THE JAFFNA MEDICAL JOURNAL

(THE OFFICIAL PUBLICATION OF THE JAFFNA MEDICAL ASSOCIATION)

VOL. 10, No. 1. MARCH 1970

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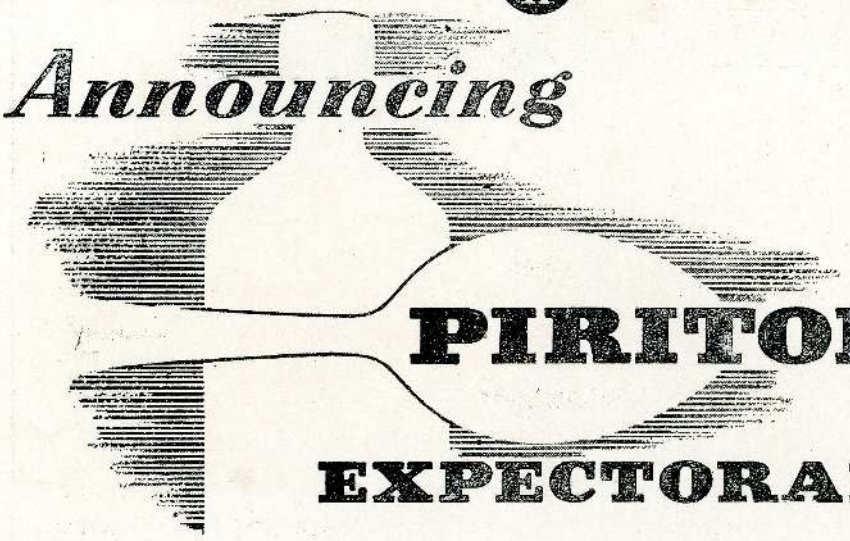

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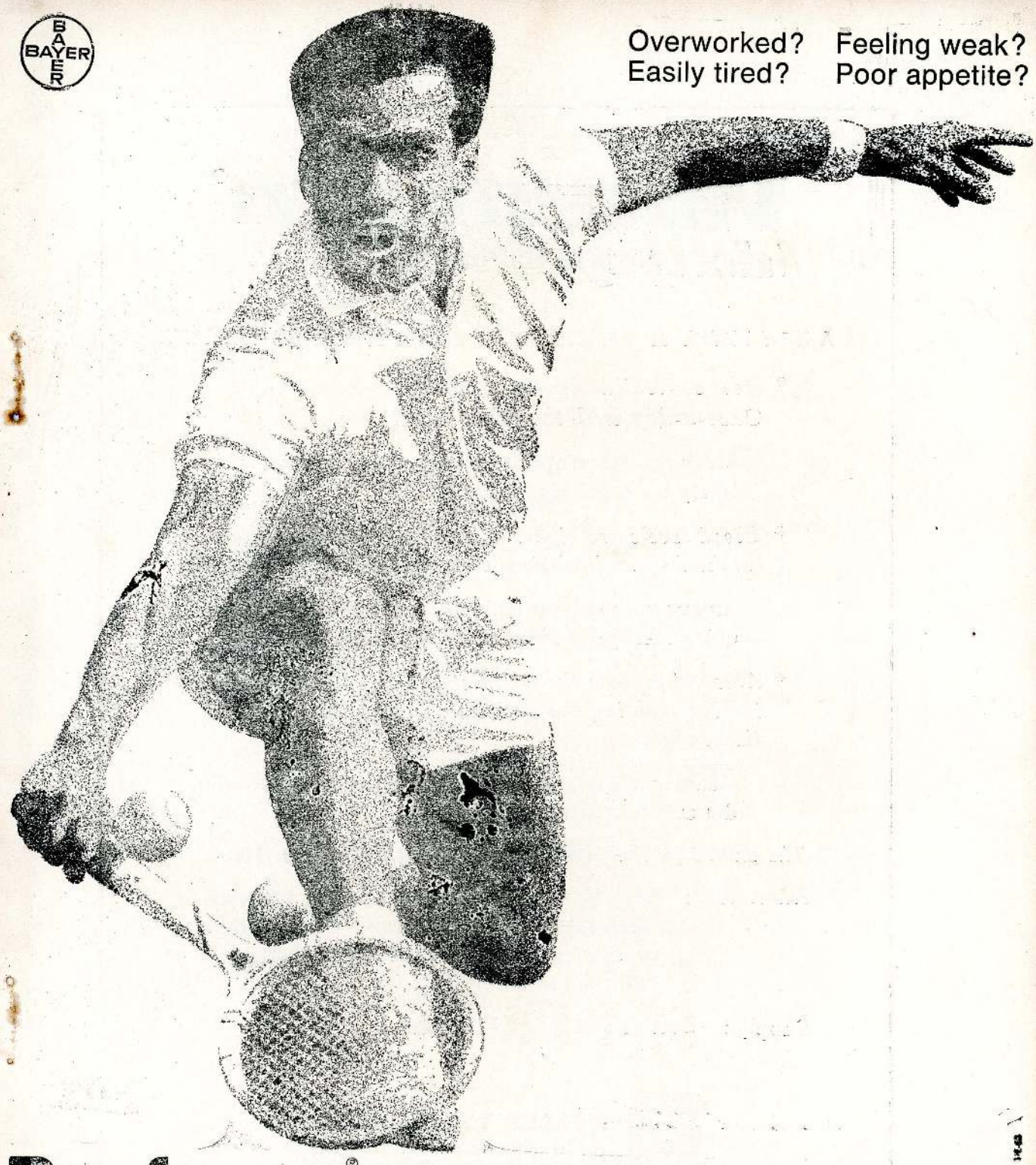

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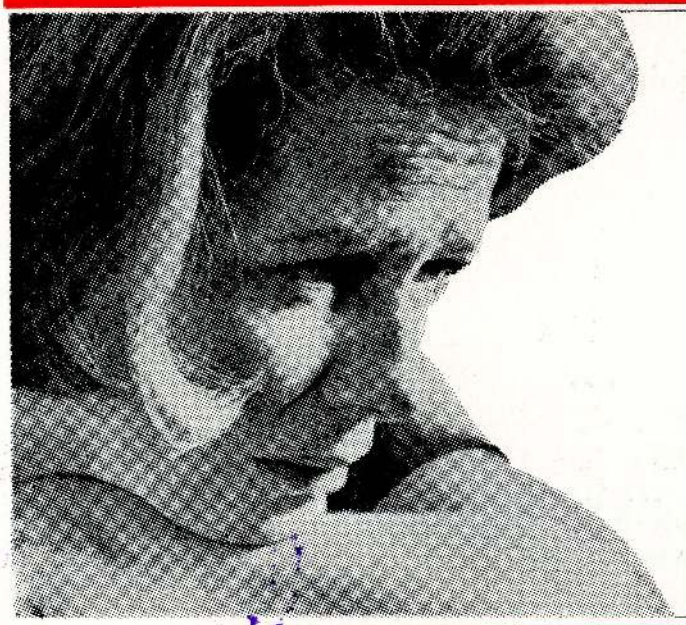

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THE JAFFNA MEDICAL JOURNAL

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CONTENTS

Editorial . . . .

Of Dams and Diversions

A new era is to be ushered in. The waters of our many rivers which were steadily flowing into the sea are to be tapped to revitalise the good earth that surrounds us. We have long passed the age of merely invoking the b'essings of the Gods above to provide the basic necessities all mortals desire and deserve – adequate food and good health in particular. We have decided that in addition, it is time to build the dams to conserve our draining resources, and divert these to places which need them most.

In our context we see an analogous situation. A vast amount of clinical material passes through the various departments of our hospitals. Foreign visitors and those of us who have been to medical centres abroad have unanimously expressed the view that in a very short period we see such a variety of interesting and instructive cases which would need years of effort to collect elsewhere. But ironically little of this appears in print. The material literally and metaphorically drains away through our hands, untapped for research, as no proper records or statistics are maintained. As a result very few clinical trials or publications have appeared in our journals.

What causes this drain of valuable material? How can we possibly make use of personal experiences to promote knowledge on a scientific and analytical basis for the use of all concerned with healing the maladies of mankind? At many of our meetings we commonly hear speakers talking of their impressions of the incidence of diseases, of the associations of illnesses with environmental and other factors etc., but definite statistics of these are hardly ever provided. Liver abscesses, hemiplegias, oesophageal carcinomas are some of the diseases which are said to be commoner in the peninsula than in the rest of the island. Are these statements correct, and if so why? We do not have the answers. Postulations are many and varied. Dietetic factors, the high calcium content of the water and many other causes have been incriminated. There is plenty of material for research and analysis and it is time we harnessed this for the betterment of mankind. Better facilities for documentation of medical records and greater incentives for research are urgently needed.

In Jaffna we are fortunate in having most of the basic equipment we need and some of these are probably superior to those available in most other provincial hospitals. But even here the investigational facilities available are somewhat limited, often due to lack of equipment, shortage of chemicals, reagents, X-ray films, barium etc. The distance from Colombo necessarily causes delays in effecting repairs and maintenance of equipment and obtaining chemicals, X-rays etc. Hence decentralisation of the Electro-Medical Services and the Medical Stores is urgent as it would facilitate uninterrupted functioning of the services available.

Probably our most urgent problem at the moment is the lack of a satisfactory library. Those who attempt to contribute

articles to our journal from the peninsula experience great hardship in obtaining adequate reference material. The library facilities available in Colombo are physically beyond the reach of the medical officers here and as such, we would like to make a strong plea for the provision of adequate funds for the development of our library. Some books and journals have been added since the inception of the library due to the great efforts made by the librarians in the past five or six years. But yet the library is totally inadequate for our needs as most text-books are archaic and only very few of the recent journals are available. An adequate annual grant to maintain a supply of at least the standard journals in the different specialities is an urgent necessity. We regret to mention that the initial allocation of Rs. 1000/- for this year for the hospital library given by the Director of Health Services has been slashed to a mere Rs. 400/-. With the additional costs involved due to FEECS there is precious little that we could obtain for the library with this meagre vote. Rs. 400/- would be just sufficient to pay the annual subscriptions for the British Medical Journal, Lancet and Practitioner.

The lack of a Medical Photographic Department too leads to valuable clinical material not being recorded for future study. Photography of patients, operative findings, specimens, and X-rays is a time-consuming procedure which has now to be done by the doctors themselves. The results too are necessarily amateurish. As this aspect is a specialised field of great value to medical documentation, an attempt should be made to provide this facility without further delay.

Most of the specialists are handicapped by the rapid transfer of medical officers in their units. Many have only Intern Medical Officers under them, who leave after six months to be replaced by new Interns. The routine ward work and emergencies hardly provide them time for maintaining records, collecting statistics, or obtaining material for publication. Provision of a medical officer of a Senior House Officer or Registrar rank who would be attached to each unit for a period of two years at least is a real necessity. He could devote some of his time to collect the data of the interesting material handled by the unit, under the guidance of the consultant staff.

There is insufficient space for filing data systematically in a manner that records could easily be obtained for any clinical survey or study. A secretary who could handle this job would be a valuable asset. We are aware of at least one doctor who, in an effort to study certain clinical problems in his unit, has employed such a person out of his own funds. It is not all who can afford this or would be inclined to do so. True enough there are many who, under all these trying conditions, are endeavouring to do what they can with the facilities available, but much more could be achieved if the proper amenities are provided.

Most of the manuscripts presented to us for the journal are handwritten, and to obtain the services of a typist or even a typewriter has proved to be a difficult task.

Such are the travails we are presently faced with, but let us hope that in the near future we too can build the dams to preserve and utilise the clinical material flowing through our hands to enable us to provide the answers to many clinical problems facing us today.

THE EYE IN CEREBRO-VASCULAR INSUFFICIENCY *

S. ANANDARAJAN, D. O. (Lond.) F. R. C. S. (Eng.)

THIS subject is a large and interesting one. It is not possible for me to deal with every eye sign that may point to the diagnosis of cerebro-vascular insufficiency in a short paper. The purpose of this talk is to review the cases I have seen over the last five years. I am not presenting any case histories, as most of them will only be a repetition of signs and symptoms. The subject is of much interest to medicine, and in reading this paper, I have had in mind the majority of the younger generation of doctors, to whom this may be a source of some knowledge.

The ophthalmologists enjoy a rare privilege of observing in the living state the most intricate tissue of the body—the retina. Embroyologically and morphologically the retina is considered to be an extension of the brain. Its blood vessels are an important part of the peripheral circulation and intimately related to the intracranial, renal and possibly other vessels. The ophthalmoscope has done more to the advancement of knowledge of cerebro-vascular diseases than any other diagnostic instrument, possibly other than angiography. A century has elapsed since the pioneer work of Helmholtz, the discoverer of the ophthalmoscope. The ophthalmoscope has been in use for over a century, and its capacity to reveal details of the fundus has made steady advancement. It is only during the last decade that eye signs are being brought to the forefront of diagnosing the syndrome of cerebro-vascular insufficiency. Intensive studies of the problems posed by cerebro-vascular disease are being done and many new concepts, regarding aetiology, pathology and treatment are being evolved now.

At this stage I wish to recapitulate to you, a few basic facts about the anatomy and physiology of the cerebral circulation. The cerebral neurone is a very sensitive constituent and its capacity to survive deprivation of blood is extremely limited. But it has been observed that not every occlusion of a cerebral vessel produces symptoms or even any asymptomatic pathological change in the brain tissue. This is because nature, with her ingenuity, has produced an adequate collateral circulation, to meet the demands of the area which has been deprived of its blood supply. The two internal carotid arteries and the two vetebrals through the basilar artery form a very important anastamosis called the circle of Willis. The brain normally receives its blood supply through this anastomosis. A typical circular anastomosis of Willis is found in about 50% of normal persons and in nearly 50%, the circle of Willis does not conform to the normal anatomical arrangement. Alpers Bury and Addison in the anatomical studies, of the circle of Willis in normal brains, found no less than 48%, with anomalies, and these consisted of the presence of accessory vessels, unusual origin of vessels, and absence or narrowing of vessels. In many instances multiple anomalies were the rule. Arteriographic studies have revealed that these anomalies were responsible for some of the case of insufficiency. When athrosclerotic narrowing

* Paper read before The Jaffna Medical Association on 2nd November 1969.

occurs in some part of the circle, the development of an effective collateral circulation would be dangerously hampered by these anomalies. Though the circle of Willis is an all important anastomosis, there are other collateral channels which play an important role in the supply of blood to the brain. There are at least six fairly well defined anastomoses within the vertebro-basilar system and between the internal and external carotid arterial systems:—

1. Anastomosis between the superior thyroid and muscular branches of the vertebral.
2. Anastomosis between occipital artery and muscular branches of vertebral artery.
3. Anastomosis between anterior and posterior cerebral arteries.
4. Anastomosis between temporal branches of the middle cerebral and posterior cerebral arteries.
5. Anastomosis between the superior cerebellar and posterior inferior cerebellar arteries.
6. Anastomosis between anterior cerebral and occipital branch of the posterior cerebral artery.

