, pallour, nausea and shivering occurred in only one patient immediately after injection. Complete abortion occurred in 20 patients.

The disadvantage of intermittent extra-amniotic administration of PGE_2 is the need of a doctor to be present at hourly interval to give the injections. Miller et al (1972) reported favourable results by administering PGE_2 continuously using a Palmer infusion pump. Midwinter et al (1973) found that the optimum dose of extra-amniotic PGE_2 given by continuous infusion for the termination of 10 to 20 weeks' pregnancies seemed to be from 66.5 to 133.5 μ g. per hour.

The majority of the patients in this series (73%) required evacuation of uterus under general anaesthesia because of retained bits or whole placenta. It is disappointing to note that the abortion was complete in only 27 percent of the patients. The percentage of complete abortion varies a great deal in different series of study, Embrey et al (1972) 60 percent, Miller et al (1972) 48 percent and Gillmer et al (1971) 70 percent. Embrey et al (1972) claimed that the proportion of incomplete/complete abortions bears little relation to the method of induction used, rather it is related chiefly to the duration of gestation, and to some extent, it is influenced by the skill of the attendant, who can often avoid retention of the placenta by a well-conducted third stage.

The incidence of vomiting (27%) and diarrhoea (6%) is comparable to other reported series. Embrey et al (1972) had 27.3 percent incidence of vomiting and 6 percent of diarrhoea with PGE_2 . The occurrence of gastro-intestinal side-effects is related to the stimulatory action of prostaglandins on the smooth muscles of gastro-intestinal tract. Two patients (12%) experienced transient attack of dizziness and pallour. This is probably due to rapid decidual absorption of PGE_2 into the systemic circulation.

Another advantage of this abortion technique as opposed to hysterotomy and intra-amniotic injection of hypertonic saline or glucose, is that it carries very little risk of haemorrhage, sepsis and trauma. It is interesting to note that the average blood loss is between 200 - 300 ml. Only one patient (6%) needed blood transfusion because of blood loss of 800 ml. Despite the introduction of a foreign body into the uterus, namely the Foley Catheter, the incidence of sepsis following abortion is almost

negligible. No case of sepsis is reported from this small series. Embrey et al (1972) reported an incidence of 6 percent of pyrexia of more than 1°C. However, he reported no case of sepsis which required antibiotic treatment.

No cases of ruptured cervix were noted in this series. However, four cases were reported following prostaglandin-induced abortion by Shearman et al (1972), Bradley-Watson et al (1973) and Wentz et al (1973). Kojanoja (1974) analysed 5 cases of cervical rupture in 412 prostaglandin abortions (incidence of 2.7%). All the 5 patients were young primigravidae treated with intra-amniotic PGF₂α. No cervical rupture was observed in patients treated with PGE₂. The association between cervical rupture and the use of PGF₂α may be related to the fact that strips of pregnant cervix contract with PGF₂α while they are relaxed by PGE₂ (Hillier and Karim 1970, Najak 1970). Infusion of oxytocin in high doses has been found to reduce the induction-abortion interval in intra-amniotic PGF₂α-abortions (Seppala et al 1972). The concomitant administration of oxytocin reduces the amount of PG required to bring about abortion but it is interesting to note that in his series, this combination treatment was used in 4 out of 5 patients with cervical rupture.

CONCLUSION

Concomitant administration of extra-amniotic prostaglandin E₂ and intravenous oxytocin is shown to be a safe and efficient way of inducing mid-trimester abortion, missed abortion and hydatiform mole. It is currently the most popular method and is associated with minimum side-effects and complications. The use of high dosage of PGE₂ extra-amniotically may be effective in producing short induction-abortion interval. However, further study is required to show that large doses are not associated with a higher incidence of side effects.

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Experiences with oral prostaglandin E₂ and amniotomy in the induction of labour

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Summary

LABOUR was induced in 42 patients by amniotomy and the simultaneous administration of oral prostaglandin E₂ (PGE₂). It was successful in 94.8 per cent of patients and appeared to be effective in both nulliparas and multiparas. The induction-delivery interval was influenced by the pelvic score of the patient. There was a high incidence of maternal side effects. No fetal side effects resulted from the use of the drug.

Introduction

Oral PGE₂ was first used to induce labour by Karim (1971) and Karim and Sharma (1971). Good results were claimed. The advantages of the oral route over the intravenous route, especially its convenience to both the patient and medical staff have been stressed (Barr and Naismith, 1972; Craft, 1972).

This report presents our experience with oral PGE₂.

Patients and Methods

All patients who required termination of the pregnancy for obstetric reasons were included in the study. The cervix was assessed at the commencement of induction and the cervical score as described by Bishop (1964) noted. Low water amniotomy was performed and oral administration of PGE₂ was started simultaneously.

In all cases, the drug was prepared fresh and according to the manufacturer's specifications. 5 mg. of PGE₂ in 0.5 ml. of N.N. dimethylacetamide

was diluted and made up to 50 ml. with purified water so that the final concentration of PGE₂ was 0.1 mg. per ml. Initially a test dose of 0.5 mg. was given to the patient by mouth. Thirty minutes later, 1.0 mg. was given unless satisfactory uterine activity had already been established. Thereafter, depending on the uterine response, doses of 1.0, 1.5 or 2.0 mg. were given at two hourly intervals. The maximum single dose was 2.0 mg.

Pelvic assessment was done routinely at six hourly intervals. Half hourly observations of the maternal pulse rate, blood pressure and fetal heart rate were carried out. Any side effects were noted. The case was considered a failure if the patient had not delivered by the end of 24 hours.

Results

42 patients were induced in the manner described. Three patients were delivered by Caesarean section; two for fetal distress and one for suspected cephalo-pelvic disproportion. Of the remaining 39 patients, 37 were delivered successfully (94.8 per cent). The two failures in the trial were infused with syntocinon and finally delivered vaginally. One patient was a nullipara with a pelvic score of six and the other, a secundipara with a pelvic score of two.

There were 14 nulliparas and 28 multiparas in the study. The pelvic score before induction was not statistically different between the two groups (Mean = 7.3, S.D. = 2.0). Table I shows the results following induction in the two groups of patients.

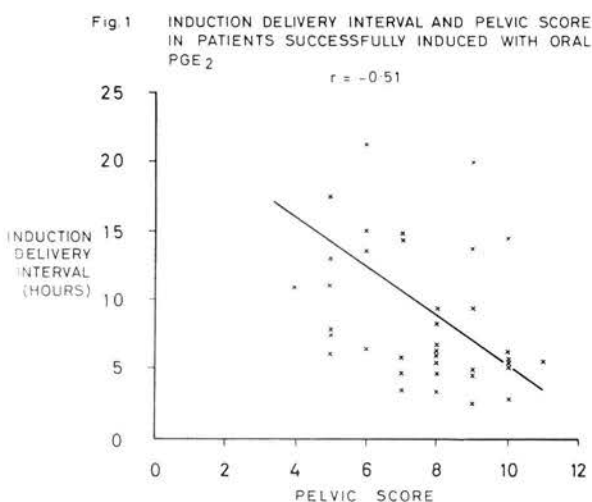
Table I
Results Following Induction with Oral PGE₂ and Amniotomy

Parameters	Nullipara Mean ± S.D.	Multipara Mean ± S.D.	Overall Series Mean ± S.D.
Induction-dilatation interval (hours)	11.5 ± 6.9	8.6 ± 7.2	9.7 ± 7.1
Induction-delivery interval (hours)	12.6 ± 6.8	8.9 ± 7.0	10.2 ± 6.9
Apgar Score			
1 minute	7.2 ± 2.1	7.5 ± 1.5	7.5 ± 1.7
5 minutes	9.3 ± 1.5	9.5 ± 0.7	9.4 ± 1.1
Birth-weight (grams)	3417 ± 351	3427 ± 479	3423 ± 443
Blood loss (ml.)	238 ± 150	172 ± 101	195 ± 124

The mean induction-dilatation and mean induction-delivery intervals were longer in the nulliparous patients than the multiparous patients. The differences were however not significant ($p > 0.05$). Similarly, no statistical differences were found in the rest of the results.

There was no perinatal mortality or fetal side effects.

Figure I shows the relationship between pelvic score and induction-delivery interval in those cases successfully induced. There was a significant inverse correlation between them.



Side Effects

12 patients (28.5 per cent) had gastro-intestinal side effects. Eleven patients had nausea and vomiting

which were severe in some cases. One patient had diarrhoea. Table II shows the gastro-intestinal side effects and the dose of PGE₂ given. Single doses of 1.5 mg. and 2.0 mg. of PGE₂ appear to produce these effects often.

No uterine hypertonus was noticed during the study.

Discussion

The results of our study show that oral PGE₂ combined with amniotomy can induce labour successfully. The length of the induction-delivery interval is governed to a certain degree by the inducibility index of the cervix. There were no harmful side effects on the fetus and this substantiates the findings of Craft (1972).

An undesirable feature of our study was the high percentage of gastro-intestinal side effects which were at times rather severe. Craft (1972) has reported a figure of 36 per cent. These side effects appear to be dose related. Single doses of 1.5 mg. and 2.0 mg. were more likely to produce them. As these were the doses usually needed to maintain labour, any reduction in them often led to a decrease in uterine contractions.

For oral PGE₂ to be considered a serious alternative to intravenous oxytocin as an inducing agent, these effects must be reduced. The new oral PGE₂ tablets appear promising in this respect. Only 9.2 per cent of patients produced gastro-intestinal side effects (Ang and Ng, 1976).

Acknowledgement

We are grateful to the nursing staff of the labour suite for their patience and expert nursing care during the period of the trial. We are also indebted to Miss S.P. Gan for secretarial assistance.

Table II
Gastro-intestinal Side Effects and Dose of PGE₂

Patient	Side Effect	Maximum Single Dose of PGE ₂ (mg)	Total Dose of PGE ₂ (mg)
L.W.	Vomited 3 x - 270 ml.	2.0	12.0
C.J.	Vomiting - Amount and no. of times not recorded	2.0	9.0
L.W.	Vomited 1 x - 150 ml.	1.0	6.5
J.S.	Vomited 2 x - 560 ml.	1.5	Not recorded
I.B.	Vomited 1 x - 150 ml.	1.0	1.5
J.P.	Vomited 200 ml. - No. of times not recorded	1.5	3.0
N.F.	Vomited - Amount and no. of times not recorded	1.5	4.0
J.F.	Vomited 5 x - Amount not recorded	2.0	8.0
M.H.	Vomited 1 x - 200 ml.	1.5	4.0
M.C.S.	Vomited - Amount and no. of times not recorded	2.0	20.5
S.T.	Vomited 2 x - 300 ml.	2.0	5.0
C.R.	Diarrhoea 2 x	2.0	8.0

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Prophylaxis against choriocarcinoma

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Summary

CHORIOCARCINOMA is a serious malignant disease in which the majority of cases are preceded by the benign hydatidiform mole. Forty-one patients with hydatidiform moles were managed during the period March 1968 to March 1976. All patients received prophylactic methotrexate intravenously during and just after evacuation of the mole or after total hysterectomy. The rationale for this form of prophylaxis against choriocarcinoma is discussed. Thirty-six patients were closely followed up for three years or more. None developed choriocarcinoma.

Although the treatment of choriocarcinoma with chemotherapy has markedly reduced the mortality rate from 80% to 24% (Chun and Ma, 1974), the mortality from the disease is still relatively high. We should, therefore, not only try to improve our management of this condition, but also direct our attention at its prevention. Choriocarcinoma may result from non-molar pregnancies, but the patient with molar pregnancy has a 2,000–4,000 higher chance of developing it (Park and Lees, 1950). As shown in Table I, about 50% to 70% of choriocarcinomas are preceded by molar pregnancies. Therefore, the incidence of choriocarcinoma would theoretically be markedly reduced if prophylaxis against it was taken in the management of molar pregnancies. In this paper, we present our results of a trial of prophylaxis against choriocarcinoma in the management of hydatidiform moles. This trial was carried out in the Obstetric and Gynaecological Unit, University Hospital Kuala Lumpur, Malaysia.

Table I
Natural History of Choriocarcinoma

Author	Type of preceding pregnancy			
	Mole	Abortion	Normal Delivery	Ectopic Pregnancy
Hertig (1950)	50.0%	25.0%	22.5%	2.5%
Chan (1967)	67.5%	17.5%	15.0%	–
Tow (1965)	70.0%	20.0%	10.0%	–
Chun (1974)	57.0%	21.0%	22.0%	–

MATERIALS AND METHODS

During the period March 1968 to March 1973, forty-one patients with molar pregnancy were treated and followed up till March 1976. The incidence pattern of this disease in relation to normal pregnancies and to abortions is shown in Table 2. Molar pregnancy is thus relatively common in Malaysia, as compared to the West (Jeffcoate, 1969; Novak, 1965).

Table 2
Incidence of molar pregnancies in relation to pregnancies and abortions

1: 330 deliveries
1: 35 abortions

Patients belonging to the "high risk" group (Tow, 1965), i.e. patients aged 40 or more, or para 3 and over, were subjected to hysterectomy. In all other patients, if they were not already aborting, an

oxytocic drip was set up, and as soon as vesicles were passed or vaginal bleeding occurred, a suction/curettage was performed. A methotrexate drip, containing 20 mg methotrexate in 500 ml 5% dextrose, was set up at the commencement of the surgical procedure and continued for 3 to 4 hours thereafter. A second curettage was done about one week after the initial curettage before the patient was discharged if it was felt that the first curettage had been incomplete. All patients were arranged for follow-up for at least 3 years. They were seen at weekly intervals for the first month, then every fortnightly for 2 months, every month for the next 3 months, every 2 months for the subsequent 6 months, and thereafter at 3 monthly intervals. Those who did not have a hysterectomy performed were prescribed contraception for 2 years so that pregnancy would not interfere with the follow-up assessment of the patients. At each visit a full gynaecological examination and a urine Gravindex pregnancy test were carried out. A chest X-ray was done at regular intervals.

RESULTS

Ethnic Distribution

Table 3 shows the racial distribution of the patients. Out of a total of 41 patients, 73.2% were Chinese.

Table 3
Racial incidence of molar pregnancy

Race	Number	Percentage
Chinese	30	73.2
Malay	10	24.4
Indian	1	2.4

Age and Parity Distribution

The majority of the patients were in the third decade of life (68.4%). There appears to be a significantly higher incidence of molar pregnancy in the nulliparous group (Tables 4 and 5).

Table 4
Age distribution of molar pregnancy

Age in years	Number	Percentage
less than 20	2	4.8
21 - 30	28	68.4
31 - 40	7	17.1
41 - 50	3	7.3
more than 50	1	2.4

Table 5
Parity pattern of Molar Pregnancy

Parity	Number	Percentage
0	10	24.4
1	7	17.1
2	7	17.1
3	4	9.7
4	8	19.6
5 or more	5	12.1

Definitive Treatment

This was carried out under intravenous methotrexate cover in all patients. In 12 patients who were in the "high risk" group (Tow, 1965) a total hysterectomy was done with the mole in situ. In the remaining 29 patients, a suction/curettage was done with an oxytocic drip running at the same time to keep the uterus contracted and thereby minimise blood loss and the risk of uterine perforation (Table 6).

Table 6
Definitive treatment of molar pregnancy

Type of treatment	Number	Percentage
Hysterectomy and i.v. methotrexate	12	29.3
Suction/curettage and i.v. methotrexate	29	70.7
Total	41	100.0

Toxic Effects Of Chemotherapy

Except for 3 patients who developed mild stomal ulcers and sore throat, no other toxic complication was noticed.

Urine Gravindex Results

In about 88% of patients (Table 7), the urine gravindex pregnancy test became negative within the first 4 weeks. There were no instances where the gravindex test became positive again after having been negative. In one patient, however, the test remained positive for as long as 8 weeks after the initial uterine curettage. A repeat curettage was done under intravenous methotrexate cover. The curettings showed residual molar tissue. The gravindex test became negative 2 weeks later and has remained negative for the past 3 years.

Table 7
Interval between evacuation/hysterectomy and negative Gravindex

Duration in weeks	Number	Percentage
1	4	9.8
2	9	21.9
3	12	29.3
4	11	26.9
5	2	4.8
more than 5	3	7.3

Duration of Follow-up and Incidence of Metastasis

Five patients were lost to follow-up after 2 to 3 months. The remaining 36 cases were followed up closely for at least 3 years, with no clinical or radiological evidence of local or metastatic choriocarcinoma developing.

DISCUSSION

It is a well-established fact that metastatic choriocarcinoma is found in a large number of patients where no growth is present in the uterus. Thus it appears that hysterectomy as advocated by Tow (1965) in the "high risk" group of cases, is no guarantee against the development of choriocarcinoma at distant sites. Attention has been drawn to the importance of trophoblastic deportation during molar pregnancy or during the treatment of molar pregnancy (Chan, 1965). He suggested the possibility of subsequent malignant transformation of the deported trophoblast after a variable latent period. This latent period was found by him to be 6 months or less in over 40% of cases (Chan, 1967). The presence of pulmonary metastasis worsens the

prognosis and the presence of cerebral metastasis makes it hopeless. Hence, it would appear logical to administer methotrexate by intravenous drip as described in this paper as a prophylactic measure against the development of metastatic choriocarcinoma subsequently. With this form of therapy, we have had no cases of choriocarcinoma following molar pregnancy in 36 patients followed up for 3 years or more, suggesting it is a safe and worthwhile preventive measure against choriocarcinoma.

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“Ante-natal diagnosis of central nervous system malformations”

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Introduction

RECENT YEARS have seen the rapid advances in the field of ante-natal diagnosis. Aristotle, in his “History of Animals” refers to the possibility of being able to predict the sex of the unborn child by such criteria as the side on which fetal movements are felt, or even the general condition of the mother. In fact, only in comparatively recent times have precise techniques been developed for the study of the human foetus in utero.

Nowadays, besides being able to ascertain the sex of the foetus antenatally, it is possible to diagnose ante-natally a number of chromosomal and metabolic disorders, as well as malformations of the central nervous system. This review is concerned only with the ante-natal diagnosis of central nervous system malformations.

The central nervous system malformations that would be discussed here are anencephaly and spina bifida. Anencephaly, with or without spina bifida, is a relatively common congenital anomaly in the British Isles, although less common in Malaysia. Once one affected child has been produced there is an increased risk for subsequent children. According to Fraser Roberts, the risk of the next child being affected after one affected child has been produced is 1 in 20; and 1 in 10 or so for a third child, when there are two affected children.

There are a number of methods developed in the diagnosis of malformations of the central nervous system of the foetus in utero.

1) Alfa-fetoprotein

Alpha-fetoprotein, first detected in the human foetus in 1957, is the first fetoprotein to appear during foetal development and is the dominant serum protein of early foetal life. It is produced by the foetal liver and yolk sac. It has a molecular weight of about 65,000 and probably consists of a single peptide chain.

In 1972 Brock & Sutcliffe presented clear evidence from a retrospective study that the alpha-fetoprotein (A.F.P.) levels in the amniotic fluids of anencephalic foetuses between 26th and 36th weeks of gestation were much higher than those from unaffected foetuses. Later, again retrospectively, Brock & Scrimgeour (1972) found a high A.F.P. level in the amniotic fluid of an anencephalic of 18 weeks' gestation, suggesting that the levels are high also at earlier stages of such pregnancies.

Thus, the level of A.F.P. in the amniotic fluid obtained by amniocentesis may be a valuable guide to the early ante-natal diagnosis of anencephaly and spina bifida, and thereby enable termination of the pregnancy to be carried out. There is a report by Sellers et al (1973) where anencephaly was diagnosed by a raised level of A.F.P. in the amniotic fluid in a 20 weeks' pregnancy and this was confirmed by ultra-sound examination, where no foetal head could be detected. This pregnancy was subsequently terminated.

Women who are in the “at risk” category (i.e. had one or more affected children) should be “screened”. Trans-abdominal amniocentesis could be offered to these patients at about 17–18 weeks

of gestation. Technically, if the pregnancy is too early, there could be much difficulty in locating the amniotic sac transabdominally. The mean A.F.P. level for nineteen control amniotic fluids at 17–18 weeks' gestation was 15 ug per ml. (range 7–22 ug/ml). Brock & Scrimgeour found that the level of A.F.P. of an 18 weeks' pregnancy with anencephalic foetus was nine times the upper limit of normal. Lorber et al also found that, in a pregnancy with a foetus with anencephaly and spina bifida, the concentration of A.F.P. in amniotic fluid at 20 weeks' gestation was six times the upper limit of normal. But the closed variety of spina bifida has been reported to give normal levels of A.F.P. These cases account for about 15 per cent of all cases (Laurence, 1974).

High levels of A.F.P. in the amniotic fluid have also been reported in fetal death (Milunsky and Alpert, 1974) and in cases of Turner's syndrome (Seller et al., 1974). On reports so far, false-positive results are relatively rare.

From the above, it would seem that anencephaly or spina bifida can be diagnosed in the foetus in utero by studying the A.F.P. level amniotic fluid at a stage early enough in pregnancy to permit termination.

But for diagnosis of spina bifida in the first half of pregnancy, amniocentesis must be performed. This is unsuitable for "screening" purposes for the general population except for the "high risk" patients. Further, amniocentesis is an "invasive" technique, the effects of which has not been fully evaluated.

It has been shown that the maternal serum level of A.F.P. is elevated in early pregnancy in some cases of spina bifida and anencephaly (Wald, M.J., Brock, D.J.H., and Bonnar, J., 1974; Brock et al, 1974). In a series conducted in Edinburgh and Oxford, it was found that one-third of the mothers with fetuses affected by both types of spina bifida cystica (open and closed) have raised serum A.F.P. levels between 14 and 21 weeks gestation. Multiple pregnancy could give rise to a higher maternal serum A.F.P. level and it has reported that the average maternal serum A.F.P. levels were double these found in singleton pregnancies (Wald et al, 1975). It is therefore vitally important to exclude multiple pregnancy by ultrasonography in cases with elevated maternal serum A.F.P. levels before an amniocentesis is performed to confirm the diagnosis of spina bifida or anencephaly.

2) Fetoscopy

Westin (1954) described a technique of hystero-photography performed between 16 and 20 weeks' gestation. The instrument he used had an outside

diameter of 10 mm. and was introduced through the cervical canal. He observed foetal limb movements and swallowing when local anaesthesia was used, but neither occurred if a general anaesthetic was used. All three of his patients subsequently underwent termination of pregnancy. In another report (Westin, 1957), the foetus was photographed and oxygen tensions in the umbilical vessels assessed, but the pregnancy was immediately terminated.

Scrimgeour, in Edinburgh has pioneered a technique of fetoscopy, of directly inspecting the foetus through a telescope, looking for evidence of central nervous system malformations such as spina bifida and anencephaly. He uses a fibre optic telescope with an outside diameter of 2.2 mm. The telescope was introduced trans-abdominally by a similar size trocar and cannula. To avoid any possible hazard to the developing foetus, a filter has been incorporated in the light source to reduce the ultraviolet and infra-red portion of the light.

Before fetoscopy could be performed, placental localisation is essential. In Edinburgh, ultrasonography was used to localise the placenta before the procedure is carried out. Ultrasonography will also confirm the size of the foetus in relation to its estimated gestation, by measuring the biparietal diameter. Also it could exclude multiple pregnancy where if it is present, would contra-indicate the performance of the procedure. The procedure is carried out under general anaesthesia so that if the foetus is found to be affected, termination by hysterotomy can be performed immediately. The bladder is emptied prior to induction of anaesthesia and strict aseptic precautions are observed throughout the procedure.

Scrimgeour found that the most suitable time for performance of the procedure is between 16–20 weeks' gestation. In pregnancies less than 15 weeks, entry into the amniotic sac with the trocar proved difficult. In gestations of more than 20 weeks, the foetus has grown to a size which makes movement in the amniotic sac difficult. The amniotic fluid conducts light easily unless contaminated with bilirubin, meconium or blood.

The complications of fetoscopy are haemorrhage, especially if the trocar goes through an anterior placenta; infection, abortion, premature labour and injury to the foetus. Also the bladder might be injured if it is not emptied before the procedure.

Fetoscopy is still a research tool at present, and is only at the initial stage of development. But it is an invaluable tool as the external appearance of the foetus could be inspected directly. It might, with

greater experience and expertise in its use, become a useful method of early ante-natal diagnosis of congenital abnormalities, such as spina bifida and anencephaly.