Another anatomical consideration, is the difference in calibre between the two vertebral arteries. Analysis of cases with vertebro-basilar insufficiency has shown that the wider calibred vertebral vessel is found on the left side in 45% of the cases, the right being wider in 30% of cases, and both being of equal calibre in 25% of the cases.

From this it should be noted that the anatomical concept of cerebral circulation is not a rigid entity, but many variations from the orthodox anatomical pattern exist. Angiographic studies have shown the richness of the collateral circulation of the brain, and the patients who manifest clinical symptomatology of cerebro-vascular insufficiency are those with poorly functioning collaterals. In recent years cerebral angiography has brought in a new understanding of the pathology, but much still remains obscure. It was once thought that the variations in blood pressure alone led to development of neurological signs and symptoms in patients with cerebro-vascular disease. Denny Brown stressed the importance of diminished blood flow, which results in low availability of oxygen to the brain, and for this the cerebral blood flow and not the blood pressure is the ultimate factor. The cerebral blood flow is usually expressed in ml of blood per 100 gram of brain per minute. This flow is the resultant of two forces.:

(a) The pressure driving the blood through the vessels.

(b) The resistance it meets during the course.

The pressure that is available i.e. the pressure head, is a difference between the pressure on the arterial side and that on the venous side. The cerebro-vascular resistance which is expressed in mm. Hg, is due to a multiplicity of factors. These are:

(1) Structure of the walls of the blood vessels.

(2) The functional tone of the vessels.

(3) External pressure on the vessels i.e. the intra-cranial pressure.

(4) The viscocity of the blood passing through the vessels.

For many years the transient attacks of cerebral dysfunction or blindness occuring in cerebro-vascular disease, were thought to be due to vascular spasm. How could this be possible? The cerebral arteries are least active and will not contract without a definite stimulus. Sir George Pickening in 1951 showed that many of these symptoms attributed to spasm, could be caused by emboli. This could be well seen in the retinal arteries. This embolic hypothesis has gained considerable importance. Fishes in 1959 Ross Russel in 1963 and many others including myself, have observed in patients with unilateral blindness, small white or yellow refractile bodies travelling slowly and steadily along the retinal arteries, and impacting sometimes at bifurcations. These emboli are made of fibrin or platelets or even of cholesterol. I had the privilege of seeing three patients, all of them over the age of 60, who experienced sudden unilateral blindness. During examination of the fundi, I was able to see these small refractile bodies passing along the retinal arteries, and gradually disappearing into the periphery. When this happened, the vision was restored with dramatic suddenness. In one patient the impaction of the embolus remained permanent with an altitudinal field defect. All these patients had stenosis of the internal carotid artery. These transient attacks of cerebral dysfunction and attacks of loss of vision are due to these refractile, breakable emboli.

Now I come to the general discussion of cerebro-vascular insufficiency. It is known that the transient disturbances of neurological function are due to transient ischaemic attacks. In 1914 Hunt mentioned "cerebral intermittent claudication" as a symptom of carotid artery disease. In 1951 Denny Brown suggested that these attacks may be due to "episodic insufficiency in the circle of Willis." Before we consider this insufficiency in little more detail, let me give you the outstanding clinical features of transient ischaemic attacks occuring in the carotico-basilar system.

1. They are of brief duration. They last only for a few minutes or sometimes up to an hour. Very rarely these may last for a few hours.

2. Spontaneous resolution without residual signs is the normal pattern. Examination between attacks usually reveals no abnormal physical signs. But sometimes nystagmus may persist for a short time after an attack, in which the vertigo was the prominent symptom.

3. Tendency to recur. These recurrences may be several attacks per week or even per day for several years without permanent damage.

4. There may be other patterns which are variable and difficult to predict.

Carotico-basilar insufficiency produces signs and symptoms in the eye which are pathognomonic. I would like to consider the internal carotid and vertebro-basilar insufficiency as separate clinical syndromes in respect of the ocular manifestations.

Carotid insufficiency is a fairly common disease and with longevity of life, it is becoming more and more recognised. The recognition of this importance is a late development. John Marshall believed that three factors have contributed to this. They are:

1. The practice of examining the great vessels of the neck at autopsy.

2. Development of angiography as a diagnostic procedure.

3. Introduction of new methods of treatment both medical and surgical.

To this I would like to add two more factors:

4. The regular use of the ophthalmoscope to study the fundus of the eye by the physicians and the ophthalmologists.
5. Ophthalmo-dynamometry as a routine procedure.

As far as the eye is concerned the most distinctive way in which carotid insufficiency appears is by producing transient blurring of vision or blindness on the side of the lesion. These attacks last from a few seconds to about five minutes without any precipitating factors and may occur repeatedly. The methods of definitely establishing the diagnosis are by ophthalmodynamometry and by angiography, the details of which I will go into a little later. The most important clinical method to clinch the diagnosis is listening over the carotids for a bruit. This is an indispensable part of examination of a patient with vascular disease. Care must be taken not to apply undue pressure. Auscultation must be done along the whole length of the medial border of the sternomastoid muscle. It is usually well heard over the bifurcation of the carotid artery. It is systolic in timing, and is harsh. While listening to the bruit application of digital compression to the artery proximal to the site of auscultation, makes the bruit disappear. If on the other hand while listening digital compression is applied to the opposite carotid, assuming this vessel to be normal, there is an increase in the intensity of the bruit. Therefore it is to be noted, that if an increase occurs it is a evidence of the patency of the opposite carotid. It is important to distinguish a carotid bruit from other causes of bruit in the neck. A carotid bruit is an important sign and when taken in conjunction with other signs it is a very valuable diagnostic sign of stenosis of the internal carotid artery. Because of the ocular signs the patients seek the advice of an ophthalmologist. They usually complain of intermittent blurring or loss of vision in one eye. The blurring of the sight is described by intelligent patients as a blind being lowered from above or being raised from below, and the recovery of sight takes place in the opposite direction. These episodes take place very frequently. It is not accompanied by any other symptom and there is no history of provocation such as bending, standing or even reading. In between these attacks there is hardly any sign left to be detected, unless the central retinal artery is involved.

Intermittent headaches also occur with disease of the internal carotid artery. The headache does not occur with the transient visual symptom. It is described as steady, situated over the eye of the affected side and occurs in episodes with moderate severity, and in a large percentage of patients occurs in the morning. There is a big spectrum of ocular symptoms from twitching of the lids to blindness and I do not propose to consider them in detail. What really happens when the eye is examined during an attack? I vividly remember three patients whose fundi were examined during attacks. I will describe one patient in detail, to illustrate the events leading to blindness and recovery.

A patient was brought into the outdoor clinic of Moorfields Eye Hospital, London at about 1 pm on a Saturday afternoon with a history of sudden blurring of vision of about 5 minutes duration. He was a man about 63 years of age and he

had brought a patient to the hospital. While seated waiting, he suddenly noticed the blurring, and instead of showing the patient he showed himself. On examination the vision was only perception to light. The pupil was dilated and was sluggish. Examination of the fundus showed marked narrowing of all the branches of the central retinal artery. After about 5 minutes he said, he could see the lower half of any object he viewed. On examination the superior temporal and nasal vessels were filled with blood and appeared to be normal. When the details of the superior branches of the central retinal arteries were studied there were two refractile bodies slowly migrating towards the periphery of the vessels. After sometime small particles about 3 or 4 in number were seen to dislodge from the stem of the inferior branch of the central retinal artery and slowly migrate towards the periphery of these vessels. While this migration was taking place the portion of the vessel proximal to the refractile bodies were starting to be filled, and the vision returned to normal. Hollen Hoest in 1958 and Miller Fisher in 1959 have given vivid descriptions of such ophthalmoscopic studies during an attack of blurring of vision. These refracticle bodies were definitely embolic. This should be considered as a warning signal to the ophthalmologists, because most of these patients may develop permanent hemiplegia on the side opposite to the affected eye. There are many causes of transient blurring of vision but there are only four conditions which produce a clinical picture somewhat related to that of internal carotid insufficiency.

They are:

1. Circulatory insufficiency in the territory of the basilar and posterior cerebral arteries.
2. Migraine.
3. Temporal arteritis.
4. Impending closure of the ophthalmic artery.

When a history of transient blurring or or loss of vision of one eye often alternating with transient attacks of weakness or numbness of an arm occur, impending occlusion of one carotid artery should be uppermost in the mind of the clinician. An ophthalmologist might not be available during attacks but there may be some residual eye signs present when examined after the attack.

These residual signs are:

1. Ipsilateral retinopathy.
2. Unequal hypertensive retinopathy.
3. Occlusion of the central retinal artery.
4. A bruit over the eye or carotid artery.
5. A fall in retinal arterial pressure as measured by the ophthalmodynamometer.

Th most important occular sign, is the fall of the retinal pressure on the side of the carotid stenosis or occlusion. This is where ophthalmodynamometry becomes very important. This provides a method of detecting the fall in pressure of the ophthalmic artery which is a branch of the internal carotid system. The technique is simple but needs practice.

A surface anaesthetic is instilled into the eyes and the patient is seated on a chair with a head rest. The foot of the dynamometer is placed vertically on the sclera closer to the insertion of the lateral rectus muscle. As the pressure in the instrument increases the retinal artery will begin to

pulsate. Normally there is no pulsation in the retinal artery but pulsation occurs in raised intra-ocular pressure called glaucoma and in aortic insufficiency. At a certain stage of the arterial pulsation, it will show a collapsing phase. This is the diastolic end-point. When the pressure is further increased the pulsation disappears. This is the systolic end-point. The normal relationship of the retinal and humeral arterial pressures is 45:100 for diastolic pressure and 54:100 for systolic pressure. The normal arterial pressure in the retinal vessels ranges between 35 mm Hg diastolic and 70 mm Hg. systolic pressure. The pressure that is taken into consideration is the mean retinal pressure. This is obtained by a formula :—

Mean retinal pressure = 0.475 (mean humeral pressure – T) + T

T is the intraocular pressure.

Among the other diagnostic procedures I like to mention two methods which have played a very important part in recent years.

1. Cerebral angiography.
2. Fluorescein retinography.

Cerebral angiography was introduced by Honiz in 1927. Later when the technique of percutaneous puncture of the carotid arteries became firmly established and widely practised, the ability to serially visualise the cranial arteries during life, was an important step in the precise diagnosis of cerebro-vascular disease. Although there are hazards in angiography like allergic reactions, hypotensive reactions, and formation of haematomas at the site of needle puncture, this method remains a major step in the diagnosis and management of cerebro-vascular disease. Therefore angiography is a must in all cases of transient ischaemic attacks so that proper treatment could be instituted before a major episode occurs. Angiography, in addition to revealing obstruction in the major vessels of the carotico basilar system may even show the presence of a cerebral tumour.

Fluorescein retinography is only about 7 years old. It consists in injecting fluorescein into the ante-cubital vein and taking fundus photographs at repeated intervals. This has assumed a great step in the diagnostic procedures adopted to study the retinal circulation. Fluorescein study not only gives a picture of the retinal vascular tree but also gives information of the permeability of the vessel walls during the re-circulation state. The embolic phenomenon I have described, has been studied with fluorescein and has given much information regarding the formation, migration, impaction, crumbling and resolution of these emboli. In addition to this, fluorescein study also reveals the vitality of the capillary network of the area in the territory of distribution of the affected retinal vessel. This method is only in its infancy and needs further study and research. It has not become a routine diagnostic procedure.

The eye is the only organ in the body which lends itself very readily to a detailed study of the circulation. Schmidt in 1874, Harliitz in 1926, Schippet and Flint in 1962 and Knox in 1965 have contributed much to the descriptions of eye signs in occlusive arterial disease of the head and neck. They have drawn attention to cause and effect relationship between arterial blood flow and eye signs. So far I have gone into details of the fundus appearance in internal carotid disease. It is a recent discovery that many a sign occuring in the anterior segment of the eye ball is due to internal carotid stenosis or obstruction. The pathological effects of this anterior segment

ischaemia are many. A feature of the clinical course is the lapse of time between the onset of ischaemia and the first appearance of signs in the anterior segment of the eye ball. In contrast to this in the posterior segment or fundus, changes occur early in the transient ischaemic process caused by internal carotid insufficiency. The most important anterior segment changes are:

1. Corneal oedema
2. Neo-vascularization of the cornea
3. Anterior uveitis
4. Atrophy of the iris
5. Horner's pupil
6. Cataract.

All these signs go to show that the eye is not an isolated organ in the human body, but an important store house of signs in most of the disease processess affecting the cerebro-vascular system. Therefore it becomes important that an ophthalmologist should carry a stethoscope and an ophthalmo-dynamometer and the physician should carry an ophthalmoscope.

Now I come to the consideration of vertebro basilar insufficiency. It should be remembered that the symptomatology of the transient ischaemic attacks in the vertebro-basilar territory is much more varied than in the internal carotid territory. Total occlusion of the basilar territory is always fatal. The most common manifestation of vertebro-basilar insufficiency is vertigo occurring alone or in combination with other symptoms. Visual field disturbances, from complete loss in both eyes to hemi anopic field defects, may occur due to involvement of the blood flow in the posterior cerebral artery. Diplopia and ptosis may also occur. Vertebro-basilar insufficiency could occur in arteriosclerosis, hypertension, heart disease, cervical spondylosis and sudden changes of posture or neck movements. The patients may also complain of visual hallucinations. They vary from white or black spots to organized hallucinations. Williams in 1964 has noted visual changes including diplopia in two-thirds of cases. Williams and Wilson in a comprehensive study of vertebro-basilar insufficiency have commented on the significance of organized visual hallucination which precede a fatal catastrophe. The other associated symptom is a migraine type of occipital headache appearing later in life. The headache is of throbbing quality very often unilateral and accompanied by occipital tenderness.