3) Ultrasonography

Ultrasonography has been used in the assessment of foetal maturity by serial measurements of the biparietal diameter of the foetal head. Using the ability of ultrasonography to identify the foetal head, it has been tried in the pre-natal diagnosis of anencephaly. Donald (1969) used the ultrasound examination to diagnose anencephaly pre-natally, but it was done only quite late in pregnancy. There has been a report by Campbell et al (1972) of diagnosing an anencephalic foetus at 17 weeks' gestation. In the case report by Campbell, the anencephalic pregnancy was successfully diagnosed by ultrasound 17 weeks after Clomiphene induction of ovulation. The pregnancy was subsequently terminated; the ultrasound was repeated twice at weekly intervals to exclude any possibility of human error before termination was carried out. Termination of the pregnancy could be carried out by intra-amniotic urea or prostaglandins.

Campbell et al recommends that every patient who has delivered an anencephalic foetus or a baby with spina bifida, should be screened with ultrasound early in the second trimester of any subsequent pregnancy. If the diagnosis could be made early enough in the pregnancy, termination of the pregnancy could be carried out.

The advantage of this method is that it is simple and harmless, and causes no discomfort to the patient. Further, it is non-invasive. However, it requires specialised units and elaborate ultrasound facilities are not widely available. It also requires considerable experience in the correct interpretation of the ultrasonograms. Cases of spina bifida are less likely to be diagnosed by ultrasonography.

4) Other Methods

There are other methods of pre-natal diagnosis of central nervous system malformations. Emery et al (1973), in their study of thirty-three rhesus positive mothers with foetuses affected by central nervous system malformations, found a significant increase in the amount of various amino acids in the amniotic fluid obtained at various stages of gestation. These affected foetuses are anencephalic or have spina bifida or both.

The increase in the amount of amino acids in the amniotic fluid was particularly pronounced in the case of certain neutral amino acids (methionine, isoleucine, leucine, tyrosine and phenylalanine).

According to the authors, if the increase of these amino acids in amniotic fluid should prove to be unrelated to foetal distress, then it might be a useful adjunct in the ante-natal diagnosis of central nervous system malformations.

Cassady and Cailliteau (1967) found an increase in the optical density of amniotic fluid at 450 m μ in six out of seven cases of anencephaly. Anencephaly has been shown to be associated in late pregnancy with reduced amniotic fluid levels of 17-ketosteroids, pregnanetriol (Jeffcoate et al 1965), oestriol (Michie, 1966) and certain other corticosteroids (Lambert and Pennington 1965) but it is not known if these biochemical changes are present in early pregnancy. They are presumably a reflection of adrenal atrophy, which is an associated feature of anencephaly.

Finally, it was observed, at least in the last trimester of pregnancy, a significant reduction in amniotic fluid levels of 5-hydroxy-indoleacetic acid (5HIAA) in central nervous system malformations (Emery et al 1972). The reduced levels of 5HIAA in amniotic fluid may reflect reduced foetal synthesis as a consequence of the reduction in functioning neural tissue in the more severe central nervous system malformations.

Conclusion

Above is a brief summary of the recent advances made so far in the ante-natal diagnosis of central nervous system malformations. It holds exciting prospects for the future. Probably in the not too distant future, many congenital abnormalities of the baby could be diagnosed even before the baby is born.

Acknowledgements

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A case of situs inversus

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THE CASE is a 25 year old Chinese female, a staff nurse by profession. She had a full-term normal delivery. Her parents are not related to each other. She had pneumonia at the age of 6 months. She had a normal childhood with no other significant diseases. When about 13 years old she went for a routine medical examination and chest X-ray to join her school swimming club and was told that she had an abnormality in the chest, but she did not go to find out the exact nature of this abnormality. She holds a swimming instructor's certificate for life-saving. In 1968, before she went to England, a general practitioner in Kuala Lumpur gave her a letter saying that she was physically fit, but did not mention situs inversus. She had a complete medical examination and chest X-ray in England on joining her nursing school in Dec. 1968. The doctor then told her that her heart was on the right side. Then she went for a barium meal (the same month), but the result of this was not told to her. One year later she had influenza and was admitted to hospital and a chest X-ray was done. The doctor then told her that she had complete situs inversus with dextrocardia. In April 1971 she had German measles. She had allergic rhinitis and then in June 1971 she developed an acute attack of bronchial asthma and later in 1972 had a few more attacks. She also sprained her back. An ECG was taken in the University Hospital here in 1972. She has had no more attacks of asthma since she returned to Malaysia in 1973. She is happily married. In 1974 she gave birth to a full-term male baby; the delivery was normal.

She is allergic to sulfonamides - she develops urticaria. She is right-handed with no signs of being ambidextrous.

Physical Examination:

She is a normal female adult on appearance.
Pulse: 64/minute, regular
Blood pressure: 110/65 mm Hg.
Vision: mild myopia both eyes
Throat & teeth: NAD
Respiratory system: NAD
Heart: Heart sounds louder on the right than the left, loudest in the 5th right intercostal space. Apex beat is not well palpable.
Abdomen: Liver & spleen not palpable, abdomen soft.
Nervous system: NAD
Musculo-skeletal system: NAD
Fig. 1 is a photograph of the case.

Investigations:

Fig. 2, her chest X-ray, shows the heart to be a mirror - image of the normal. Lung fields are normal. Gas under the right dome of the diaphragm indicates that the abdominal viscera are also reversed. The left pulmonary arteries are prominent, perhaps due to poor positioning.

Several tracings were taken, some of which are shown in Figs. 3 & 4. Fig. 3 shows the ECG taken with the leads in the usual positions and shows dextrocardia. The rate is 64/minute and the rhythm is regular. It is interesting and logical to see that when the limb leads were laterally reversed (LL \leftrightarrow RL & LA \leftrightarrow RA) the resultant ECG looks almost normal (Fig. 4). Also, no left ventricular complex was found even in v7R, with the leads laterally reversed.



Fig. 1

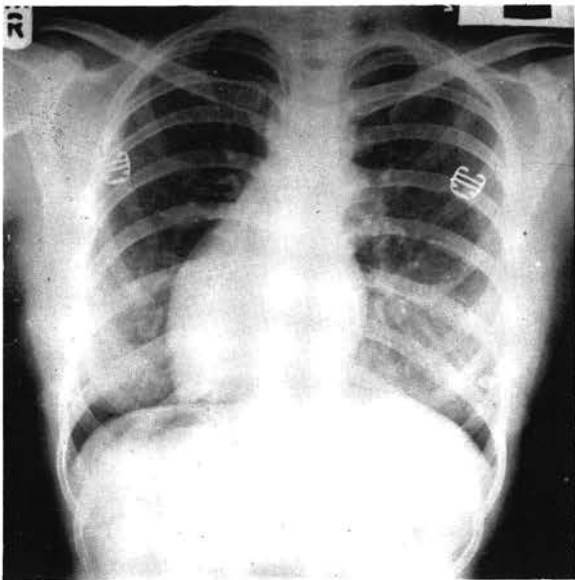


Fig. 2

Discussion:

Complete situs inversus viscerum is also known as situs inversus totalis, situs transversus and heterotaxia, and means lateral transposition of all the viscera, so that they are the mirror-image of the normal. (The normal position of the viscera is called situs solitus). In this article situs inversus always means complete situs inversus. Aristotle mentions it in animals and Marie de Medici, a queen of France, was said to have had it. One woman with situs inversus attempted suicide unsuccessfully by shooting herself in the normal location of the heart.

The incidence of situs inversus varies in different series, the highest being found in the Philippines (1:4000). In the Mayo Clinic, U.S.A., an incidence of 1:20,400 was found.

The establishment of situs inversus takes place in early cleavage of the fertilized ovum. The cause is unknown. Cockayne feels that situs inversus is inherited as an autosomal recessive gene. It may be familial; many cases have parents who are first cousins, and it occurs in both members of a pair of identical twins. It may be related to twinning, as experiments with frog and toad embryos suggest that injury to one side may induce reversal of symmetry. In human beings with situs inversus the heart is mainly on the right side, the stomach runs from right to left, the liver is mainly on the left, the caecum and appendix are on the left, the spleen on the right, etc. The asymmetrical blood vessels are also laterally reversed. Sometimes only the abdominal or only the thoracic organs may be reversed, i.e. there is incomplete situs inversus.

During disease pain may occur either on the side where the organ is or on the side where the organ should be. Faulty diagnosis may lead to a wrong operative approach.

Dextrocardia alone is much more common than situs inversus. Fig. 5 shows the normal heart and two types of dextrocardia. Situs inversus is compatible with normal life except in cases which have associated bronchiectasis and underdeveloped paranasal sinuses (the rare Kartagener syndrome). The incidence of cardiopathy in situs inversus hearts is not greater than normal.

There is no higher incidence of left-handedness in cases of situs inversus. Broca's area (area 44 or the motor speech area) is the area in the inferior frontal gyrus of the dominant cerebral hemisphere of a normal person. Theoretically it should be more often on the right in cases of situs inversus.

ECG with leads in usual positions

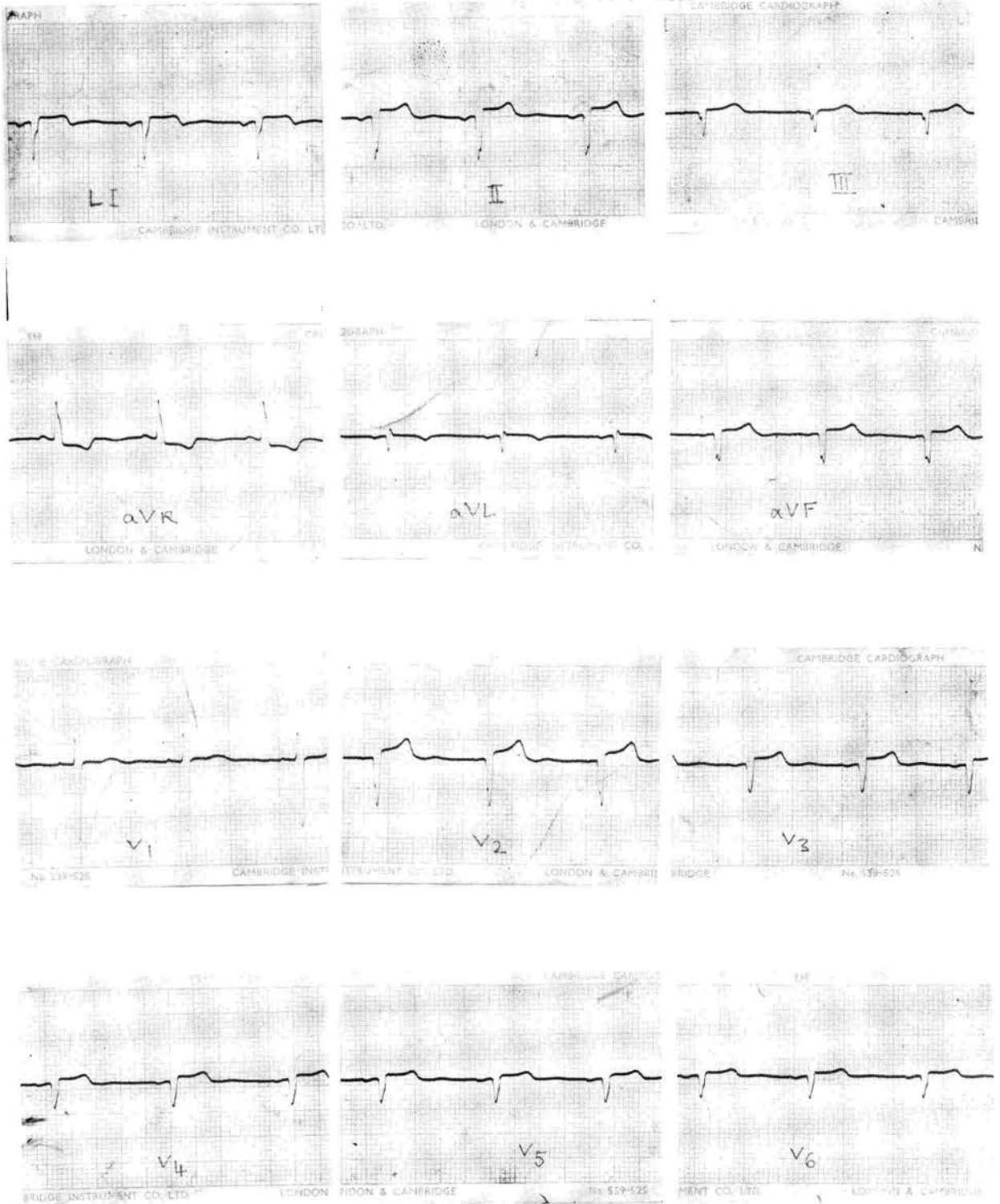
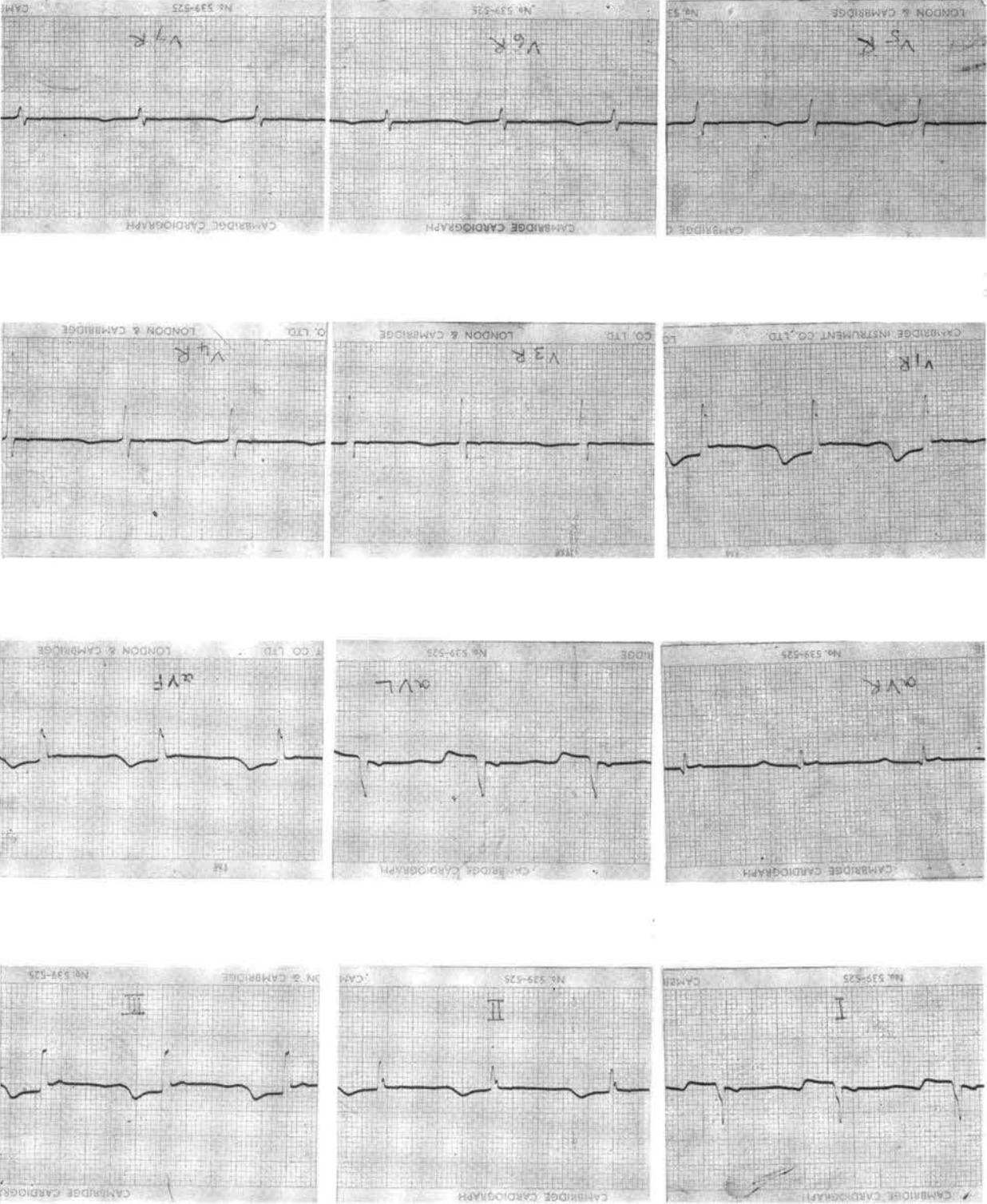


Fig. 3

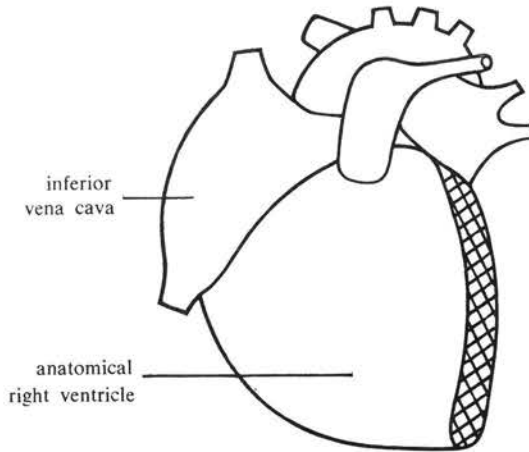
EKG with limb leads laterally reversed



N.B. V_2R has been deliberately omitted; it is similar to V_3R .

Fig. 4

Anterior View of Normal Heart



Dextroversion ← Dextrocardia → Situs Inversus Heart

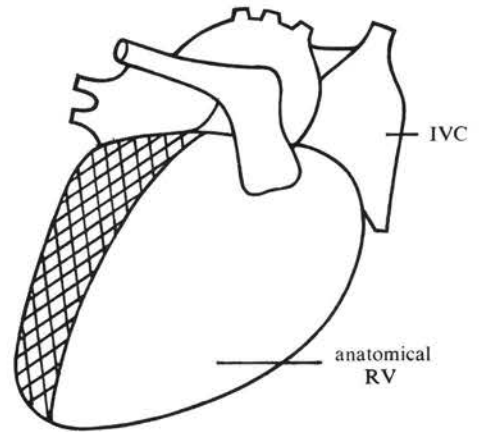
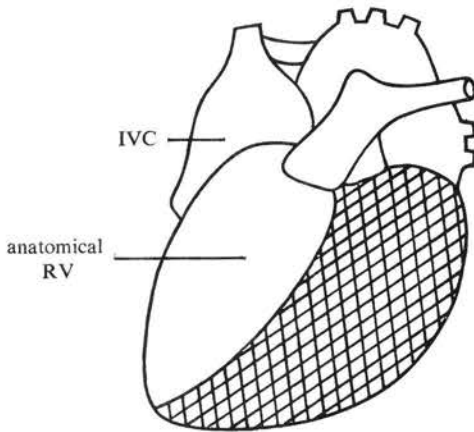


Fig. 5

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Gonococcal uveitis associated with threatened iris prolapse

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GONORRHEAL UVEITIS may occur in the course of a violent purulent conjunctivitis in adults as the gonococci are capable of penetrating the cornea. The other way by which gonococci gain entry into the cornea is endogenously, via the blood stream. The first is a rare event. The second was first associated by Brodie (1818) and Vetch (1820) to be due to gonorrhoea. Sir William Lawrence (1830) was the first to describe the clinical picture of a severe attack of iridocyclitis in the course of a systemic gonorrhoeal infection. *Neisseria gonococci* however was discovered by Neisser only in 1879, much after, the established association clinically, between gonorrhoea and uveitis.

Although in gonorrhoea, arthritis and uveitis are frequent, Griffith (1900) suggested that iritis might not only be a complication but also a late sequelae. Karsnitski (1897) Sidler - Huguenin (1911) and Velhagen (1937) isolated gonococci from the Anterior Chamber of a typical acute case of the disease.

Incidence of Iritis in gonorrhoea varies with the author e.g. Gilbert 3% (1930) Yeld 8% (1901) and others like Goulden 45% (1914) while Zeeman 12% (1936). A survey in 1914 by the Institute of Ophthalmology London suggested gonorrhoea as an aetiological factor of Iritis in less than 2% (Perkins 1961).

Time of Onset

Gonorrhoeal uveitis is exclusively a disease of males. The eyes are affected only when the disease has spread to the deep urethra and Iritis is then secondary to Chronic prostatitis or vesiculitis. It

never occurs during the acute stage of anterior urethritis (Sidler-Huguenin 1911 & Von Hippel 1917).

Uveitis usually occurs weeks or months after infection and usually follows other systemic involvement particularly joint. Also, there is no time limit as to when an attack or a relapse can occur subsequent to infection and a period of 5 - 10 or more years is quite common before the initial attack of iritis e.g. Kravitz (1936) - 60 years after original infection.

Iridocyclitis may be bilateral (Byers 1908) but this is not the rule.

Gonorrhoeal infections of uvea may present as follows:-

1. Suppurative Uveitis.
2. Simple Iritis.
3. Exudative Iridocyclitis.
4. Plastic Iridocyclitis.
5. Mild Iritis associated with endogenous conjunctivitis.
6. Posterior uveitis - rarely.

Case Report

History:

A young Malay man of 34 years was referred from a district Hospital for "Red Eyes" of 20 days duration, which had stubbornly not responded to antibiotic drops and ointment prescribed. Patient complained also of a foreign body sensation, extreme photophobia, epiphora and slight pain in both eyes.

Clinical Presentation:-

Patient was only able to open his eyes after repeated instillation of Amethocaine drops for about 5 Mins. So intense was the photophobia, that tears kept streaming down his cheeks when finally his upper lids were lifted.

Patient had VAR 4/60 VAL = 3/60. The Conjunctival congestion was both circumciliary and generalised. The strangest feature was the presence of two huge almost symmetrical *Iris Prolapses* into the already much thinned cornea (threatening perforation) well-tucked under the upper lids. (Photos 1-2). The right side measured 10mm x 3mm and left was about the same. In fact, these were only seen when the patient looked down. The *cornea* along the upper limbus was scarred and thinned out with Epithelial Erosions, otherwise no fresh Corneal Ulcers were seen. The Anterior Chamber had an Aqueous flare and cells in plenty. There were no Posterior Synechiae. The pupils were pulled upwards because of the adherence of the Iris to the Posterior Endothelial Surface above. No cells were seen in the Post Lental space. Fundus appeared normal. Ocular Tension could not be taken.



Photo 1

Both eyes showing Upper Limbal Threatened Iris Prolapse (with patient looking down.)



Photo 2. Left Eye

Magnified view of Upper Limbal Threatened Iris Prolapse.

Investigations & Management

Patient was admitted and treated with Gutt. Atropine and gutt. Chloromycetin initially.

1. A conjunctival smear proved negative for organisms.
2. Blood Picture Hb% = 14.8 gm%
TWDL = PN 58 PE = 2
L = 40 M = O B = O
3. ESR = 9mm.
4. Urine examination showed Pus cells 25-30/cu. mm.
5. Urethral smear then ordered, proved positive for gonococci.
6. With the latter finding other investigations like VDRL and FTA Absorption - Test were ordered too. Both proved to be positive.

Treatment was then changed to gutt. Penicillin and Systemic Procaine Penicillin 300,000 IU-IM daily was started. By the 13th. day after admission, patient was less photophobic but eye congestion persisted with Anterior Uveitis.

An Aqueous Tap was done on the 14th day on the left eye and at the same time 5000 IU of Crystalline Penicillin was given intraocular. The Aqueous Tap proved fruitful for within 24 hours, the Laboratory Technician exclaimed "Luxuriant growth of gonococci" from the Aqueous Humour.

At this juncture, the opinion of the Venereologist was consulted as to therapy and his advice was to increase the Aqueous levels of Penicillin by this therapy:- (1) Inj. Procaine Penicillin G (Hoescht) Daily 6 Mega Units to be given as 3 Mega Units Deep IM in each gluteal region, for 2 consecutive days. (2) BENEMID 1 Tab. 8th. Hourly for 48 hours.

Clinical Progress:

By the 4th day after completion of this therapy or 21st. day after admission, the progress of the patient could be said to be remarkable or dramatic. Patient was only slightly photophobic. By the 10th. day after this therapy the Iris Prolapse in both eyes had recessed.

The Cornea was thinned out but there was no more bulge produced by the underlying Iridic Tissue. The pupils still remained updrawn, for there was still adherence of the iris to the endothelium.

Patient was discharged just short of two months after admission. Both threatened Iris Prolapse and Corneal Perforation had responded beautifully to massive Penicillin Dosage Therapy. (Photos 3, 4 & 5).