Vertebro-basilar ischaemia could be diagnosed by:

1. Characteristic symptomatology.
2. Arteriography.
3. Electro-encephalography.
4. Xanthochromia in C. S. F.

Toole in 1964 described a new clinical entity called the "subclavian—steal syndrome." This is one of the causes of transient ischaemic attacks occuring in the vertebro-basilar territory. In this condition there is stenosis of the subclavian artery proximal to the origin of the vertebral artery. This causes a reduction of pressure beyond the stenosis. Blood flows through the vertebral of the opposite side and through the vertebral of the same side into the subclavian artery distal to the stenosis. During exercise of the arm blood is siphoned out from the vertebral system and a basilar insufficiency occurs causing ischaemia of the brain stem, cerebellum and the occipital lobe. The presence of a "subclavian steal" must always be considered in vertebro-basilar insufficiency.

The blood pressure in the two arms will show a difference and a systolic murmur may be heard over the affected subclavian artery. The diagnosis is by aortography with serial films.

The knowledge of cerebro-vascular insufficiency is far from complete. What is said today may be a subject of ridicule tomorrow. In the development of knowledge, first we have an instinct, then an opinion and finally the truth. I think I am not wrong to say that we are only in the stage of opinion and the truth may elude us for many more years. To know more about cerebro-vascular insufficiency, let us look more into the cerebral vessels themselves. As Bertrand Russel said "The fundamental cause of trouble in the world today is that the stupid are cock-sure while the intelligent are full of doubt." Let us feel that we are in the latter group and keep an open mind on cerebro-vascular insufficiency until the human intellect unfolds the mystery of nature.

Before I conclude this paper I would like to make a plea to create Medico-Neuro-Ophthalmological centres in big institutions in the provinces where a physician, an ophthalmologist and a neurologist could work as a team. Unfortunately in the present day, the ophthalmologists consider themselves an isolated group of specialists living and dreaming in a world of their own. A co-ordinated service like this will open the fields of research and produce an efficient system to the patients to whom we owe our services. I hope the day will dawn when the ophthalmologist will look at his speciality through the eyes of a physician and the physician in turn looks at his speciality through the eyes of an ophthalmologist.

THE ELDERLY PRIMIGRAVIDA*

(A TWO YEAR STUDY)

BY

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THIS paper is based on a study of 24 elderly primigravidae delivered in the University Obstetric Unit Colombo, during the two year period 1962 and 1963. The total number of deliveries during this period was 2108. The incidence of delivery amongst the elderly primigravidae was thus 1.13 per cent in this series.

It must be admitted that this series is small to be statistically significant. But elderly primigravidae however are not common in Ceylon, as in the West, because of the existing social and racial customs which favour early marriage.

Definition of Elderly Primigravida

There has been a certain amount of discussion whether the term should be elderly primiparae or primigravidae. Greenhill [1] defines primipara as a woman who has delivered her first viable child and primigravida as one who is pregnant for the first time. Dutta [2] is of opinion that although the term primipara is in common use, for obvious reasons it is preferable to use the term primigravida. The question arises who is an elderly primigravida? Some authorities like Rucker, De Lee and Greenhill take 30 years as the lower age limit for definition while Stander, (1945) Nathanson [3] and Kuder and Johnson, prefer 35 as the minimum. Thompson [4] applied the term elderly primigravida to a woman over the age of 35 years, who is pregnant for the first time. Booth et al [5] considered the age of 35, as the lowest age for their series, as recommended by the Council of the International Federation of Gynaecologists and Obstetricians, and by Macdonald and Mac Lennan. In our unit also we accepted the Council's definition of elderly primigravida, as applicable to a woman of the age of 35 years and over who is pregnant for the first time, as the criterion.

Studies on Elderly Primigravida

Nixon [6] mentioned that the literature on the subject was somewhat scanty. However the past few years have seen an increasing number of studies of elderly primigravidae.

One of the very recent works on this subject have been by Booth and Williams [5] who studied the elderly primigravidae delivered at the Queen Charlotte's Maternity Hospital, London in the 10 year period 1951—61.

* This study was done when the author was the Senior House Officer to Prof. A. Sinnatamby in the University Obstetric Unit Colombo.

Table 1.

COMPARISON OF SOME STUDIES OF ELDERLY PRIMIGRAVIDAE

Authors	Place	Years	No. of Patients	Incidence	Caesarean Section	Caesarean Section rate	Foetal and Neo-natal Death rate	Maternal Deaths	
Denner and Ainslie	New York	1939—1948	446	4.2%	168	37.7%	4.4%	1	2.2/1000 live births
Arnot and Nelson	San Francisco	1922—1949	346	3.6%	33	9.5%	8.96%	4	12/1000 live births
Thompson	Dublin	1944—1949	537	2.75%	86	16%	9.7%	1	1.9/1000 live births
Hawkins, Foley and Tierney	Chicago	1937—1949	382	1.2%	63	16.4%	4.2%	3	8/1000 live births
Waters and Wager	Jersey City	10 years	649	1.2%	107	16%	6.9%	8	12.3/1000 live births
Methodist	Brooklyn	1943—1947	277	2.46%	47	16.8%	7.5%	1	3.6/1000 live births
Booth and Williams	Queen Charlotte's London	1951—1961	1018	—	177	14.5% (35—40) 29.5% (over 40 yrs.)	37.4% (per thous-and	1	—
Present Series	Colombo	1962—1963	24	1.13%	10	41.5%	0%	0	0/1000 live births

Table I shows in a tabulated form a comparison of some of the studies on elderly primigravidae, by various authors. Our two year study (1962—1963) has also been included.

The number of patients in these studies ranged from 277 to 1,018. Our two year series comprised of only 24 patients. The incidence of elderly primigravidae among total obstetric patients varied from 1.2 per cent to 4.2 per cent. In our series it was 1.13 per cent. The Caesarean section rates ran from 9.5 per cent to 37.7 per cent. It was 41.5 per cent in our study. It is interesting to note that in four of the studies, the Caesarean rate was about 16 per cent. The high incidence in our series is probably due to the small number of the study. Gross foetal and neo-natal deaths ranged from 4.2 per cent to 9.7 per cent. It was nil in our series. Although the maternal mortality rates involved totals too small to be valid statistically they ranged from 2.2 to 12.3 maternal deaths per 1000 live births (Nil per 1000 live births in our study).

The Problem of the Elderly Primigravida

Since the reproductive phase of a woman extends from the onset of menarche at puberty, till the menopause, she has a 'reproductive era' of 30—35 years. During this period the fertility varies, being maximum about 18—23 years, with a definite waning after 30 years of age. Thus when pregnancy occurs for the first time at 35 years the term "elderly" is justified from a reproductive angle.

Two distinct classes of elderly primigravidae should be recongnised, viz, those who have married late and have become pregnant quickly after marriage and those who, although married young have failed to become pregnant untill after a considerable time has elapsed. The former group indicate a high degree of fertility and the probability of succeeding pregnancies. In the latter group, the fertility is low, and chances of future pregnancies may be remote. Lundh in 1926 drew attention to the association of elderly primigravidity with genital hypoplasia. Horner described a more or less clearly defined class of difficult labour, which De Lee and Greenhill named the "Dystrophia-dystocia syndrome". In some of the elderly subfertile primigravida, the dystocia may be attributed to endocrinal dysfunction, causing genital hypoplasia, delayed conception, uterine weakness and pelvic deformity, which all add to the difficulties of the case, apart from the rigidity of the soft parts.

Ante-Natal Care of Elderly Primigravidae

It is worth stressing the fact that although elderly primigravidae require very careful supervision in the ante-natal period and skilled management during labour, the majority of them have normal confinements. Booth et al [5] (1964) in their study found 68 per cent of their patients had an uneventful pregnancy. Home delivery has no place for elderly primigravidae, since labour conducted in a hospital would give a better chance of survival for the baby. On the first visit a careful history is taken, and a routine clinical examination carried out including examination of the urine. If the patient has missed only one period, pelvic examination should be postponed till she has missed the second period. A pelvic examination at this stage in addition to confirming the pregnancy gives an idea of the position of the uterus, and the presence of any pelvic tumours. Since all elderly primigravidae usually view pregnancy with much anxiety, it is well to reassure them regarding their con-

dition at the first ante-natal visit. The patient should also be advised on general hygiene, diet and on the importance of hospitial confinement. It is of great importance that she should develop the greatest confidence both in herself and in her doctor. The patient should be seen at three-weekly intervals until the 20th week and then fortnightly intervals until the 32nd week. After this, she should attend the clinic weekly. The prime object of such frequent visits is the detection of early toxaemic manifestations. In the majority of cases however, with more than the average supervision, the confinement is uneventful.

Associated medical and surgical disorders

Randall et al[7] at the Mayo clinic, found that elderly primigravidae showed a higher incidence of medical and surgical disorders. This is to be expected considering the age factor.

In our study of 24 elderly primigravidae, no medical or surgical complications were encountered.

Abortion and premature labour

Nixon[6] in his study found that the incidence of abortions and premature labour was nearly three times more common in elderly primigravidae (10 per cent) than in young primigravidae (3.8 per cent). He attributed this incidence largely to toxaemia of pregnancy. Booth et al[5] found that the slightly increased tendency to premature labour was not statistically significant.

Toxaemia of pregnancy

All writers agree that elderly primigravidae show a higher incidence of toxaemia of pregnancy. Nixon[6] in his study found that toxaemia of pregnancy was three times as frequent in primigravidae over the age of 40 years. Nathanson[3] from his study concluded that toxaemia occurs one and a half times as often in the old patient as in her younger sister. Randall et al[7] found pre-existing hypertension in 11.6 per cent of women after the age of 35, either before pregnancy occurred or very early in pregnancy. They also found that the incidence of toxaemia in women less than 30 years old was 10.7 per cent, while those of 35 years and over 18.4 per cent suffered from it. In our study of 24 cases (1962—1963), toxaemia of pregnancy was present in six of them, an incidence of 25 per cent. Many elderly primigravidae are hypertensives irrespective of their existing pregnancy. According to Thompson[4] it is probably the predisposing factor to the higher incidence of toxaemia in these patients. At any time during the later weeks of pregnancy toxaemic manifestations may arise and these must be treated promptly. If these measures fail to control the degree of toxaemia, termination of the pregnancy should be undertaken. Thompson is of opinion that in these cases, a timely Caesarean section, even as early as the 34th week offers the best solution to this dangerous problem for both the mother and child. Induction of labour by amniotomy is most unsuitable in these cases, for it greatly jeopardises the chance of survival for the infant. Induction of labour, in elderly primigravidae, would only be indicated in such circumstances as a dead foetus and in foetal abnormality e.g. anencephaly. With a high frequency of toxaemia in the elderly mothers, one would expect a corresponding increase in accidental haemorrhage. But Nixon[6] however found this condition in one case only, in his series.

Contracted pelvis

The incidence of contracted pelvis is slightly higher among elderly primigravidae. This is due to there being an association between a lowered fertility and android tendencies in the pelvic shape. If any doubt exists regarding the capacity of the pelvis an X-ray pelvimetry should be carried out, during the ante-natal period between the 32nd and 36th weeks. Nathanson[3] in his study, however, found that a higher percentage of normal pelves occurred in the old primigravidae than in the younger ones. In our series, contracted pelvis was present in 3 of the 24 cases (an incidence of 11.25 per cent).

Malpresentations

A higher incidence of malpresentations occurs in elderly primgravidae than in the younger group. Nixon[6] found in his analysis that occipito-posterior position of the vertex and breech presentation were three times more common. Thompson[4] reported an incidence of 6.6 per cent of breech presentation while Weisl et al[8] found an incidence of 7.2 per cent. In our study, breech presentation occurred in 2 patients (an incidence of 8.3 per cent). With regard to malpresentations, the best policy to adopt is to assess the situation at the 38th week, and then decide whether spontaneous onset of labour should be awaited or an elective Caesarean section should be performed.

Duration of pregnancy

With regard to the duration of pregnancy in elderly primigravidae, Nathanson[3] found that the duration was actually longer in the younger group of primigravidae than in the elderly group. The great majority of them reach the 38th week safely. It is important, at this stage to assess each patient. Spontaneous onset of labour should be awaited if everything appears satisfactory clinically. A good number of elderly primigravidae come into this group, and this policy will be rewarded by a higher percentage of successful results. This was so in our series, where 14 patients delivered successfully by the vaginal route, giving an incidence of 58 5 per cent.

Premature rupture of membranes

This occurred in 21.2 per cent of elderly primigravidae, as compared with 12 per cent in the younger group in Randall's series. Waters et al[9] also came to similar conclusions, from their study. This complication was not encountered in our series.

Duration of labour

Most workers are generally agreed that the duration of labour among elderly primigravidae is usually longer than in the younger group. Nixon[6] found that the shortest time was one hour and fifty minutes and the longest 92 hours. In his study the average length of labour among elderly primigravidae was 25½ hours, whereas in the young primigravidae it was 19¾ hours. Nathanson[3] also confirmed Nixon's findings, with regard to the duration of labour. The duration of labour in our 14 patients, who delivered vaginally varied from 11 to 34½ hours.

Uterine inertia

This is one complication to which elderly primigravidae are particularly prone. Uterine inertia in these patients may be primary but more often it is found in association with one of the following conditions: an occipito-posterior position of the vertex, an inelastic or rigid cervix, or a minor degree of pelvic contraction. Nathanson[3] observed that uterine inertia, both primary and secondary was nine times as frequent in the elderly primigravida as compared with the young patients. Randall et al[7]

found abnormal behaviour of the uterus and cervix in 6.4 per cent of women 35 years of age or older. They claim that the efficiency of the behaviour of the genital tract during parturition declines with advancing years.

Management of labour

The management of labour in elderly primigravidae, is carried out on the usual lines in the "booked case", i.e, where a careful assessment had been done in the 38th week. Thompson[4] is of opinion that where labour is prolonged for more than 1 or 2 hours after reaching the second stage, forceps delivery should be effected. In our study, forceps delivery was effected in 2 patients out of the 14 who delivered vaginally for prolongation of the second stage of labour which was probably due to uterine inertia. If uterine inertia supervenes prior to the rupture of membranes, there is no cause for immediate anxiety but in cases where the membranes have ruptured a vaginal examination should be performed, and a decision taken as to whether labour should be allowed to progress or immediate Caesarean section be performed. Faced with the problem of the "non-booked" case in labour, the correct policy would be early assessment of the case by careful vaginal examination if the course of labour indicates abnormality such as inertia or breech presentation. If however, labour is progressing satisfactorily, no vaginal examination is required. The conduct of the third stage of labour is equally important in these patients, since they have a greater tendency to post-partum haemorrhage and retention of the placenta. There were no third stage complications in our series.