Photo 3. Both Eyes
Upper Limbal Corneal scarring and recessed Iridic Tissue.

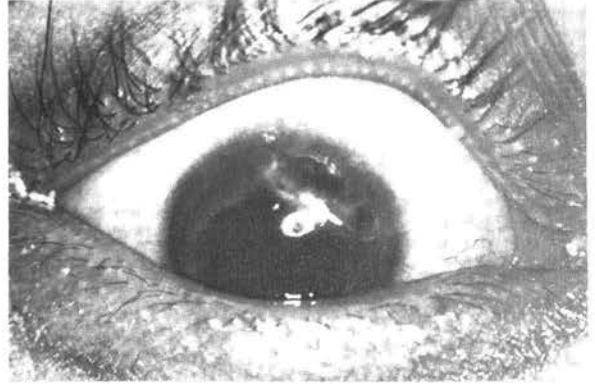


Photo 5. Right Eye
Magnified view after Treatment.

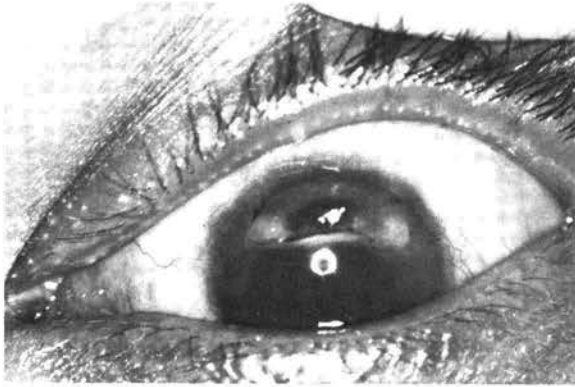


Photo 4. Left Eye
Magnified view of corneal scarring and irregularity and recessed Iridic Tissue.

Discussion:-

This case is interesting from the unusual mode of presentation of gonococcal uveitis as threatened Iris Prolapse with Thinned Cornea.

1. The thinned out cornea suggests past Interstitial Keratitis due to Acquired Syphilis and the positive VDRL and FTA – Absorption test proves concomitant Syphilis.
2. Also the Positive Aqueous Tap for Gonococci from a case of “Chronic gonococcal Urethritis”. This was in retrospect after patient admitted his past history of exposure to V.D. 17 years ago. Following that he had urethritis, which was treated with injections for a week. 2 months prior to patient’s present hospitalisation he had Urethritis (without re-exposure to V.D.)

and was treated effectively according to him. 4 days after his present hospitalisation he again had urethritis.

3. The Dramatic Response to high dosage IM Procaine Penicillin totalling 12 Mega-Units within 48 hours combined with oral Benemid to delay excretion rate.
4. The spontaneous recession of Iris into the Anterior Chamber, and Cornea into its normal convexity though with scarred and thinned out areas and some vascularisation in upper limbus. The monthly follow-up reveals no active uveitis.

This case is worth reporting because of the absence in Ophthalmic literature of this particular complication, presenting as Threatened Iris Prolapse secondary to Gonococcal Uveitis.

Summary:-

This is a case report of Threatened Iris Prolapse in a case of Bilateral gonococcal Uveitis with Chronic Urethritis. Its dramatic response to systemic High Dosage Penicillin is also commented on.

Reference: Duke Elders Volume IX.

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The Empty Sella Syndrome

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Introduction

THE RADIOGRAPHIC APPEARANCE OF an enlarged sella turcica is usually associated with an expanding intracranial lesion often a result of an intra- or peri-sellar neoplasm (Agrawal et al, 1966). Occasionally, pneumoencephalography shows that the enlargement is not occupied by a tumour mass but admits air instead as a result of the extension of the subarachnoid space below the clinoid processes. This constitutes the "empty sella" syndrome.

Busch (1951) first described the empty sella when the diaphragm sellae was incomplete or formed only a small peripheral rim and the pituitary gland was not grossly visible as viewed from above at necropsy. Colby and Kearns⁴ (1962) described what is referred to as the secondary "empty sella syndrome" in a patient who had radiotherapy. With recurrence of visual symptoms he was operated on and the sella at operation was found to be empty without evidence of a tumour mass. We are reporting two cases encountered at the University Hospital illustrating the primary and secondary empty sella syndrome. Weiss¹⁰ and Neelon⁸ emphasized the need to differentiate between these; the latter occurring after surgical or radiotherapeutic procedures whereas the aetiology is quite different in the former.

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Case Reports

Case 1

OHS, a 60 year old Chinese male was first seen in another hospital in 1971 with a 10 year history of left sided temporal headache. He had no symptoms or signs to suggest hypopituitarism. His visual fields were intact. He was admitted to the University Hospital in December 1973 for a pneumoencephalogram.

On examination the patient was an intelligent slightly obese male. His pulses were normal and his blood pressure measured 160/100 mmHg in the supine position. He had normal hair growth. His visual acuity was not impaired and his fundi were normal. There was a bitemporal upper quadrant hemianopia. No other abnormal signs were detected in the other systems. Psychological assessment showed normal verbal intelligence on the Wechsler Intelligence Scale but non-verbal performance showed a discrepancy suggesting an organic abnormality.

Laboratory investigations revealed normal thyroid and adrenal functions. The insulin tolerance test was normal. Examination of the cerebrospinal fluid revealed no abnormality, the pressure was not elevated. Urinalysis showed the specific gravity to be within normal limits. Plain skull radiograph showed an enlarged sella (Fig. 1) and a pneumoencephalogram demonstrated an enlargement of the lateral, third and fourth ventricles with air filling the enlarged sella (Fig. 2). A brain scan was normal.

He was discharged as no surgery or radiotherapy was deemed necessary. He subsequently had an

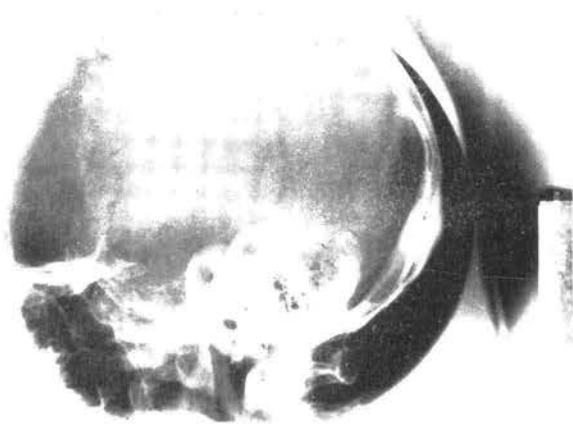


Fig. 1

Lateral projection - showed an enlarged sella with destruction of posterior clinoid processes and dorsum sella.



Fig. 2

Lateral projection taken in "overhanging head" position showing the following features:

- (1) Enlarged lateral and third ventricles.
- (2) Absence of air in cerebral sulci.
- (3) Trapping of air in the suprasellar cisterns.
- (4) Subarachnoid air filling the enlarged sella.

isotope cisternography at the Royal Perth Hospital, Australia in May 1974 and this confirmed the presence of a communicating hydrocephalus. Pituitary function was normal and there was no evidence of diabetes insipidus. He is being followed up regularly at the University Hospital.

Case 2

LSY, a 35 year old housewife was admitted in November 1970 with complaints of amenorrhoea and infertility. There was no history of sexual dysfunction, visual disturbances or headache.

On examination the patient was obese and hirsute. Her pulses were normal and the blood pressure measured 170/100 mmHg. Her visual acuity and fundi were normal. There was bitemporal hemianopia. The rest of the physical examination was normal. A plain skull radiograph and tomograms showed an enlarged sella with a double floor contour. There was undercutting of the anterior clinoid and erosion of the posterior clinoid processes (Fig. 3). A diagnosis of chromophobe adenoma was made and the patient underwent a course of radiotherapy.

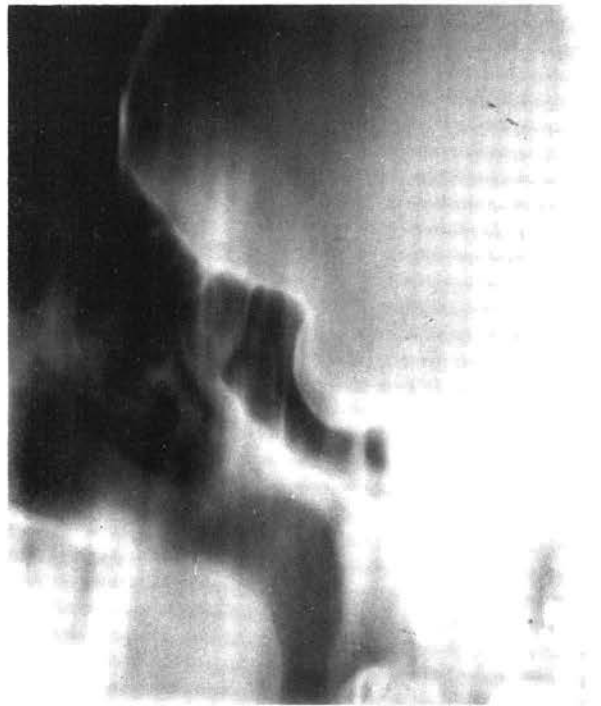


Fig. 3

Lateral tomogram of sella turcica.

In August 1972 patient was readmitted with complaints of sudden blurring of vision, diplopia and headache. She developed a transient right 3rd nerve palsy. There was no evidence of endocrine dysfunction. A right carotid angiogram showed no abnormality. A pneumoencephalogram revealed an empty sella (Fig. 4). The patient was last seen at the University Hospital in June 1974 and no deterioration in her visual fields was noted.

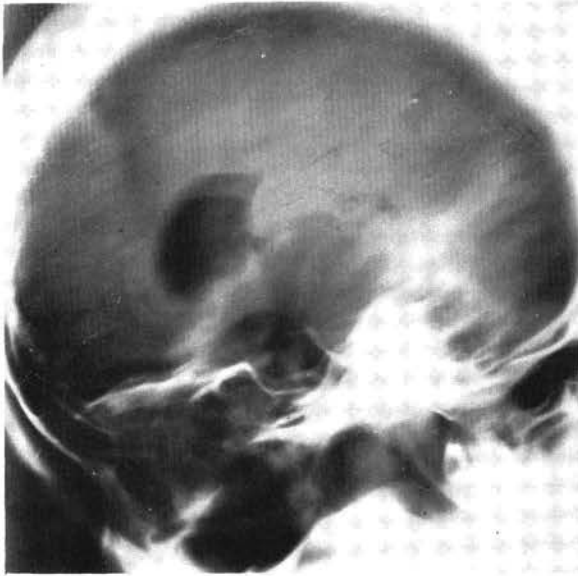


Fig. 4
Lateral projection taken in "over hanging" head position showing air in the enlarged sella.

Discussion

The aetiology and pathogenesis of the primary empty sella syndrome have not been established with certainty. Caplan & Dobben³ reviewed the possible mechanisms and concluded that the syndrome was the end result of a number of different pathogenic mechanisms. Neelon et al⁸ considered the rupture of an intra or parasellar cyst; pituitary hypertrophy and subsequent atrophy; infarction of sellar contents and transmission of cerebrospinal fluid pressure through a congenitally defective sellar diaphragm as possible mechanisms to explain the occurrence of the primary empty sella. They stated that the most accepted mechanism concerns the transmission of a normal or elevated cerebrospinal fluid pressure, with an incomplete sellar diaphragm as an essential pre-requisite.

Colby and Kearns⁴ from the Mayo Clinic, in a review of their results of radiation therapy of 149 pituitary tumours considered an empty sella as a rare complication. Three cases reported by Lee and Adams⁷ (1967) and the second patient in this report are examples of secondary empty sella syndrome. It is important to be aware of this complication because with recurrence of symptoms the patient may be subjected to an unnecessary operation.

The absence of any endocrine dysfunction in our patients is not surprising as pituitary function may remain normal even when large amounts of pituitary parenchyma has been destroyed¹⁰. Caplan³

noted pituitary dysfunction in four out of six patients whilst Neelon⁸ in an analysis of thirty one patients noted endocrine dysfunction in only eight of them. Brisman² in a study of 19 patients with empty sella noted some degree of endocrine dysfunction in eleven of them.

The prognosis in patients with primary empty sella is generally considered to be good. Neelon⁸ et al in their extensive review of 31 cases considered the condition benign and the occasional instances of endocrine dysfunction to be unrelated to sellar enlargement or to the extension of the subarachnoid space into the sellar cavity. They concluded that pneumoencephalography prior to therapeutic intervention is essential in all patients suspected of having pituitary tumours based on plain skull radiographs. Radiation therapy is not warranted in patients with the empty sella syndrome. Patients without symptoms should be examined regularly since pituitary dysfunction or chiasmal pressure may develop.

Acknowledgement

We would like to thank Professor H.O. Wong and Professor T.G. Loh for their helpful criticisms, Puan Rohani for typing the manuscript and the Medical Illustration Department for the illustrations.

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Red tide and outbreak of paralytic shellfish poisoning in Sabah

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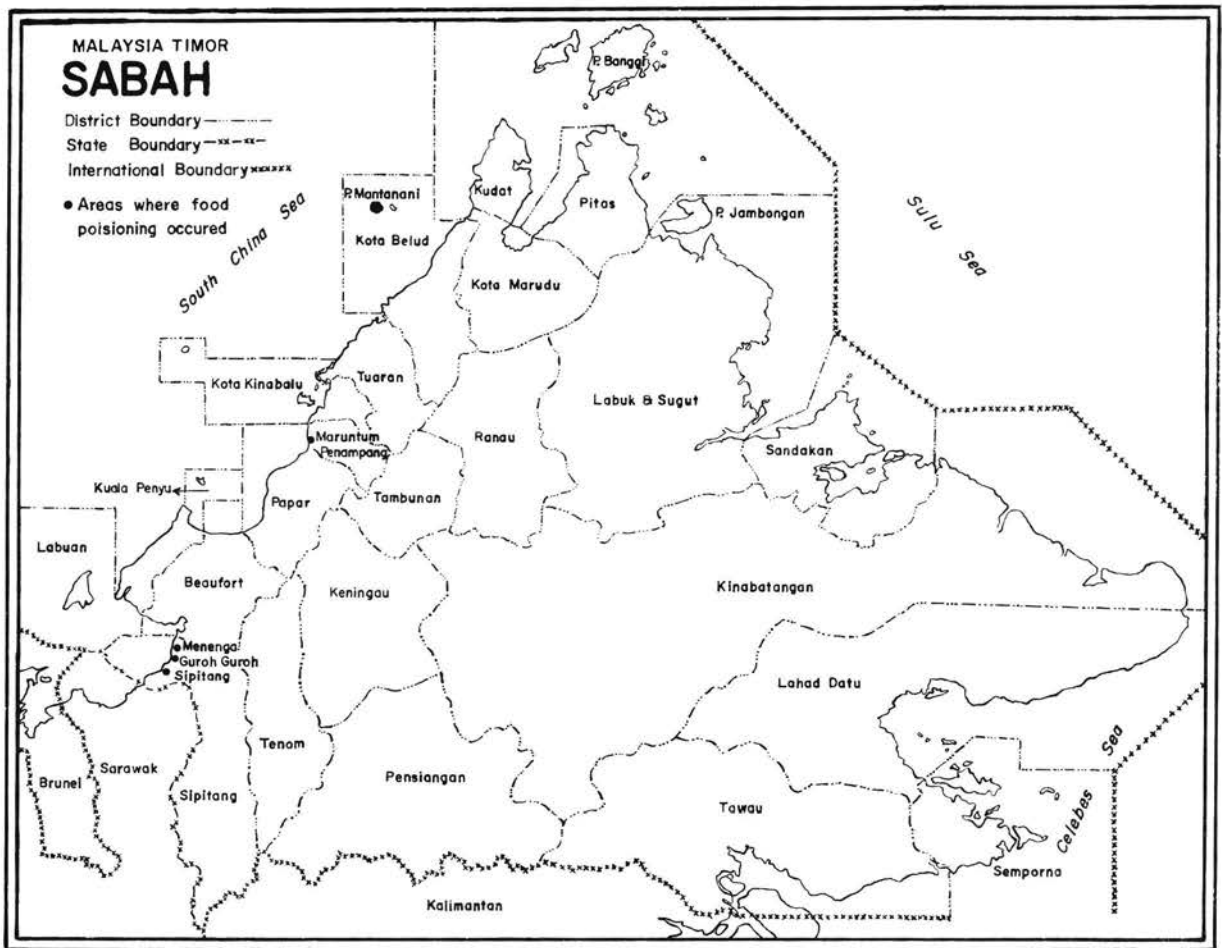
SABAH is one of the thirteen states of Malaysia and occupies the northern part of the island of Borneo, between 5 degrees and 7 degrees north of the Equator. It covers an area of 29,388 square miles with a coastline of about 900 miles; South China Sea on the West and North and the Sulu and Celebes seas on the East. The population of Sabah, though small is made up of many races. The August 1970 census recorded a total population of 655,295. The population has been growing at a rate of about three percent and it has been estimated that by the end of 1975 population rose up to 800,000. Seventy six percent of the population lives in the rural areas.

Economy of Sabah is agrarian and most of the people depend on rice farming and small scale coconut, rubber and oil palm plantation and fishing. Fishing forms one of the main occupations and only source of income for many people living in the coastal areas and on many small islands.

The staple diet of the population is rice. Other foods grown include maize, tapioca, yam and sweet potatoes. Other items of food are fish, shellfish, livestock, pigs, buffaloes and poultry. Adequate quantities of fish, shellfish such as mussels, oysters and crabs, shrimps and lobsters are available from the coastal waters. Animals flesh and poultry are not however available in sufficient quantity to form a regular feature of the local daily diet especially in rural areas. Dairy farming is unknown in the State. Therefore fresh milk is not available and people depend upon imported milk. Most of the protein component of the diet of the rural people is derived from fish, shellfish especially in coastal areas. Salted and dried fish and meat from wild games occasionally

form parts of the meals of people living in interior residencies and in the hinterland of the country. As a matter of fact fish and shellfish form the staple diet of the rural people in the coastal regions. The fish and shellfish have been consumed for generations without having any ill effects whatsoever until few cases of suspected food poisoning due to consumption of clams were reported in January, 1976. Between 15th and 16th January, 1976 a total of 8 cases of suspected food poisoning from Kampong Maruntum, a coastal village close to Kota Kinabalu were admitted to the Queen Elizabeth Hospital. One of the cases a child aged 7 years died immediately after admission and it was reported at the time of admission that his sister aged 4 years had died before she could be brought to the hospital. History revealed that all the cases including the child who died at the house belonged to 3 families living in the same village who collected clams from the shallow water in the bay along their kampong in the early hours of the morning. Between 9 a.m. and 11 a.m. all the members of their families ate cooked shellfish with rice and vegetables. On the same evening all the children in the 3 families became very sick and ill with nausea, vomiting and giddiness, one of the children became so acutely ill suddenly that she died before she could be taken to the hospital and the other child of the same family died within a few hours of admission into the hospital. The doctor who attended the child reported that she died of respiratory paralysis. Although paralytic type shellfish poisoning is known to have occurred in many parts of the world it has been unknown in Sabah.

In March 1976 about two months after the first occurrence suddenly there was an acute out-



break of food poisoning in the 3 villages in the coastal district of Sipitang. A total of 186 members of the 50 families residing in 3 neighbouring kampongs (villages) close to the coastal area were affected. 105 persons were so acutely ill that they had to be transported to the district hospital about 24 miles away where two children died within a short period of admission. Two other children died in their homes. The day before the outbreak of the food poisoning members of these families went to the beach close to their villages and collected large number of clams. The people of the coastal villages have been used to eating clams, mussels and crabs collected from these areas. But they never had the experience of finding such large number of clams appearing on the sandy beach in the past. The clams which they are used to collect usually remain buried in the sand. But this time they found them on the surface and collected them in large numbers.

Of the 50 families who collected clams 41 families who consumed clams were affected. Some of them became acutely ill, some only had minor symptoms, gravity of the illness being more acute among children than adults. At the same time appearance of red patches and large number of dead fish floating in the coastal water of Brunei Bay were noticed. For the first time an association between appearance of red tide and shellfish poisoning was suspected. Collecting and selling of shellfish and catching of fish in Brunei Bay were prohibited. People became panicky and stopped eating fish even in other parts of the State where there was no evidence of such phenomenon. Within 3 weeks of the occurrence of this outbreak of food poisoning in the Sipitang district there was another outbreak of food poisoning due to consumption of cooked shellfish among 7 members of the two families residing in a small island close to the West Coast within the administra-

tive district of Kota Belud. Distribution of outbreak of food poisoning due to consumption of shellfish is shown in the map. At the same time more brick red patches appeared in the coastal waters of the South China Sea along the West Coast. Food poisoning and appearance of red patches were also reported from the neighbouring state of Sarawak and also from Brunei.

Table I and II show the distribution of food poisoning cases by sex and age.

Table I
Distribution of Cases by Age and Sex in
Kampong Maruntum, Putatan: 15th January, 1976

Age/Years	Male	Female
0 - 4*		1
5 - 9*	4	2
10 - 14		
15 - 19		2
20 - 24		
25+		
All Ages	4	5

*Two children died: one aged 4 years and the other 7 years.

Of the 7 cases of food poisoning occurring due to consumption of cooked shellfish in the island of Mantanani in Kota Belud district 4 were children under 14 years of age. One of them a boy aged 6 years died about 8 hours after the meal containing

cooked shellfish; others were admitted to the district hospital where they gradually recovered from the illness. The illness which so suddenly affected a large section of the people could be completely and readily controlled by preventing people from eating marine food from the areas where red tide was observed.

The Characteristics of the Illness:

Symptoms and signs appeared to be varied. The time of onset and symptomatology also varied with the size of meals and the amount of clams taken and the age of the person. Children appeared to have suffered more acute symptoms and signs, and all the fatalities occurred among them. Tingling about the lips and tongues and throat followed by numbness and heaviness developed immediately and at any time within a period of 6 to 12 hours. The most common symptoms and signs were tingling about lips and tongues and throat followed by numbness and heaviness around the mouth. In some cases initial symptoms and signs had been nausea and vomiting. Vomitus contained, depending upon the time of onset of the illness, undigested food mixed with clams and in some cases there was only a bilious vomiting. In other cases muscles of the mouth, cheek and throat appeared to be spastic and the patient found difficulty in swallowing. Many patients became lethargic and there was generalised weakness; some patients developed weakness of the limbs and also ataxia. Paresthesia was also observed in the limbs. The child patients developed distension of abdomen and retention of urine. Paralysis of the respiratory muscles was the cause of cyanosis and death. Diarrhea was uncommon. There was

Table II
Distribution of Cases by Age and Sex in Kampongs Menangah, Guroh-Guroh and Pantai
in the Sipitang District: 5th March, 1976

Age/Years	Kg. Menangah		Kg. Guroh-Guroh		Kg. Pantai		Total
	M	F	M	F	M	F	
0 - 4*	8	3	2	-	-	-	13
5 - 9*	6	4	-	-	2	-	12
10 - 14*	8	13	2	2	1	-	26
15 - 19	5	8	-	-	-	1	14
20 - 24	4	8	-	-	-	-	12
25+	11	14	1	1	-	1	28
All Ages	42	50	5	3	3	2	105

*4 children died, two of them aged 11 years and the other two aged 4 and 6 years.

slight or no rise of temperature. Recovery occurred gradually and most of the patients recovered within a period of about 12 to 24 hours. Most of the patients were discharged from the hospital within 24 hours of their admissions. However, generalised weakness remained for a longer period.

Etiology:

The paralytic type of shellfish poisoning is known to be caused by certain toxic species of planktonic dinoflagellates which are ingested by filter feeding clams and molluscs such as sand mussels, black mussels and oysters. The ingested toxin is accumulated in the body of the clams and molluscs concentrating particularly in the digestive organs. Usually this does not cause any harm to the clams or molluscs. But in Sipitang area the toxin appears to have also affected clams causing their deaths. The U.S. Food and Administration has established the maximum human tolerance of paralytic shellfish poison at 1200 Sommer mouse units. A mouse unit is the amount of toxin that will kill a 20 gm mouse in 15 minutes. The dose of toxin needed to cause symptoms in most people seems to be 5000 units or more; death of an average adult usually means that at least 30,000 units have been ingested. Smaller dose of toxin could be fatal to children as evidenced in the recent occurrence of food poisoning when all the fatalities occurred among children. Results of bioassay and feeding of animals have shown action of the poison similar to that isolated from shellfish in other parts of the world. The intestine of the clams were examined and many dinoflagellates had been found. Examination of the sea water containing red patches along the coastal region have shown dinoflagellates in abundance. Both red water and shellfish poisoning have been known for many centuries in many parts of the world although their association was not scientifically recognized until Sommer and his colleagues established their relationship in 1937.