Place for Caesarean section

Thompson[4] considered elderly primigravidity as one of the definite indications for an elective Caesarean section.

Booth et al[5] who performed one quarter of the elective Caesarean sections in their series for the presence of breech, conclude that although age per se is not an absolute indication for operative delivery, it obviously influences the obstetrician in the management of the case. They state that the risk of breech delivery is too high to be permissible in an elderly primigravida.

Caesarean section was performed in 10 patients in our series of 24 cases, an incidence of 41.5 per cent. The indications for Caesarean section were as follows: (i) Subfertility and contracted pelvis, (3 cases), (ii) Breech presentation (2 cases), (iii) Pre-eclamptic toxaemia (3 cases) and (iv) "Large baby" (2 cases).

Nathanson performed Caesarean section in 10.75 per cent of elderly primigravidae. He states that practically in every instance it was definitely indicated on more than one premise, the most important of which was not the advanced age of the patient. The definite existence of various degrees of pelvic deformity, usually associated with other potent contributory factors such as non yielding cervix, pelvic neoplasms, progressive toxaemia etc. was noted in practically every case in the group.

Birth weight of the babies

The birth weight of the babies in our series varied from 3 lbs. 8 ozs. to 8lbs. 2ozs.

Congenital anomalies in the baby

Weisl et al[8] found that the incidence of congenital anomalies was higher among the elderly primigravidae. Mongolism, for instance, was eight times more frequent in the children of elderly primigravidae, than it was among other infants. There were no congenital abnormalities in any of the babies in this study.

Prematurity and still birth incidence

The prematurity rate was a more frequent complication of the child of the elderly primigravida, exhibiting itself in 8.24 per cent as against 5.41 per cent for the total number of deliveries[8]. Four of the babies born in our series were premature, an incidence of 16.6 per cent. In Nathanson's study[3] it was three times higher among children born to elderly primigravidae. In Weisl's series[3] the stillbirths were one fourth again as frequent in the elder patients and neonatal deaths were twice as frequent. Thus in his group of older mothers, the chance of foetal survival was markedly reduced. There was no foetal loss in our series.

Maternal mortality

In Nixon's series[6] the maternal mortality was 4 per cent, as compared to 1.16 per cent in Nathanson's study[3] The fact that Nixon did not employ Caesarean section in his series may account partly for the higher incidence. There was no maternal mortality in our study.

The puerperium

In the management of the puerperium early active movements and ambulation should be encouraged in elderly primigravidae, to prevent complications such as thrombophlebitis supervening on varicose veins, which are common among elderly primigravidae. There is also a greater tendency to subinvolution of the uterus among them. Breast feeding is generally inadequate in these patients, and if so, it is preferable to establish artificial feeding of the infant before the patient is sent home.

I would like to conclude this paper quoting Weisl[8] who said, "Pregnancy in an elderly primigravida may be contemplated with reason, approached with intelligence and confidence, and managed before, during and after parturition with complete awareness of the hazards, adequate preparation for threatened complications, and conservative intervention in the interests of the lives involved".

Summary

(1) A two year study of the elderly primigravidae admitted to one of the Professorial Units of the University Unit at the De Soysa Hospital for Women in Colombo has been the subject of this paper.

(2) Elderly primigravidae are not common in Ceylon because of existing social and racial customs which favour early marriage.

(3) The term 'Elderly primigravida' has been defined and discussed.

(4) The literature on the subject has been briefly reviewed and an attempt has been made to compare our results with the findings of various workers on the subject. It must be admitted however, that our series was too small to be statistically significant.

(5) The place for vaginal delivery and Ceasarean section among elderly primigravidae has been discussed.

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PROLAPSED LUMBAR INTERVERTEBRAL DISC

PATHOLOGY & RELATION TO SYMPTOMS

By

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PATIENTS with prolapsed intervertebral discs, are seen by general practitioners and specialists and obtain relief from various therapeutic measures prescribed, yet surprisingly very little is known of the precise pathological processes involved, or as to how and why they occur. In this article an account is presented of present day concepts of the nature of prolapsed intervertebral discs, the pathological processes involved and their relation to symptoms.

Definition :

By prolapsed intervertebral disc we mean a disorder of the disc in which there is rupture or solution of the annulus fibrosus to a varying extent with resultant escape of nucleus pulposus material in different degrees into the annulus or beyond it. It usually presents as low backache and/or sciatica. This diagnosis is used, very often wrongly, for an undiagnosed backache, or to include other clinical entities such as muscle strain, ligamentous strain, sprung back etc. and vice versa.

Historical background :

One of the chief presenting features of prolapsed intervertebral disc is sciatica—i. e. pain running down the lower limb. Sciatica was known two centuries earlier and it is not surprising that the evolution of the diagnosis of prolapsed intervertebral disc is intimately related to it. However, it was Mixter and Barr[1] who in 1934 after the surgical treatment of several patients with sciatica with or without backache concluded, "Sciatic nerve compression is due to a prolapsed disc more commonly than the neoplasm, for which it has been mistaken." This concept has remained generally acceptable since.

Anatomy :

The normal lumbar intervertebral disc is a bi-convex structure. It consists of an outer annulus fibrosus—a dense conglomeration of collagen fibres—within which and bounded above and below directly by the vertebral end plates is the nucleus pulposus, a glairy mucoid substance through which run fine strands of collagen. In older age groups the nucleus becomes less fluid and the annulus less resilient.

Aetiology :

Several theories have been put forward to account for prolapsed discs.

(1) The Osmotic theory :

The basic concept derives from the progressive dehydration of the nucleus pulposus with age, which presumably leads to a decreased efficiency in distributing tension uniformly to the annulus. Such unequal distribution of tension predisposes the annulus to rupture and subsequent herniation of the nucleus. The normal turgor of the inter-vertebral disc is due to the osmotic property of the nucleus which is of immense magnitude.

Two views have been expressed as to how alteration of the osmotic tension causes prolapses of the disc. Charnley[2] holds the

view that an increased osmotic pressure within the disc leads to a marked imbibition of fluid which the annulus cannot accomodate and so it ruptures and the nucleus herniates. Hendry[3] is of the view that the initial change is the lowering of the osmotic pressure with a consequent fall in imbibition capacity resulting in inability of the disc to hold a normal amount of fluid under mechanical stress. There is a sudden release of fluid leading to attrition of a segment of annulus and later prolapse. What is more important is why this alteration of osmotic pressure should occur. Naylor[4] has suggested that this may be due to endocrine influences.

(2) **Constitutional factors :**

Certain findings suggest that there are factors inherent in an individual which seem to make them liable to develop prolapsed discs whether such prolapses cause symptoms or not.

(a) Neuro-endocrine influences :

Scott[5] having subjected voles to emotional stress killed them and noted a marked increase in the proportion of nucleus pulposus to the entire intervertebral disc and frank rupture of these discs in many instances. Exactly how these act on the intervertebral disc is at present unknown.

(b) Genetic factors :

Based on studies in dogs and mice Berry[6] suggested that prolapse often results from congenital or developmental anomalies in the disc due to a specific genetic make-up.

(c) Multifocal lesions :

The findings of multifocal lesions at surgery and at autopsy and the finding of another disc at a different level at re-laminectomy has led to the theory that an inherent factor, as yet unknown, is operative to account for the structural instability of the intervertebral discs of these affected individuals.

(3) **Trauma :**

Many patients give a history of trauma suggesting a mechanical derangement. But many are certain that they have not had any trauma at all. However, sheer force causes usually fracture of vertebrae. The possibility of recurrent minor episodes of trauma involving force of low magnitude, but all together leading up to prolapse has been an alternative hypothesis acceptable to many.

Roaf[7] suggests that rotation and horizontal shearing forces render the discs highly vulnerable and liable to rupture. The protection against this is the integrity of the various intervertebral, inter-spinous and other ligaments but disorder of the disc would upset the equilibrium of forces and predispose to rupture.

(4) **High-heeled shoes :**

The suggestion that wearing high-heeled shoes may lead to prolapse of discs does not hold, as men are more liable to prolapsed discs. Further, the effects on the spine following some cases of poliomyelitis, congenital dislocation of hip are worse, but these subjects are no more prone to a prolapsed disc.

(5) **Allergy :**

Allergy as a cause has been suggested and may be a cause considering present day knowledge on anto-immune diseases and its protean manifestations.

(6) **The upright position :**

The suggestion that the upright position is the cause of prolapsed discs can be dismissed as it is well known that cats, dogs and pigs all get prolapsed discs. However not one single theory accounts for all cases.

Pathology

(1) The local disc changes :

The changes occurring in the disc have been divided into three stages.

For the intervertebral disc to prolapse, it has to undergo a degenerative change and this constitutes the first stage. In this stage there is first softening of the nucleus and posterior part of the annulus. The nucleus changes start first, it disintegrates and breaks up, leading to complete fragmentation. The fragments lie free surrounded by semi-fluid material. There is a generalised weakening of the annulus posteriorly but complete disintegration of the annulus takes place over a comparatively small area. Rupture or perforation may take place here and the contents of the disc are then retained only by the over-lying posterior longitudinal ligament (Fig 1). At this stage the nucleus may not be completely broken up.

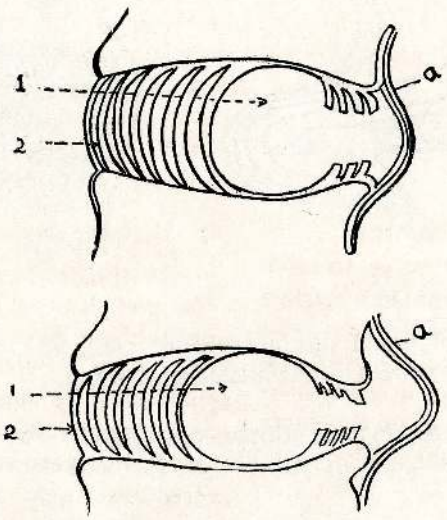

Fig. 1. Shows early rupture of annulus-fibrosus (2). The nucleus (1) is retained by the posterior longitudinal ligament (a) at first Later the posterior longitudinal ligament gets stripped of its attachment as shown in lower figure.

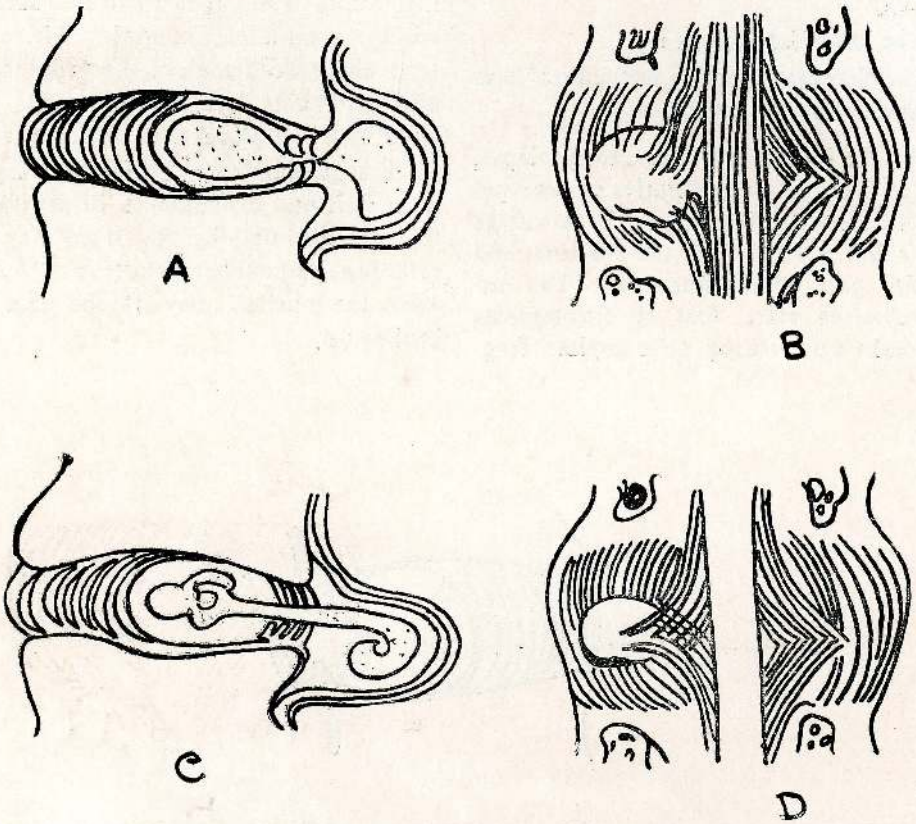

Fig. 2. Shows some types of disc protrusion. A & B show the initial bulge, while C & D show a pedunculated protrusion.

This leads to the second stage in which there is posterior displacement of all or part of the nucleus.

The nucleus is under positive pressure at all times and slightly distends the annulus and when the annulus ruptures the nucleus tends to bulge through the defect, being only partly retained in position by the posterior longitudinal ligament. If the nucleus is degenerate and fragmented the tendency to herniate is greater. The posterior longitudinal ligament may get lifted and stripped off its vertebral attachment. With the decrease in nuclear bulk the annulus is no longer distended and does not compress the remaining nuclear tissue and no further extrusion occurs. The compression force may be increased by exertion, muscular efforts or movement of the lumbar spine.

The site of protrusion is to one or other side of the midline (Fig. 2. B & Fig. 4). The central part of the posterior surface of the disc gives way least often, as this part of the annulus is reinforced by the strongest parts of the posterior longitudinal ligament.