There are many species of dinoflagellates of which some species have been identified to be the cause of shellfish poisoning. *Gonyaulax catanella* was the source of poisoning in California, *Gonyaulax tamarensis* in the Atlantic coast of Canada, *Gonyaulax Actanella* in the Pacific coast of Canada, *Prorocentrum micans* in Portugal. In Japan a species of *Prorocentrum* has been suspected being the source of poison of mussels. *Gonyaulax Actanella* has also been implicated being the source of poison of mussels in the Philippines. *Gonyaulax Polyhedra* and *Gymnodinium brevis* have also been known to be the source of poison in the Pacific Coast of the U.S.A. *Gonyaulax tamarensis* was found to be the cause of mussel poisoning in Britain in 1968.

Species of dinoflagellates implicated in the poisoning of the shellfish in Sabah have been identified as being *Pyrodinium Bahamense*.

Public Health and Economic Hazards:

Sudden outbreak of food poisoning due to consumption of shellfish in the rural areas of the West Coast area of Sabah and appearance of thousands of dead fish in the coastal waters due to blooming of dinoflagellates resulting appearance of red tide created a public health problem; so fishing in the coastal waters was prohibited. About 4,100 fishermen and fishmongers lost their employment and their only means of livelihood for an indefinite period of time. Prawn fishing and export industry was also affected. As a result about 20,000 of the rural population, for their subsistence, had to depend on the financial assistance from the Government. Shellfish and fish which form the main protein component of the food of the population of Sabah became unobtainable to them. Fortunately however red tide gradually started disappearing within about two months of its first appearance and the large number of dead fish which was noticed earlier also gradually became less. Since bioassay results showed very little or no toxin in fish flesh the ban on fishing and selling of fish was lifted.

It has been known in North America that most species of molluscs retain toxicity for about two months after toxification. But some species may even retain a significant level of toxicity for about 3 years.

The unfortunate phenomenon triggering bloom of dinoflagellates has posed a real public health hazard and also an economic problem for the fishermen and the fishing industry. Moreover the ability of the shellfish especially bivalve molluscs to accumulate the very toxic paralytic poison for indefinite period will make it essential for the Fisheries and Medical Departments to organise and implement a monitoring system in order to determine toxin content of the shellfish and to prevent consumption of shellfish whenever toxin content appears higher than the level considered safe; levels above 8 μg per 100 g of shellfish meat are considered unsafe.

Treatment and Prevention:

No specific antidote is known. The treatment of shellfish poisoning is primarily symptomatic and supportive. After ingestion unabsorbed toxin may be removed by emesis. Since toxin becomes unstable in alkaline media, stomach wash with solution of sodium bicarbonate is of considerable value in shellfish poisoning. Diuresis may be instituted. In case of respiratory embarrassment artificial

respiration is essential to get over the acute phase of the paralytic condition. Anticuerare drugs such as neostigmine have been found to be useful in aiding artificial respiration. Oximes such as pralidoxime may be used to reactivate acetylcholine esterase. Noradrenaline, ephedrine and amphetamine have also been used.

The exact mechanism which triggers the bloom of dinoflagellates leading to red tide phenomenon and production of toxin in shellfish is not known. However, it is believed that disturbance in ecological balance in the sea due to dumping of materials, dredging, blasting of sea bed and construction or natural substrata disturbance may trigger such phenomenon. In recent years much construction work, blasting of coastal sea bed for collection of corals, reclamation and also exploration for oil and gas have been carried out in the sea along the West Coast of Sabah. Despite much research conducted in many countries so far no chemical has been found which could be used to control bloom of dinoflagellates without jeopardizing the human and marine life or which would be economically feasible. It must also be noted that shellfish may even become poisonous long before bloom of dinoflagellates becomes sufficiently high to produce red patches in the sea. It will therefore be necessary to carry out testing of shellfish for toxicity at regular intervals. The diagnosis and prevention of the red tide associated diseases require the awareness of the problem by the physicians, public health authority and Fisheries Department.

Summary:

Sabah is one of the thirteen states of Malaysia and occupies northern part of the island of Borneo. It covers an area of 29,388 square miles with about 900 miles coastline. It has a population of about 800,000.

Economy of Sabah is agrarian. Staple diet of the population is rice. Most of the protein content of the diet is derived from fish and shellfish especially in coastal areas.

Between 15th January to 10th April, 1976 a total of 201 cases of paralytic food poisoning occurred due to consumption of shellfish in three different areas at different times in the West Coast region of the State. Appearance of red tide in the sea in the

coastal water of West Coast region was also noticed for the first time in the memorable history of Sabah.

The exact mechanism which triggers the bloom of dinoflagellates leading to red tide phenomenon and production of toxin in shellfish is not known. No specific antidote is known; treatment is symptomatic and supportive. For prevention of occurrence of paralytic shellfish poisoning it is essential for the Fisheries and Medical Departments to organise and implement monitoring system in order to determine toxin content of the shellfish and to prevent consumption of shellfish whenever toxin content appears higher than the level considered safe; levels above 8 μg per 100 g of shellfish meals are considered unsafe.

Acknowledgement:

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Sebab-sebab patah tulang-tulang panjang

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Pengenalan

PENGAJIAN ETIOPATOLOGI sesuatu keadaan amnya dapat menolong menentukan pengurusan sewajarnya mengenai keadaan tersebut. Pemahaman yang betul dari parameters yang terlibat tidak sahaja membolehkan perumusan cara-cara pengubatan yang tepat, tetapi juga untuk menetapkan tindakan-tindakan pencegahan yang sesuai dimana mungkin. Karangan ini mencuba mengemukakan faktor-faktor yang terlibat dalam genesis patah tulang-tulang panjang yang dihadapi diantara kes-kes di Hospital Universiti.

Kaedah & Bahan (Method & Material)

Pengkajian ini meliputi semua kes berkenaan dengan patah tulang panjang yang dirawatkan oleh jabatan orthopidik di hospital ini. Dalam masa empat tahun setengah yang pertama dari masa penubuhannya, riwayat kes (case history) dan filem-filem roengenographic dari semua kes telahpun saya teliti sendiri tidak lama sebelum saya menulis karangan ini. Data menasabah dan bersabit dengan perkara ini telahpun dimasukkan pada kad-kad IBM dan dari situlah diperolehi hasil-hasil pengkajian keretakan melibatkan 1,586 tulang termasuk 831 patah sebelah kiri, 711 sebelah kanan dan 22 patah pada kedua-dua bahagian (bilateral). Dari jumlah ini, 1,167 (75%) orang lelaki dan bakinya 397 (25%) orang perempuan.

Dari 987 (63%) kes patah meliputi tulang-tulang anggota-anggota badan bahagian atas dan dari 577 (37%) kes berkenaan dengan pasangan rangka (skeletal counterparts) anggota badan bahagian bawah. Kecederaan majemuk dari jaringan tisu

lembut (multiple soft tissue) berkaitan dengan 158 kes dan kecederaan diurat saraf (neurovascular) ujud dalam 21 kes patah.

Peringkat umur terjadi patah ini paling lazim (67%) didapati pada mereka dalam usia tiga puluhan pertama dalam hidupnya. Penerangan yang lebih lanjut diberikan dalam jadual 1.

Jadual 1

Bahagian tulang-panjang yang patah disusun mengikut umur

Umur dalam peringkat	Bilangan yang patah
0 - 10	330
11 - 20	394
21 - 30	320
31 - 40	142
41 - 50	104
51 - 60	106
61 ke atas	168

Hampir 4/5 Lapanpuluh peratus dari patah itu adalah akibat dari kecederaan kerana jatuh yang tidak dinyatakan jenisnya dan akibat kemalangan-kemalangan jalan raya. Berikutnya adalah patah akibat kecederaan-kecederaan dalam sukan. Jadual II, dengan cara yang lebih terperinci memperlihatkan sebab dan tempat patah itu terjadi.

Jadual 2
Penyebab patah-tulang dari semua tulang-tulang panjang yang diubati di Universiti Hospital
sejak tahun 1967 hingga Disember 1971

Penyebab patah tulang	Jatoh	Kemalangan Jalan Raya	Permainan dan sukan	Rumah	Perusahaan	Penyerangan	Penyakit	Bunuh diri	Sebab2 lain	Sebab2 yang tidak dapat di-tentukan	Jumlah
Tulang											
Clavicle	51	103	28	18	0	0	0	0	1	6	207
Humerus	130	56	11	8	2	5	0	0	3	1	216
Radius/Ulna	281	124	91	12	16	9	3	0	17	11	564
Neck of femur	92	40	0	8	3	0	0	0	3	1	147
Shaft of femur	25	110	2	1	6	0	3	1	11	0	159
Tib./Fibula	41	179	24	4	7	2	1	0	10	3	271
Jumlah:	620	612	156	51	34	16	7	1	45	22	1,564

Dari jumlah yang memerlukan rawatan hospital ternyata bahawa tempoh dirawat di rumah sakit adalah lebih rendah dikalangan mereka yang menderita patah tulang pada anggota badan bahagian atas. Jadual III diberikan untuk membantu memberi penilaian dengan cara yang lebih terperinci tempat patah berikutan dan lama masa rawatan di hospital.

Jadual 3

Rawatan hospital bagi mereka yang menderita patah tulang, tulang-panjang University Hospital, 1967 hingga December 1971

Tulang	Bil: kes yang menghendaki rawatan hospital	Jumlah bilangan hari	Hari purata
Clavicle	33	499	15.1
Humerus	126	1,939	15.4
Radius/Ulna	140	2,284	16.3
Neck of femur	130	3,861	29.7
Shaft of femur	152	8,707	57.3
Tibia/Fibula	166	5,221	31.5
Jumlah:	747*	22,511	30.0
Upper extremity	299	4,722	15.8
Lower extremity	448	17,789	39.7

Jumlah belanja bagi 747 pesakit yang dirawat di hospital selama 22,511 hari = \$1,148,061
Belanja purata bagi setiap pesakit \$1,537

Jadual IV memberi gambaran kemundupan mengikut waktu (chronological breakdown) yang lebih teliti dari patah yang diakibatkan oleh kemalangan kerana jatuh yang tidak dinyatakan jenisnya.

Jadual 4

Patah-tulang diakibatkan kerana jatuh - di susun mengikut umur - dirawat di Universiti Hospital, Kuala Lumpur antara tahun 1967 hingga Desember 1971

Umur (tahun)	Anggota diatas	Anggota dibawah
0 - 10	208	20
11 - 20	122	12
21 - 30	27	10
31 - 40	24	7
41 - 50	24	10
51 - 60	26	19
61 - 70	21	34
71 ke atas	10	46

Perbincangan

Adalah lazim bahawa keretakan pada umumnya disebabkan oleh satu daripada tiga faktor berikut, iaitu "trauma", senile osteoporosis dan keadaan-keadaan pathology daripada tulang adalah sering terjadi patah mengikut susunan-susunan di atas itu. Amnya data disebut di atas adalah bersesuaian dengan susunan ini.

Yang menarik perhatian dalam pengkajian ini ialah bahawa sejumlah besar daripada patah tulang itu adalah akibat kecederaan kerana jatuh yang jenisnya tidak disebutkan dan akibat kemalangan-kemalangan jalanraya (Jaduan II). Manakala dikomputerkan, kecederaan tersebut berjumlah hampir empat perlima daripada seluruh bilangan keretakan-keretakan tulang panjang yang dikaji. Penyebaran patah tulang itu hampir sama diantara kedua-dua rupa kecederaan itu. Yang disebut terdahulu sesuai dengan hasil penyelidikan kami lebih dahulu dikalangan kanak-kanak^{3b}. Perhatian kepada yang disebut terkemudian telahpun dibentangkan di atas^{3a}.

Apabila dibuat penelitian yang lebih lanjut, didapati bahawa patah tulang akibat kecederaan jatuh lebih banyak melibatkan tulang-tulang anggota badan bahagian atas manakala kemalangan jalanraya nampaknya melibatkan tulang anggota badan bahagian bawah (Jadual III).