The size of the extruded material may vary. It may even be that of a small marble with a broad base and covered by the

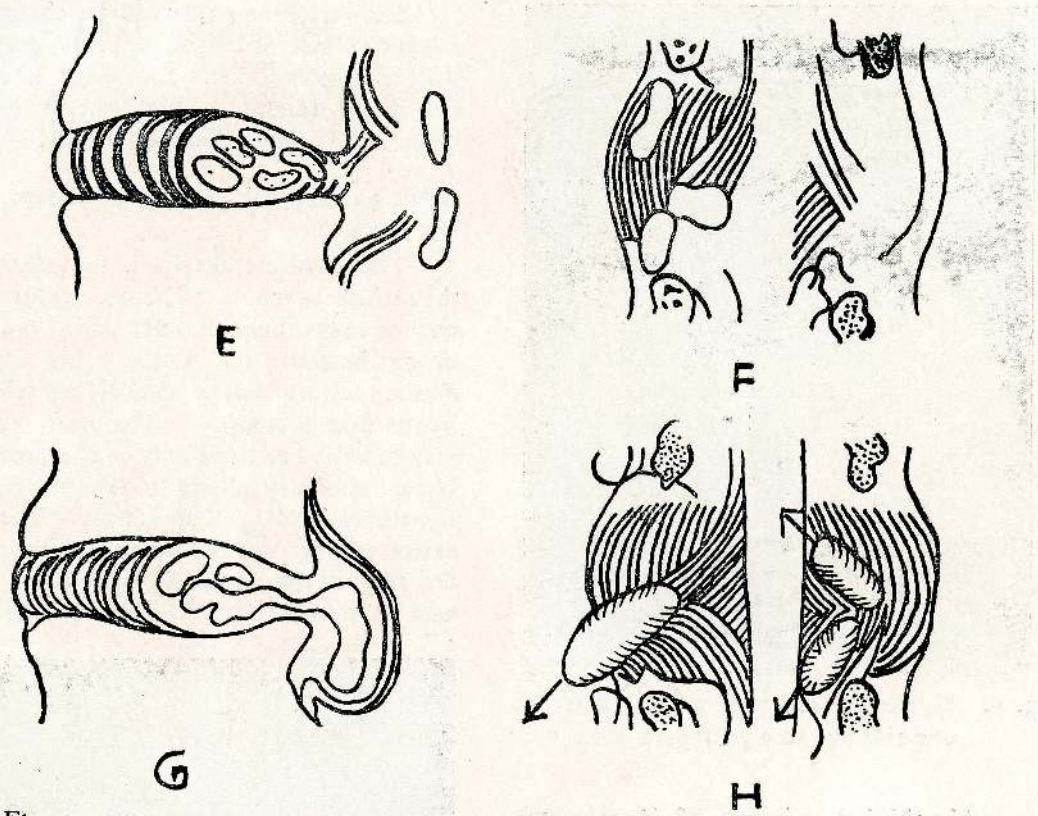

Fig. 3, Shows some types of disc protrusion. E & F show free sequestra. G & H show the dissecting type.

posterior longitudinal ligament. Sometimes it may be sessile (Fig. 2 C). or even pedunculated. At times the protruded material lies free in the canal (Fig. 3 E & F) or may get impacted in the spinal foramen causing root pressure. Sometimes the posterior longitudinal ligament prevents a fuller protrusion and the nucleus extends a considerable distance—a dissecting protrusion (Fig. 3 G & H).

The protrusion may be massive and then the nucleus seems to be posteriorly displaced in its entirety. Bilateral protrusion of the same disc may occur. An extrusion in the earlier bulging phase can be made much more obvious by anything which increases intervertebral pressure.

The second stage may continue for varying periods if untreated. This stage ends when all the nuclear material is extruded or the remains of the nucleus becomes fibrotic and then they are no longer unstable. Sometimes the second stage is by-passed entirely.

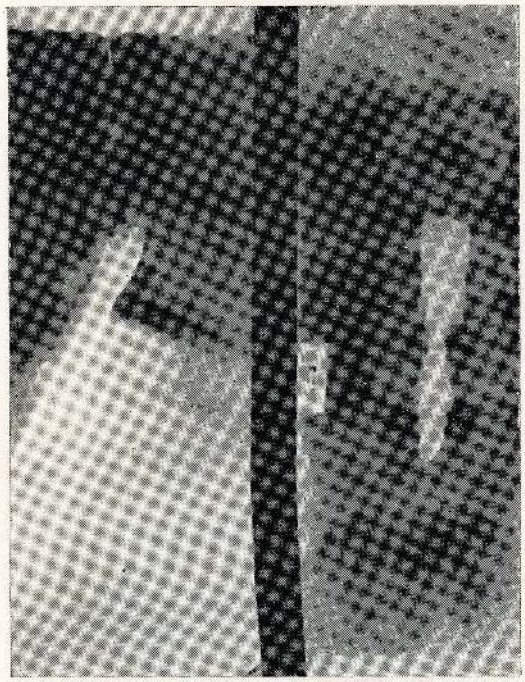

Fig. 4. Myelogram showing a filling defect to one side due to a prolapsed disc.

The third stage is one of fibrosis and essentially a stage of repair. Fibrosis can go on while there is periodic prolapse of the nucleus. The nuclear tissue remaining in between the vertebral end plates becomes finally fibrous and at this stage further protrusions do not occur. The displaced nuclear tissue also becomes fibrous, hard and its bulk decresses and it may calcify and be converted to a bony nodule. New bone formation occurs where the posterior longitudinal ligament has been stripped and finally an old lesion is seen as a hard calcified nodule smaller than a recent prolapse. The nodule my be adherent to a nerve root. The disc space gradually narrows and this is due to the fibrosis of the remaining disc tissue (Fig, 5). Even after surgical removal of a disc, narrowing is noticed only after a few months.

The vertebrae also undergo changes—a layer of sclerotic bone appears deep to the cartilage end-plates and there is some new bone formation around the periphery of the contiguous vertebral surfaces.

Other pathological changes associated with disc lesions :

The most important is the effect on the extrathecal roots. The disc protrusion may be to the inner or outer side of the root or may be under it. As the roots are inelastic they are usually immediately affected by the disc protrusion The root tension may be raised or there may be compression. Nerve roots may adhere to the protrusion, sometimes binding them firmly. The adhesion can become fibrous and in the calcified stage of the protrusion the nerve root may be buried in it. The root can become

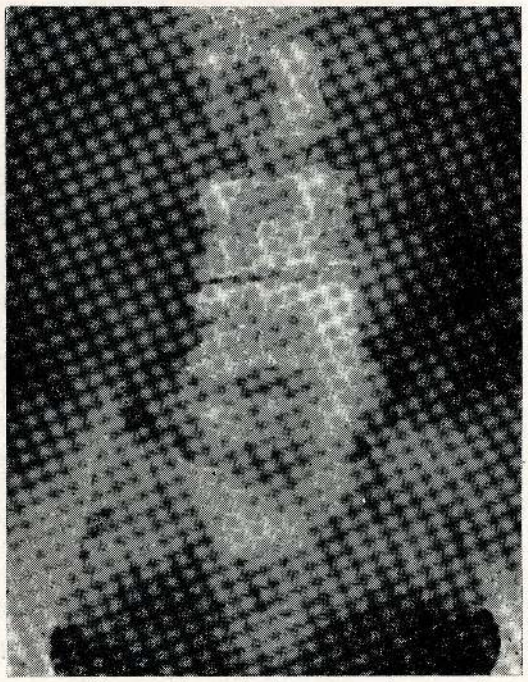

Fig. 5. Shows the third stage of a prolapsed disc. Sclerosis, narrowing of the disc space and lipping are seen.

oedematous and later fibrosis can set in and some fasciculi can be affected by degenerative changes. Sometimes a unilateral dissecting protrusion can involve a nerve root and the root below. A central protrusion can affect roots on both sides or not involve either.

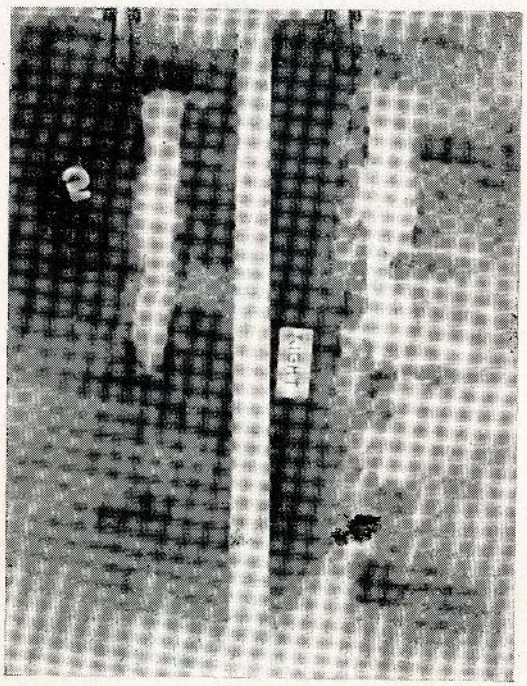

Fig. 6. Myelogram showing complete obstruction following a sudden massive prolapse of disc.

Massive protrusion can give a sudden cauda equina paralysis and this may give Froins syndrome (Fig. 6).

The narrowing of the disc space affects the posterior di-arthrodial joints and osteoarthritis of these joints finally develop.

As a rule disc lesions occur between L. 5—S. 1 and L.4—L. 5 discs. Double lesions occur in about 10% of cases. Lesions at other sites are rare.

Symptoms and their relation to the pathological processes :

Low backache and / or pain down the leg are the symptoms of a prolapsed lumbar intervertebral disc.

Low backache can be of different types :

(a) It could be of dramatic onset and can be very severe. The patient has acute pain and any movement is intolerable. Usually improvement occurs some times in a few hours. This is probably due to a prolapsed disc which is impacted between the posterior rims of the vertebral bodies. Symptoms disappear with shrinkage or with extrusion of the protrusion.

(b) It may be a constant dull ache not localised. This has been attributed to changes taking place in the disc itself. (The annulus has a nerve supply from the posterior primary divisions)

(c) Root irritation by the protrusion certainly causes pain referred to the cutaneous distribution of the posterior primary rami of the affected roots.

(d) Pain increasing with activity and increasing when in the same position is usually due to an arthritis of the intervertebral joints.

Changes in posture occur. There is a flattening of the lumber lordosis which may be a result of joint derangement and the consequent erector spinae muscle spasm. Scoliosis occurs and this is to relax the root.

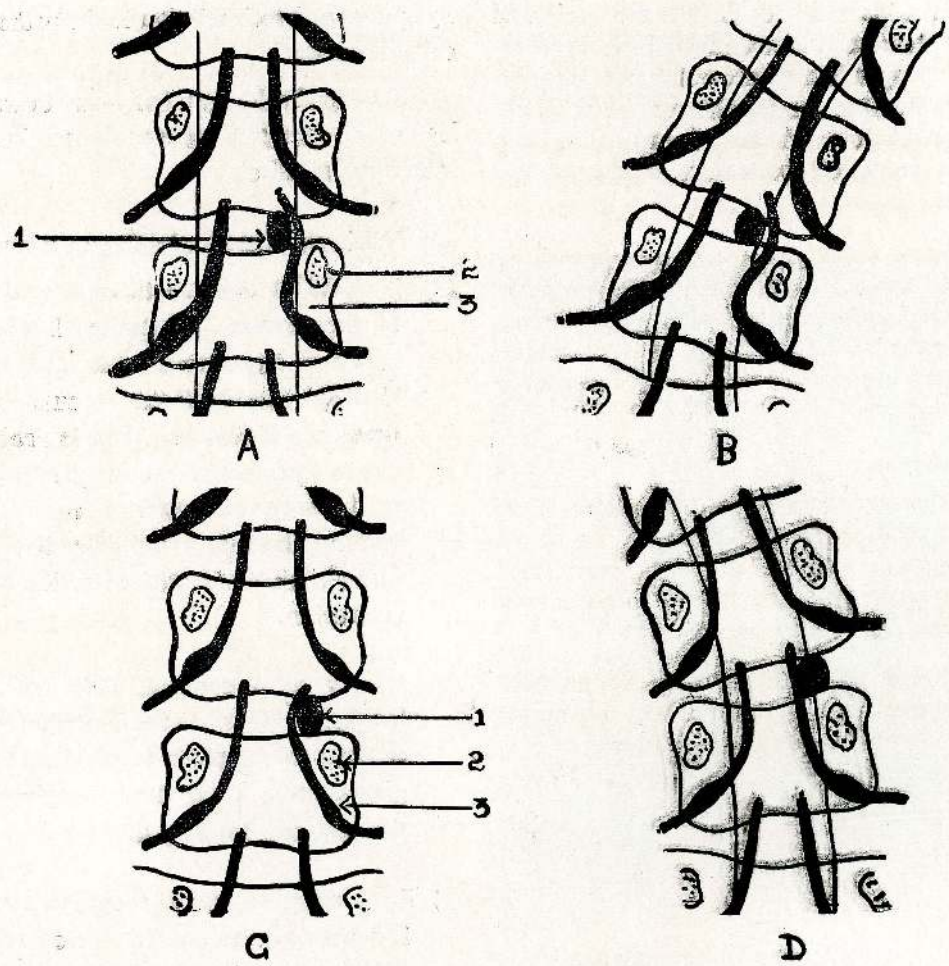

Fig. 7. A shows a protrusion of the disc (1) medial to the nerve root (3) with resulting scoliosis concave to the side of the lesion—B. C shows a disc protrusion (1) lateral to the nerve root (3) with scoliosis convex to the side of the lesion—D. The vertebral body and cut pedicles are marked (2).

With a medial protrusion the scoliosis is concave to the side of the lesion (Fig. 7 A & B). With a lateral protrusion the scoliosis is convex to the side of the lesion (Fig. 7 C & D).

Flexion of the spine is limited as this stretches the torn annulus and posterior longitudinal ligament. Flexion and extension also alter tension in the disc and so causes pain.

Symptoms referred to the legs:

The rise in root tension when a root is displaced or stretched by a protrusion causes root pain.

In the stage of fibrosis the binding down of the root may cause pain along its distribution on movement of the leg and trunk as the nerve root has lost its mobility.

Hyperaesthesia, blunting of sensation and loss of sensation may be caused in the stage of protrusion or in the stage of fibrosis.

Some weakness and or muscle wasting may be noticed and sudden paralysis without pain is due to a massive compression. Diminished or absent knee jerks or ankle-jerks are noted when the L 4 or S.1 root is involved.

Recurrences :

This is a common feature of disc prolapse. Prolapse of disc material can be an intermittent phenomenon and every time this happens pain in the back and or root pressure can cause symptoms.

Nerve adhesions may cause pain by minor traction injuries caused by movement and thereby appear as a recurrence.

Before final fibrous ankylosis of the intervertebral joint, any stress on this joint may break adhesions and cause a sharp exacerbation of pain in the back.

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A REVIEW OF THE METHODS OF TREATMENT OF PULMONARY TUBERCULOSIS IN A COMMUNITY CONTROL PROGRAMME

By

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Tuberculosis is a community problem i. e, it is a problem of a collection of individuals who live in the same locality and are dependent on one another. Hence the treatment of the disease should be orientated to the community in order to obtain the maximum benefit within the shortest time and with the resources available. This means that in a developing country priority should be given to an economically feasible method of treatment in a Community Control Programme. By proper treatment of the infectious cases only, the chain of infection from a case to a susceptible will be broken and this along with other specific control measures—e. g. B. C G. will contribute to the control of the disease in the community.

A Case of Tuberculosis.

The WHO Expert Committee on Tuberculosis[1] defines a case as follows: "from the epidemiological point of view, a 'case' of pulmonary tuberculosis means a person suffering from bacteriologically confirmed disease". The acid fast bacilli may be seen by a microscopical examination of a direct smear or / and grown on a culture. In the control work it is found that more cases could be detected by examination of four direct smears than one. Hence the value of a direct smear examination increases with the number of examinations per patient, and it could be said that it is almost as efficient as a culture especially in patients with advanced disease. Those who show tubercle bacilli on direct smear are more highly infectious and demand immediate treatment.

Others, i. e., those who show a radiological opacity and / or have clinical symptoms suggestive of tuberculosis should be regarded as 'suspects". They require further investigation for a proper diagnosis. However, a judicious interpretation of the X'ray should be made which will help in picking up persons who are direct smear negative but may be culture positive.

Summarised below is the examination of a single collection of specimen of sputum for newly diagnosed patients by direct smear and culture in two different places.[2]

Laboratory	Total Positive by smear or culture	culture positive		Smear positive		Positive only on culture	
		No:	%	No:	%	No:	%
London, 1954—62	776	773	99.6	275	35.4	501	64.6
Madras, 1956 – 58	324	324	100.0	267	82.4	57	17.6

As shown in the analysis, among those found positive (either on smear or on culture examination), a positive result was obtained only on culture in 64.6% of 776 specimens in London, but in only 17.6% of 324 specimen in Madras. This difference is chiefly due to the severity of the disease. Persons who come for treatment in London had early disease where as in Madras the patients had severe bacillary disease when they first reported. Hence "suspects" should be thoroughly investigated. The more sensitive culture examination will net most of those with minimal disease. But if the "suspects" are not culture positive, they should be followed up regularly as "potential" cases for "persons whose chest X'ray films show shadows indicative of tuberculous disease are much more likely to develop active T.B. than those whose chest X'ray films do not show such shadows"—W.H.O. Expert Com. in Tuberculosis[3]

Thus from the point of view of control of tuberculosis, when the choice is between denying treatment to some of the 'suspects and offering treatment at the cost of a few over-diagnosed cases, it is justifiable to err on the right side.

Progress made in treatment.

Remarkable progress has been made by the developed European countries during the past 15 to 20 years, with the result the mortality rates in most of the European countries is in the region of 10 per 100,000 population. In some countries e.g., Netherlands it has fallen to 1.5 per 100,000 population. The control of tuberculosis in Netherlands mainly depends on the constant drainage of the infectious cases in the community. They are all hospitalised and given intensive chemotherapy. It is now well known that triple drug therapy streptomycin + para-amino salicylic acid + isonicotinic acid hydrozide in standard dosage for 3 to 6 months followed by dual drug regime of PAS+INAH is almost 100% effective in newly diagnosed cases who have bacilli sensitive to at least 2 of the major drugs[4,5,6] This scheme requires hospitalisation. In the Western countries, the minimum of 1 bed per 1000 population was provided for T.B. cases. Hence these schemes although almost 100% effective are intrinsically expensive, lengthy and require hospital facilities.

Such measures as are found successful in Western countries will be impracticable in the community control programme in the developing countries. The economic considerations necessitate that treatment measures adopted in developing countries should be cheap, easy to administer and effective when given to patients living in their homes.

Domiciliary treatment of tuberculosis

There have been 6 controlled studies which have compared sanatorium with home treatment.

As analysed, none of these studies has demonstrated any advantage of sanatorium (rest) over home treatment (ambulation). In fact the trial at the Tuberculosis Chemo-

Investigators	Population Investigated	Period of Investigation	Comparison	Results	Relapse	Dis. Among Contacts
Tyrell 1956	97	6/12	Home and Sanatorium	Similar		
Madras T.C.C. 1959	163	12/12	,,	Similar	Similar during 4 year follow-up	Similar during 5 year follow-up
E. African/B.M.R.C. 1960	247	2/12	,,	Similar		
Bel. 1960	89	3/12	,,	Similar		
T. B. Society of Scotland	103	3/12	Rest and normal work	Similar	Similar	
Wier et al 1957	281	6/12	,,	Similar		
Wyn William 1960	62	6/12	Rest and Exercise in Sanatorium	Similar		

therapy Centre, Madras has confirmed that the newly diagnosed sputum positive cases treated with standard dosage of PAS and INAH for one year in a sanatorium enjoying adequate diet, nursing, rest, supervised drug therapy did well (92% bacteriologically quiescent in one year) but not better than those treated at home under adverse conditions such as poor diet, little or no nursing, little or no rest. The relapse rates also were similar during a full year follow-up. Besides the morbidity amongst the contacts of patients treated in their homes, was no greater than those treated in a sanatorium although none in the latter group received B.C.G. or chemoprophylaxis. Thus a basis for mass domiciliary treatment of tuberculosis with modern drugs has been established.

The evolution of bi-weekly treatment.

Isoniazid alone—Amongst the anti T.B. drugs, INAH is the most valuable because it is cheap, easy to administer, highly potent and has low toxicity in the dosage recommended.

A control trial of 3 regimen of INAH was compared with standard PAS and INAH by Tuberculosis Chemotherapy Centre in Madras[7] on patients with advanced disease who were sputum positive. It was

found that INAH alone even in the optimal dose of 8—9 mg. / kg. body weight in one dose was not sufficiently effective.

Combination of isoniazid with streptomycin, and with para-aminosalicylic acid.

INAH + PAS—When INAH is given alone it is found to be (1) not sufficiently effective (2) bacilli which are resistant tend to appear soon. Hence a combination of drugs is given. It is not practical in domiciliary treatment to administer injections daily regularly for a long period. Also PAS is bulky, unpleasant to take, costly and it deteriorates in the tropics. Hence other companion drugs which are cheaper, nontoxic, effective and acceptable to patients were tried out.

Combination of isoniazid with thiacetazone

One such companion drug is thiacetazone. It was found in both the East Africa/BMRC trials, and the Tuberculosis Chemotherapy Centre Madras trial[8] that INAH 300 mg. + Thiacetazone 150 mg. in a single daily dose was as effective and had the same amount of toxicity as PAS 10 mg. + INAH 200 mgs. given in two divided doses. It was also found that increasing the dosage of INAH did not increase the efficacy, but an initial supplement of streptomycin daily for the first two months enhanced efficacy to 95%[9]. Thus thiacetazone which is cheap, effective, small in bulk and of relatively low toxicity in the minimal dosage recommended has emerged as a suitable companion drug to INAH for use in developing countries with a poor economy. However, regular drug taking daily for long periods remains a formidable problem. It could be overcome to a certain degree by explanation, persuasion and supervised administration.

Intermittent chemotherapy

It makes fewer demands on the patient's co-operation and is easy to organise. The basis for intermittent chemotherapy is the fact that a high peak concentration of INAH in the serum which the single dose achieves is more important in the response to treatment than the maintenance of a continuous inhibitory concentration of the drug.[10]

Supervised intermittent form of treatment has been tried out in the Tuberculosis Chemotherapy Centre, Madras and the W.H.O. controlled Kurunegala project. In both trials strep tomycin was given in a dosage of 1 gm. or 0.75 gms. (27mg/kg body weight) with INAH 14mg/kg. b. wt and pyridoxine on the 3rd and 4th day, alternately. In the Madras trials it was compared with PAS 0.2—0.3 g/kg b. Wt. and INAH 4 mg—5mg/kg.b.wt. given in two divided doses to newly diagnosed sputum positive cases.

Madras trial[11] — It was found that at the end of one year bacteriological quiescence was obtained in 94% on bi-weekly and 85% on PAS and INAH. A four year follow up showed that relapse rates were similar.

In the Kurunegala project — Bacteriological quiescence was obtained in 91%. Hence the intermittent regimen is at least as effective as daily PAS & INAH in attaining quiescent disease in one year and its maintenance over a period of 4 years. It has the advantage that supervised therapy could be given to domiciliary patients.

Once weekly regimen — In order to make therapy less toxic, cheaper and more acceptable to patients, once weekly regimen of streptomycin and INAH in the same dosage has been tried out at Madras by Menon in 1967. But it has proved to be unsatisfactory because it produced bacteriological quies-

cence in only 71% of the series. However addition of streptomycin 1gm. or 0.75 gm. and INAH in uniform dosage of 400 mg. daily for 4 weeks prior to once weekly treatment enhanced its efficacy (91%) to almost that of bi-weekly regimen. However, it was found to be a marginal chemotherapy for its efficacy depends on the rate of inactivation of INAH. Hence it would prove less effective in communities with rapid inactivators of INAH.

Thus in the community control programme of tuberculosis in a developing country domiciliary, supervised bi-weekly treatment is the most exciting development reasonably cheap (would cost the Ceylon Government Rs. 48/68 per patient per year), not inferior to daily PAS & INAH and more effective than once weekly regimen.

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RADIOLOGICAL EXAMINATION IN ABDOMINAL EMERGENCIES

By

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SIR James Mackenzie Davidson[1] in 1902 said that "the abdomen is very difficult to examine by X-rays. With the exception of gaseous distension of the stomach, renal calculi, and metallic foreign bodies which can be detected, little information can be obtained." The situation then would have been attributable to factors such as lack of proper equipment and safe contrast media, and inadequate experience in the interpretation of findings and in special techniques of investigation. Considerable progress has been made since this time and radiology has now been accepted as a valuable aid in the elucidation of the causation of abdominal emergencies. Beckus[2] in 1964, discussing the acute abdomen, states that "often foremost in importance, second only to clinical appraisal, is the assistance afforded by the competent radiologist."

Acute abdominal conditions can broadly be classified into the following groups, (1) Surgical—perforations; obstructions of bowel, ureters, bile ducts etc.; inflammations of viscera; and traumatic lesions of the abdomen, (2) Medical—such as diabetic acidosis, tabetic crisis, porphyria and Henoch-Schonlein purpura and (3) Gynaecological emergencies responsible for acute lower abdominal pain, such as ectopic gestation, rupture or torsion of cysts and tumours, salpingitis, and a ruptured uterus. Occasionally an intrathoracic lesion or an acute disc prolapse may simulate an abdominal emergency.

Satisfactory treatment will naturally depend on prompt and accurate diagnosis. For radiology to aid in the clinical evaluation, the facilities available should be used judiciously and without causing further insult to an acutely ill patient. In certain European centres, chiefly in the Scandinavian countries, the patient is taken directly into the X-ray department, where a casualty officer sees the patient with the radiologist.

This system enabels static X-ray units, with their inherent superiority over the portable machines, to be used for obtaining the necessary radiographs. It also avoids shunting the patient between the ward and the X-ray department, if such examinations are found to be necessary. Portable units generally cannot produce radiographs of the same quality as those obtainable with static machines, as longer exposures have to be used with them, and they lack a Bucky attachment. The results are also more satisfactory when the radiologist himself supervises the examination. He could also decide whether any other special diagnostic procedures are necessary, and perform them without further delay.

It is generally believed that radiological procedures are cumbersome and time-consuming. This assumption however is incorrect. Even in the absence of automatic processing units, a radiograph could be taken and a wet film be made available for viewing within five minutes. With modern processing equipment the dry film is ready

in about 90 seconds. A Bucky apparatus with a high grid ratio (e.g. 16:1) reduces scatter and produces very satisfactory radiographs. Optimum contrast is obtained at 60—70 kv. Collimation of the X-ray beam with suitable cones and the use of aluminium filtration improve contrast also by reducing scatter. The exposure time should be kept to a minimum, particularly if the patient is comatose or unco-operative. To achieve this, a high milliamperage (300-500 m.amps) and high speed screens and films should be used.

A supine antero-posterior film and an upright view of the abdomen are the standard films needed initially. Morphine administration may produce gas shadows due to decreased intestinal mobility. Cleansing enemas may also produce gas and fluid levels in the colon. Hence these procedures should be avoided prior to taking the plain films. If an upright film is not possible, a film with the patient propped up, or a lateral decubitus film with the patient lying on the left side using a horizontal X-ray beam, is obtained. The patient should be kept in the erect or lateral position for about a minute prior to exposure of the film in order that the free air may rise to the least dependent part of the abdomen. The upper limit of the erect film should include the diaphragm, and the lower portion of the supine film should include the pelvic bones down to the ischia. Laterally, both peritoneal fat lines should be included in the flanks. A routine chest film is useful to exclude an intra-thoracic pathology which may simulate an abdominal emergency—such as pneumonia, pneumothorax, pleurisy, mediastinitis, or any abnormality of the heart, pericardium, great vessels and diaphragm.