Bagi yang disebut terdahulu iaitu kecederaan akibat jatuh apabila terjadi pecahan Chronological (Jadual IV) didapati bahawa lebih daripada setengah bilangan patah tulang berlaku pada peringkat usia muda atau tua. Diantaranya 228 patah terjadi pada usia puluhan tahun yang pertama, ketika kanak kanak itu masih dibawah jagaan ibu bapa dan 156 patah tulang melibatkan pesakit-pesakit yang berusia lima puluh tahun atau lebih ketika tanda-tanda kemunduran kesihatan akibat umur lanjut mula memperlibatkan kesannya. Oleh yang demikian ada pendapat bahawa dengan pengajaran dan penerangan yang lebih baik pihak ibu bapa dan pesakit-pesakit sendiri, disertai dengan pemeriksaan kesihatan yang lebih kerap dan peraturan terhadap penduduk yang berumur 50 dan lebih akan bolih menolong mengurangkan bilangan kecederaan cara besar-besaran. Mungkin juga, dalam batas-batas tertentu, usaha tersebut berlaku pula patah tulang akibat kecederaan sukan.

Disamping itu perhatian telahpun diberikan pada kemalangan jalan raya yang bilangannya terus meningkat. Dari kajian setempat terbukti bahawa kecederaan lebih kerap berlaku kepada mereka yang berumur 20, 30 dan 40 tahun^{3c}. Hendaklah diingat bahawa peringkat umur ini melibatkan sejumlah besar tenaga pencari nafkah yang sedang berada kemampuannya. Tidaklah mustahil bahawa sejumlah besar patah tulang akibat kecederaan kerana jatuh dan kemalangan jalanraya boleh dielakkan.

Kalau tidak dilakukan segera langkah-langkah penyelamatan yang tepat dan pelaksanaan undang-undang tidak dikuatkuasakan kenyataan berkenaan dengan proses urbanisasi perkembangan industri yang berjalan pesat dewasa ini, mungkin akan merebak dan menjadi satu epidemik, seperti nyata terbukti oleh masyarakat teknologi yang telah wujud.

Demikian pula dikemukakan bahawa pemeriksaan kesihatan yang beraturan terhadap orang-orang yang berumur 50 tahun ke atas, hendaklah diwajibkan. Dengan yang demikian, adalah diharapkan bahawa sebilangan besar penduduk yang sudah berumur lanjut terselamat dari menderita patah tulang pada hari tua dengan segala akibatnya. Walau bagaimanapun kerana kemalangan itu ditakrifkan sebagai "satu kejadian tanpa sebab musabab yang nyata", adalah diakui bahawa setengah-setengah patah tulang tidak dapat tidak pasti berlaku apa langkah diambil untuk mengelakkannya².

Dipandang dari segi ekonomi kebangsaan nyata-nyata bahawa dari jumlah bilangan kes-kes yang dikaji, 747 dirawat dalam hospital. Jika dikira banyaknya dari segi perbelanjaan kewangan pada kadar \$51.00 untuk seseorang sehari bagi tiap-tiap kes¹, jumlahnya menjadi \$1,148, 061:00 (Jadual III). Jika kepada bilangan ini dicampurkan pula fakta-fakta lain yang melibatkan pendapatan dari pengajian, kehilangan masa kerja selama dalam rawatan dan mula sembuh, kehilangan kemampuan daya bekerja akibat anggota badan dan dalam beberapa kes juga jiwa sudah cacat j ga, lantaran fikiran tak sihat sering menyertai patah tulang maka kerugian kewangan yang menjadi beban bangsa akan boleh merupakan tekanan hebat bagi seluruh perbelanjaan negara.

Oleh itu contoh-contoh yang dikaji, menunjukkan satu pola dari aetiology (aetiologi) patah tulang-tulang panjang yang nampaknya sebahagian besar dapat dihindarkan. Tidak dapat dinafikan, bahawa faktor yang dibentangkan dalam kajian panduan ini masih memerlukan analisa-analisa selanjutnya, tetapi kerana tidak ada dijumpa data-data lain, sungguhlah pengkajian ini sebagai hasil dari tinjauan kami saja.

Rengkas

Sebab-sebab Aetiopathologi berkenaan dengan 1,564 patah tulang yang pertama dihadapi oleh Perkhidmatan Orthopaedik Hospital Universiti ini telah dibahas kesimpulannya ialah bahawa hasil dari pembahasan awal ini menunjukkan dua perkara.

Iaitu:

1. Bahawa sejumlah besar patah tulang adalah akibat daripada sebab-sebab yang "boleh dihindarkan" dan
2. Bahawa apabila tindakan-tindakan penyelamatan tidak dilaksanakan pada waktunya, jumlah kes-kes patah tulang akan bertambah terus kerugian kewangan dan kadar bilangan orang yang sakit, cacat anggota badan atau untuk acumen hidupnya sebagai akibatnya akan menjadi bebanan teruk bagi negara.

Rujukan

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Penghargaan

Saya ucapkan ribuan terimakasih kepada Cik Gu Bahadur Shah, Dr. Mohd. Dahalan Mansoer, Dr. Mahmood Merican dan Prof. Hamid Abdul Rahman di atas bantuan mereka di dalam penyusunan semula kertas-kertas saya ini ke Bahasa Malaysia.

Summary:

Aetiopathologic causes of the first 1564 fractures encountered in the Orthopaedic Service of University Hospital are presented. It is concluded that the results of this initial presentation suggest two features.

These are:-

1. That majority fractures have their origin in 'preventable' causes and
2. That, should preventive measures not be implemented in time the increase in the number of fracture cases, the accompanying financial loss and the morbidity rate, both of life and limb, may well be profound.

Book Reviews

NUTRITION IN PREVENTIVE MEDICINE, by G. H. Beaton and J. M. Bengoa, Geneva, 1976 (World Health Organisation: Monograph Series, Np. 62), ISBN 92 4 140062 5, 590 pages. Price: Sw. fr. 83. Available through WHO Representative, Malaysia, Room 1004, Fitzpatrick Building, Jalan Raja Chulan, Kuala Lumpur.

In spite of all efforts to eliminate the causes, malnutrition remains a grave problem throughout the world, particularly in the developing countries. Making sufficient food available is not, as might be supposed, the only difficulty since there are many important contributory factors including ignorance about the nutritive values of foods and poor family budgeting. The significance of malnutrition in relation to health, social progress, and economic development is now clearly recognised, and the World Health Organisation, in common with the Food and Agriculture Organisation of the United Nations, the United Nations Children's Fund, various international aid organisations, and national governments, regards the conquest of malnutrition as a top priority. WHO's concern is mainly with malnutrition as a predisposing factor in a wide range of diseases; in particular, the high childhood mortality rates for infections such as measles in developing countries are closely linked with the poor nutritional status of the child population.

Up to the present there has been no comprehensive treatment of malnutrition and preventive medicine, and this is a major contribution to the fight against this scourge. It will serve as a field guide for health workers, a work of reference for planners, and a teaching resource for schools of medicine, public health, nursing, and allied fields.

DIAGNOSTIC ULTRASONICS: Principles and Use of Instruments. Granads Publishing Ltd., Lond. pp. 320 £15.00 net.

The book explains the use of ultrasonic scanning machines and gives guidance in overcoming all the problems which might arise. It helps in a proper understanding of how results are produced as well as giving practical information on such things as manipulating controls, maladjustment of sensitivity controls, the special features of machines at present available, and advanced techniques of usage.

The routine use of diagnostic ultrasonic instruments in hospitals is increasing rapidly at present. All doctors who use diagnostic ultrasonics will find this an invaluable manual to have with them always.

ADDENDUM

THE MEDICAL JOURNAL OF MALAYSIA Vol. XXXI No. 2 December 1976

ARTICLE: THE SURGICAL MANAGEMENT OF PTOSIS by Andrew C.H. Fong

Page 145: Lines 7 to 10 is inserted out of place: they should follow the bottom line of the column. Line 6 should continue to line 11.

CORRECTED VERSION

From line 5: (page 145)

In Chinese patients with unilateral ptosis and absent lid fold on the contralateral lid, it is necessary to use the posterior approach to avoid creating an unwanted lid fold.

From line 20 (page 145)

For severe unilateral or bilateral congenital ptosis with levator function of 4 mm or less, levator resection is still the operation of choice. If this fails, a suspension operation is done as a second procedure. Beard (1969) advised bilateral suspension operation as a primary procedure for severe bilateral congenital ptosis if the patient is reluctant to undergo a second operation.

Correspondence

14th December 1976

Professor A A Sandosham
Editor
The Medical Journal of Malaysia
M.M.A. House
124, Jalan Pahang
Kuala Lumpur

Dear Sir,

I read with interest the paper by Dr S K Teoh on "Tapeworm infestation in Perlis" which appeared in the Medical Journal of Malaya, 31, 57-58 of Sept. 1976. It is now almost universally accepted that the drug of choice for most tapeworm infections, particularly the *Taenias*, is Niclosamide (Davis, A. 1973 "Drug treatment in Intestinal Helminths" WHO Publication). I find no mention of this drug in Dr Teoh's paper and also find, on inquiry of the agents, that this very effective drug has not found its way into this country. If there is a Formulary Committee that decides on and regulates the import of drugs into Malaysia, I would like to draw their attention and the Medical profession to the fact that niclosamide, in my experience, is the best drug we have at the moment against tapeworms. It kills the scolex and proximal segments on contact and the scolex releases its hold on the mucosa of the small intestine, and the worm is evacuated.

Yours faithfully

Professor A S Dissanaiké
Head
Department of Parasitology
Faculty of Medicine

The Editor,

Sir,

Nikethamide Usage in Resuscitation

For many years it was common clinical practice to administer nikethamide as a final therapeutic gesture in patients dying of cardio-respiratory failure¹. This followed its much publicised action as a respiratory and cardiac stimulant.²⁻⁵ Now that such indiscriminate use has been discredited^{1,6-9} we wondered to what extent it was still being used in resuscitation. For this purpose, the following study was carried out to determine the extent this drug continues to be used in resuscitation.

We reviewed 100 consecutive deaths in children below 7 years of age occurring from 1st July, 1974 to 17th October 1975 in the General Hospital Malacca, Malaysia. The case records were examined for the following information:-

- (1) Whether nikethamide or any other analeptic had been used as a resuscitative measure and if so, the dose and the method of administration.
- (2) The cause of death;
- (3) The order in which the following resuscitative measures were written in the doctors' case record: clearing of airway, oxygen administration, ventilation, cardiac massage, administration of sodium bicarbonate, adrenaline, calcium gluconate, other drugs and finally of analeptics. This information was used to determine the importance given by individual doctors to the use of analeptics in resuscitation. It is probable the order in which the measures are listed in the case record generally reflects the order in which the measures were ordered and carried out.

The study showed that in 74 of the 100 cases reviewed, an analeptic (nikethamide in all cases) was used as a resuscitative measure. In none of these cases was there any evidence of respiratory depression due to drugs or anaesthesia.

The dose varied from 62.5 mg ($\frac{1}{4}$ ml) to 500 mg (2 ml). This was equivalent to 25 mg/kg to 50 mg/kg. It was given by intramuscular injection in 78% and by the intravenous route in 22% of the children. Of the 74 children who had received nikethamide, only 44 case records (doctor's) show the order in which the resuscitative measures had been carried out. In 18 of these, nikethamide was apparently used as the first measure, in 12 as the second measure, in 10 as the third measure and in the rest as the fourth measure.

Analeptic Received

as 1st measure	18
2nd measure	12
3rd measure	10
4th measure	4
order not mentioned	30

Total	74
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Analeptic not received

Total cases reviewed	26
	100

Until the mid-sixties there was a great demand for analeptics. Many new ones were tried and advocated for use in resuscitation of the new born³ in acute respiratory failure,^{3,5} in respiratory insufficiency² and for cardio-respiratory arrest.³⁻⁵ However in the last decade, progress in the field of resuscitation has pushed the use of analeptics into the background. The consensus of present day opinion is that analeptics have no place in resuscitation. (Behrman⁶ and Daniel et al⁹) The serious side effects of analeptics are convulsions, hypotension and CNS depression. Further the margin between the therapeutic and toxic doses is small and as Guilo et al¹⁰ stated, convulsions and other undesirable side effects are frequent even at the recommended therapeutic level.

We wonder to what extent analeptics are being used for resuscitation in other Hospitals.

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.....
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