The processed film should be viewed using an X-ray illuminator, and not, as often done, through a window or room light. As the solid organs are surrounded by a relatively translucent line of fat they can generally be visualised on a plain film. The kidney, liver, spleen and bladder outlines should be carefully examined. The psoas margins should be traced on either side. The psoas shadow may be obliterated in any retroperitoneal collection of fluid (blood or pus) or by a retroperitoneal mass. In the presence of ascites the psoas shadows may be obscured in the supine film but are clearly outlined in the erect film. Abnormal soft tissue masses should be identified. They may be detected by the displacement of viscera, e.g. the stomach by a pancreatic cyst. A liver abscess may cause elevation of the diaphragm or bulging of the inferior border of the liver or both. The bony

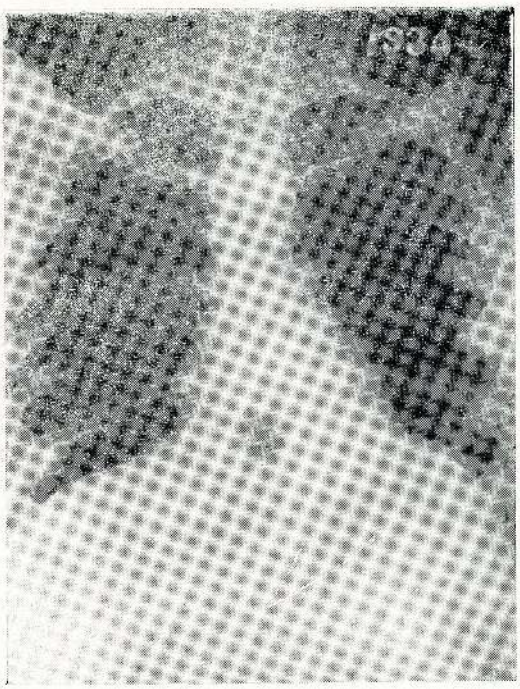

Fig. 1. Erect chest film showing gas under the diaphragm following perforation of a duodenal ulcer.

structures should be examined for fractures or other pathology. Fractures may be associated with injuries to internal organs or the diaphragm. Scoliosis of the spine with the concavity to the side of the lesion may be seen in appendicitis, psoas abscesses, ureteric stones, etc

Free gas should be looked for in the peritoneal cavity. This is seen under the diaphragm in the erect film (Fig. 1), or overlying the liver in the lateral decubitus film. Visualisation of the outer aspect of the bowel wall in the supine film also indicates free gas in the peritoneal cavity. A spontaneous pneumoperitoneum follows perforation of a duodenal or gastric ulcer in over 90% of cases. No age is exempt, and cases of perforated gastric ulcers have been reported even in newborn infants[3]. Less common causes are rupture of the appendix; rupture of duodenal, small intestinal (Meckel's) or colonic diverticula; perforation following intestinal obstruction; traumatic rupture of the stomach or bowel; and ruptured gas cysts in pneumatosis cystoides intestinalis. The latter condition can be recognised in a plain film of the abdomen Interposition of bowel between the diaphragm and the liver may simulate free gas under the diaphragm (pseudo-pneumoperitoneum), and this should be borne in mind (Fig. 2). The presence of small bowel folds or colonic haustral markings help to differentiate this benign condition from free gas.

The site of the perforation may sometimes be located by obtaining a lateral decubitus film with the patient lying on the right side after ingesting 2—3 ozs. of methylglucamine diatrizoate (Gastrografin). The contrast medium will be seen tracking down from the ulcerated site. An erect film taken after the introduction of Biligrafin into a liver abscess will show similar

Fig. 2. Chest film showing bowel interposition between the liver and the right dome of the diaphragm, and consolidation in the lingular segment of the left upper lobe.

appearances in cases of rupture or slow perforation (Fig. 3). Retroperitoneal gas may occasionally be seen in the perirenal space outlining the kidneys and retroperitoneal structures. This usually follows retroperitoneal perforation of the duodenum due to trauma or perforation of an ulcer or diverticulum in the second part of the duodenum.

The lumina of the various segments of the intestinal tract are delineated by gas, fluid, food or faecal residue. Distended bowel loops, with or without fluid levels are a common finding in the plain films of the abdomen of a patient with an acute abdomen. Interpretation of the appearances is important, as the causation is not

Fig. 3. Erect lateral film of the upper abdomen following aspiration of a right lobe liver abscess and instillation of Biligrafin. A track of contrast medium is shown extending from the cavity to the inferior aspect of the liver.

always bowel obstruction. The main conditions to be considered are ileus, obstruction, and gas distension following aerophagy.

A localised ileus usually accompanies visceral inflammations such as acute appendicitis, cholecystitis and pancreatitis. The location of the distended segments may give a clue to the organ involved ('sentinel loops'), e.g. distended ileal loops would be seen in the right iliac fossa in acute appendicitis. Reflex bowel distension is also usually seen accompanying renal and biliary colics and vertebral injuries. A generalised ileus is often associated with peritonitis. Fluid accumulates in the peritoneal cavity and distension occurs in both large and small bowel segments. In the erect film, gas-distended coils with fluid levels are seen floating in the upper abdomen, with the lower abdomen opaque due to free fluid (Fig. 4). In the supine film, the distended loops are seen in the mid-abdomen surrounded by an opaque periphery ('foot-ball sign') There is also a widening of the soft tissue space between contiguous gas-filled loops. These appearances, associated with the history and the absence of bowel sounds is usually diagnostic of adynamic ileus with peritonitis.

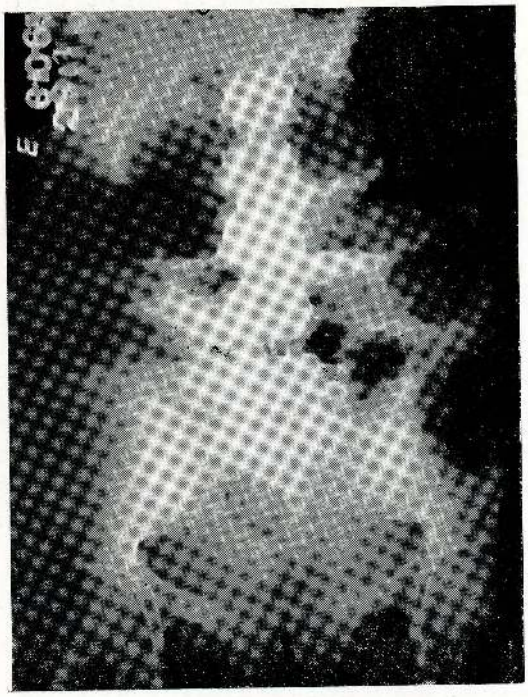

Fig. 4. Erect film of the abdomen showing distended coils of large and small bowel with fluid levels. The lower abdomen is opaque due to free fluid. Appearances of an ileus with peritonitis. Laparotomy showed evidence of bilateral salpingo-oophoritis.

Obstructive bowel lesions generally produce greater distension than that seen in an ileus. Some idea of the location of the block can be obtained from the appearance and number of the distended segments. Pyloric obstruction produces a distended stomach containing food residue. In duodenal obstruction, the distended stomach and proximal duodenum show two fluid levels in the erect film ('double-bubble sign'), (Fig. 5). In jejunal obstruction, the distended segments show complete plicae

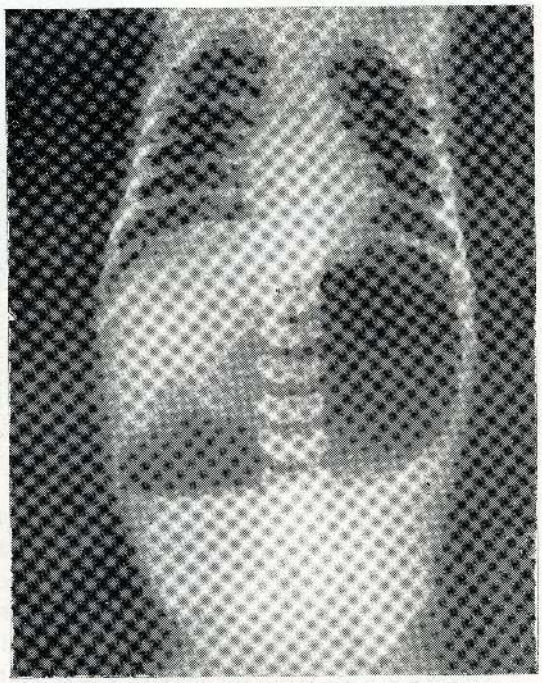

Fig. 5. Duodenal obstruction in a newborn infant. Erect film of the abdomen shows the distended stomach and proximal duodenum with two fluid levels.

stretching transversely across the wall as in a coiled spring. The dilated loops are generally located in the left upper quadrant. If many loops of small bowel are distended, the block is usually located in the lower reaches of the ileum. The distended ileal segments have smooth walls and show no mucosal folds. In small bowel obstruction, the bowel distal to the point of obstruction is collapsed. The distended loops tend to arrange themselves in parallel layers ('step-ladder' pattern). If initially only a few gas-filled loops are seen, the significance of which is in doubt, the examination should be repeated in a few hours. If by this time the bowel loops have increased in diameter and the gas has not travelled into the colon, the diagnosis is most likely to be a small bowel obstruction.

In large bowel obstruction, the colon proximal to the site of obstruction gets grossly distended, but the small bowel is not markedly affected. This is due to the check-valve action of the ileo-caecal valve. The distended colon shows characteristic interdigitating haustrations, and the large bowel distal to the point of obstruction is empty.

It should be remembered that in a patient confined to bed for a long period, a considerable amount of gas may accumulate in the bowel. This is due to swallowed air not being eructated, but passing through the pylorus, as this is at a higher level than the fundus in the supine position. This, associated with constipation may produce abdominal pain and distension which may be mistaken for intestinal obstruction. Aerophagy should also be considered in hysterical patients presenting with abdominal pain and distension (hysterical proptosis).

Mesenteric artery or venous thrombosis produces dilatation of the devitalised segment of the bowel. The superior mesenteric artery is most frequently involved, and produces signs of obstruction in the hepatic flexure with gas distension in the lower ileum and ascending colon. There is no distension of the left colon. Gas may be

seen in the wall of the colon as gangrene sets in. A history of mitral stenosis with atrial fibrillation may be obtained in some of these cases.

Closed-loop intestinal obstruction occurs with a volvulus or strangulated bowel herniation. Volvulus of the stomach produces a double fluid level in the left hypogastrium, and a barium meal study will confirm the diagnosis (Fig 6). Volvulus of the large bowel may involve the caecum and ascending colon, or the sigmoid colon. The former condition is generally associated with a loose mesenteric attachment and anomalous rotation of the gut. The caecum gets grossly distended with gas and swings upwards, usually to the left upper quadrant. The distal colon is empty. Volvulus of the

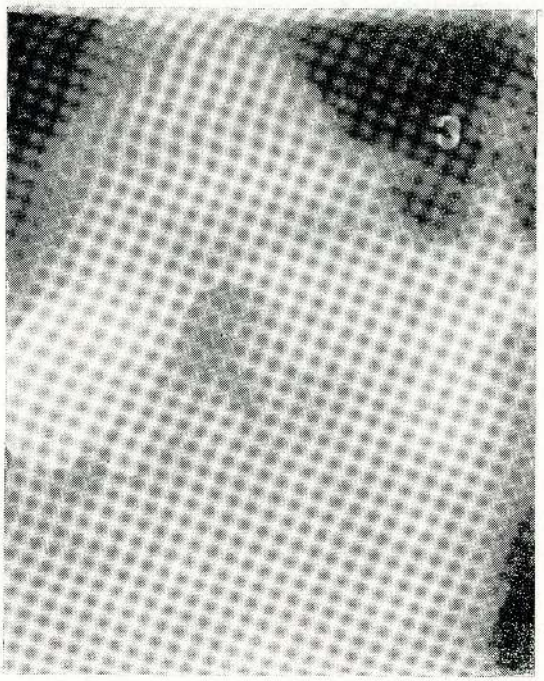

Fig. 6. Barium meal study demonstrating a partial volvulus of the stomach. Note the high position of the splenic flexuer of the colon.

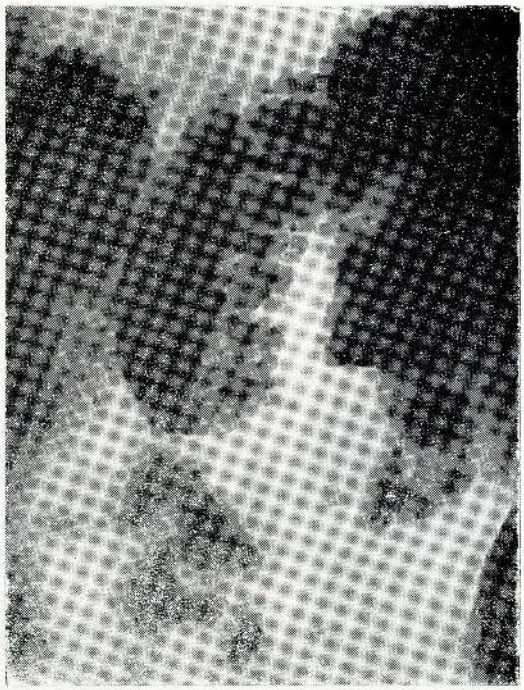

Fig. 7. Erect film of the abdomen in a case of volvulus of the sigmoid colon. Two adjacent gas-distended loops of bowel are seen arising from the pelvis. There is also some distension of the ascending colon.

sigmoid colon is an acute surgical emergency carrying a high mortality, as gangrene sets in early. The X-ray appearances are usually pathognomonic. Two adjacent gas distended loops of bowel will be seen arising from the pelvis ('coffee bean' sign). (Fig. 7). If however, the distended segments are filled with fluid, the appearance may simulate that of a tumour arising from the pelvis ('pseudo-tumour' of Frimann-Dahl).

In the plain abdominal film it is useful to look around the hernial orifices for gas-filled loops of bowel. Those in the femoral and inguino-scrotal regions are readily recognised. Intestinal herniation may occur

through the foramen of Winslow into the lesser sac. The radiological features are not very specific in this condition. Stammers[4] (1959) has described cases of herniation of small bowel after ante-colic partial gastrectomy. Distended loops of jejunum are seen in the upper abdomen near the stoma.

Inspection of the translucent retroperitoneal fat lines is important, particularly in patients examined after trauma to the abdomen. The distance between the gas in the colon and the retroperitoneal fat line gives an indication as to the presence or absence of free fluid in the peritoneal cavity. Blood or other fluid in the paracolic gutter pushes the colon medially and increases the distance between the fat line and the colon (Fig. 8). The normal distance between the two is only about a millimeter. Blood in the pelvis produces a butterfly-shaped soft-tissue opacity overlying the bladder shadow and indicates bleeding into the peritoneal cavity.

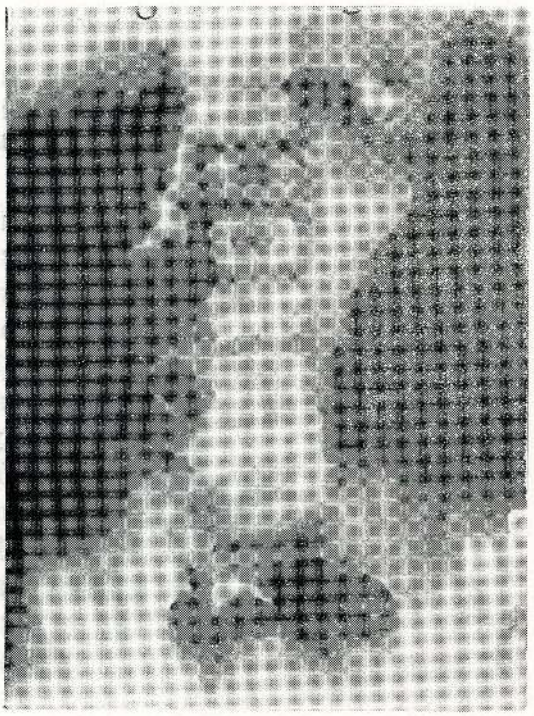

Fig. 8. Pyelogram of a boy who had sustained abdominal injuries following a fall from a bicycle. The descending colon is displaced medially. Contrast medium shown above bladder shadow. Laparotomy showed a tear of the left renal pelvis and blood in the left paracolic gutter.

Gas in the biliary tree in a patient with acute upper abdominal pain usually indicates that a gall-stone has passed through the ampulla into the duodenum (Fig. 9).

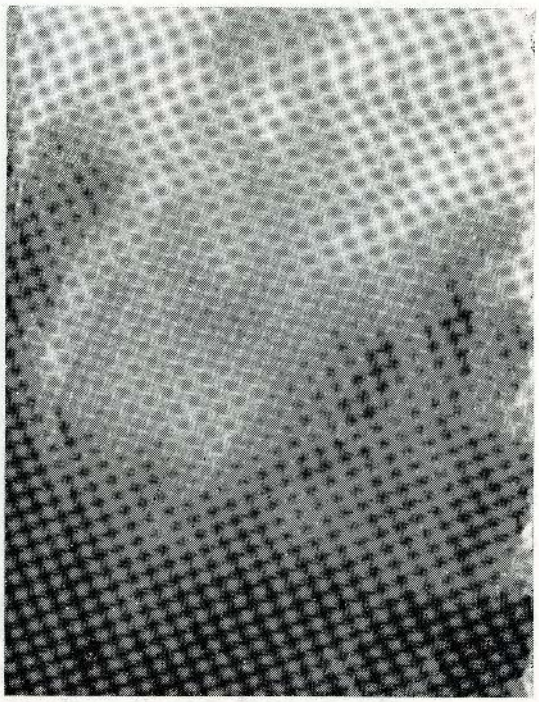

Fig. 9. Gas in the biliary tree following passage of a gall-stone through the ampulla into the duodenum. The patient presented with fever and jaundice following an attack of severe upper abdominal pain.

The stone, if large enough, may cause intestinal obstruction (gall-stone ileus). The impaction usually occurs in the distal ileum. Perforation of a duodenal ulcer into the gall-bladder can also produce gas in the biliary system. Ascending cholangitis with jaundice, due to ascending infection, is a frequent sequel to a choledocho-duodenal fistula.

Gas in the portal vein is an ominous sign, ocurring in intestinal gangrene following mesenteric thrombosis or volvulus. Linear branching translucent shadows are seen in the peripheral parts of the liver.

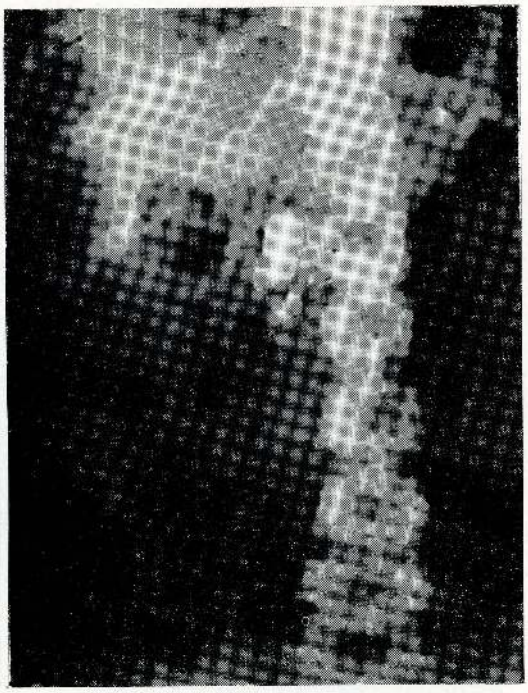

Fig. 10. Plain film of the abdomen in a patient who presented with an acute exacerbation on a chronic pancreatitis with pancreatic lithiasis. Distended small and large bowel loops due to associated ileus.

Calcific opacities should be looked for in the plain films of the abdomen. 80—90% of renal and ureteric calculi are opaque. However, only 10—20% of gall-stones can be visualised in a plain film. Pancreatic lithiasis, either as calculi in the ducts or parenchymal calcification, is associated with chronic pancreatitis (Fig. 10) but severe abdominal pain may occur due to an acute exacerbation. A stone in a pancreatic duct may produce colicky pain indistinguishable clinically from a biliary colic. A faecolith in the right iliac fossa may occasionally be seen in a patient with acute appendicitis. Pelvic tumours with calicification, such as dermoid cysts and fibroids, may be seen. These may cause abdominal pain due to torsion or haemorrhage. Curvi-linear calcification may be seen in the wall of an aneurysm.

The necessity for further radiological investigation will depend on clinical assessment and the information obtained on plain radiography and biochemical and pathological tests. Fluoroscopy will demonstrate the extent of mobility of the diaphragm. An elevated left dome with limited mobility is seen in splenic rupture, subdiaphragmatic collections of pus or blood, and in left lobe liver abscesses Herniation of bowel through a diaphragmatic tear could be demonstrated and differentiated from basal lung cysts or abscesses. In the tropics, an elevated right dome is usually associated with a liver abscess. Acute pericarditis is occasionally heralded by acute abdominal pain and shock. Fluoroscopy is useful in its diagnosis.

Barium meal studies for small bowel obstruction should generally be avoided unless duodenal obstruction is suspected

(Fig. 11). Inspissation of barium may convert a partial obstruction into a complete one. Gastrografin is a safe contrast medium to use in such circumstances. 30—40 c.c. are usually sufficient. Gastrografin however is much more expensive than barium.

A small intestinal enema is an extremely useful procedure for the investigation of small bowel obstruction. In addition to its diagnostic value, the procedure enables the withdrawal of fluid and gas from the distended bowel. Various types are available for this purpose — the Miller-Abott and the Scott Harden tubes being the most popular. The Miller-Abott tube[5] has a double lumen with a collapsible rubber balloon at its distal end. The tube is passed through the nose into the stomach, with the balloon deflated. It is pushed on till the tip is in the duodenum. The balloon is now inflated and this acting as a bolus, is drawn down the intestines by peristalsis until it is held up at the site of obstruction. The extreme tip of the tube is metal and can be followed fluoroscopically. Proximal to the balloon are several holes in the outer tube. Suction is maintained during the passage of the tube through the bowel. When the tube has reached the point of obstruction, a small amount (about 30 c. c.) of the contrast medium (thin barium or Gastrografin) is injected into the tube to outline the obstruction radiographically. Gentle compression and oblique views will help to visualise the site of obstruction clearly when coils of bowel tend to overlap. In paralytic ileus, the tube eventually reaches the ileo-caecal junction. Before removing the tube the balloon must be completely deflated. Some use mercury in the balloon instead of the air to hasten the passage of the tube through the pylorus. The Scott Harden tube[6] has no balloon at its tip. It consists of two concentric metal-tipped polythene tubes. The tubes are advanced together to the pre-pyloric region. The outer tube is large enough to be held up at the pylorus. The inner tube is then gently manipulated through the pylorus into the duodenum under fluoroscopy. 30—60 c. c of barium or Gastrografin or a mixture of both are introduced into the small bowel.

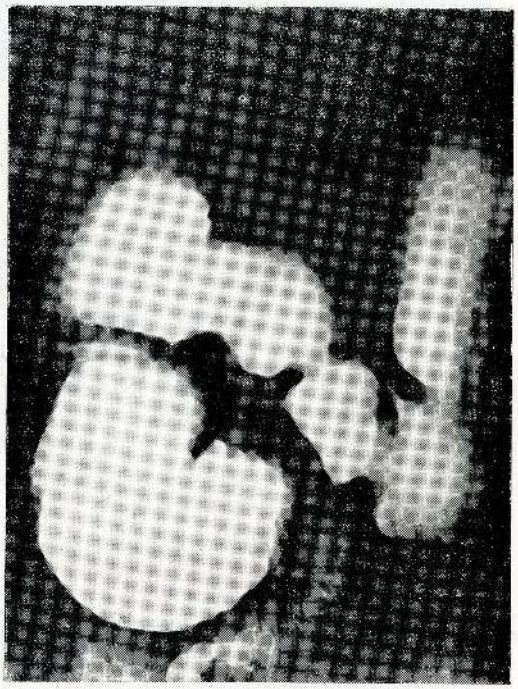

Fig. 11. Barium meal study showing obstruction of the third part of the duodenum due to an abnormal artery with massive dilatation of the proximal duodenum.

An abrupt termination of the contrast medium is seen in an obstruction due to an adhesion or band. Stenosis due to tuberculous or other causes of regional enteritis will show single or multiple narrowed segments. A neoplasm will show a filling defect, with or without mucosal destruction. In patients with Henoch-Schonlein purpura presenting with abdominal cramps and melaena, narrowed segments of bowel with

mucosal distortion due to localised swellings may be seen. Enlarged lymph nodes may cause extrinsic impressions on the barium-filled bowel loops. An intussusception can readily be made out due to the characteristic appearances it produces.

A barium enema examination is a safe and useful procedure in the examination of patients with obstructive lesions of the large bowel. The examination should be done under fluoroscopic control without forcing the barium beyond the site of obstruction. Neoplasms (Fig. 12), strictures and spastic segments can be readily made out. The X-ray appearances in an intussusception are very characteristic (Fig. 13). The barium coats the apex of the intussusception and spreads between the receiving and returning layers producing the characteristic coiled-spring appearance. The intussusception may sometimes be reduced by the barium enema. An underlying neoplasm, if present, can then be clearly demonstrated If the intussusception does not reduce easily high and prolonged hydrostatic pressure should not be used with the object of obtaining reduction.

Fig. 12. Barium enema study showing an annular carcinoma of the distal sigmoid colon.

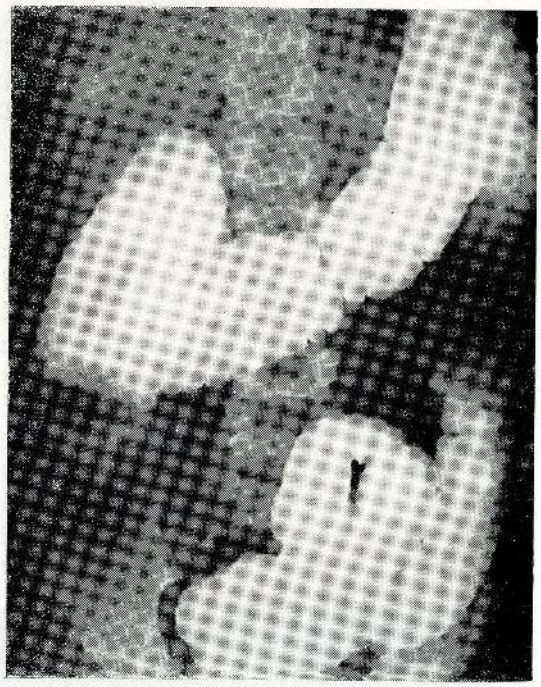

Fig. 13. Barium enema study showing an ileo-caecal intussusception.

A volvulus of the sigmoid colon also produces a characteristic appearance on fluoroscopy after a barium enema. (Fig. 14). The barium fills the rectum and then ends in a tapered point No attempt should be made to fill the colon beyond as this may further compromise the blood supply. Some

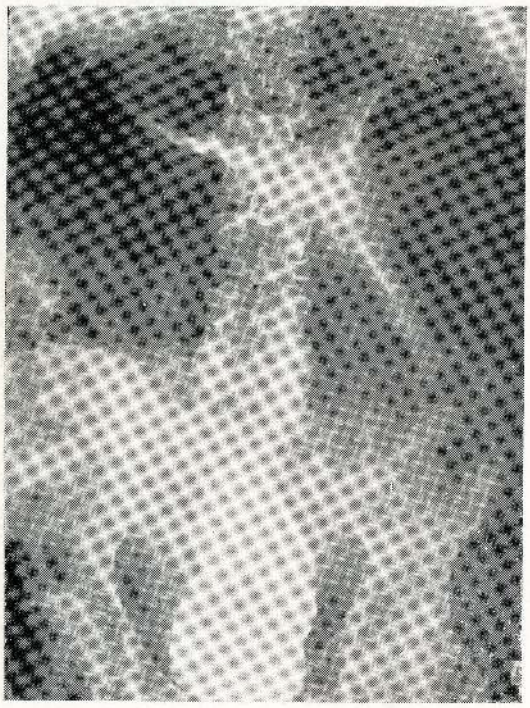

Fig. 14. Barium enema study showing a volvulus of the sigmoid colon. The barium fills the rectum and ends in a tapered point. Gross distension of the sigmoid loop.

barium may escape through the twisted segment to outline the wall of the distended loop of sigmoid. A barium enema examination is also necessary to confirm the nature and site of obstruction in a volvulus of the caecum and ascending colon.

A barium-air double contrast examination is sometimes useful in the investigation of large bowel obstruction, especially in elderly subjects who are unable to hold on to the normal barium enema satisfactorily. A small amount of barium is first given and then air is introduced into the colon with a Higginson's syringe. By turning the patient around to coat the bowel wall with barium, a satisfactory demonstration of the large bowel can be obtained.

Pyelography and cholangiography may be indicated for the further evaluation of biliary and renal tract disorders. In afferent loop obstruction following partial gastrectomy a film taken 2—3 hours after an intravenous injection of 40 c.c. of methylglucamine iodipamide (Biligrafin) may show opacification of the afferent loop and indicate the site of obstruction. Selective arteriography or aortography is indicated for the confirmation of suspected embolic lesions and mesenteric artery occlusions. Coeliac axis arteriography is sometimes used for the demonstration of splenic rupture, splenic embolism, and pancreatic injuries. Renal arteriography is useful in the diagnosis of traumatic lesions of the kidneys and in the demonstration of renal infarcts. Rupture of an aortic aneurysm and embolism of the aortic bifurcation, though rare causes of an acute abdomen, may increase in frequency with increasing life expectancy. These can be demonstrated by aortography.

Pneumoperitoneography is sometimes used to outline the liver, spleen and pelvic organs. Radioactive isotope scanning has recently been introduced for the evaluation of the extent of hepatic and renal injuries following abdominal trauma.[7]

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STUDY OF CASES FITTED WITH I. U. D., IN HEALTH UNIT TELLIPALAI

By

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THIS study was carried out in order to evaluate the use of an Intra-Uterine Device (I. U. D.) viz., Lippe's loop as a contraceptive method in this part of Ceylon. It was felt that in view of the social and cultural background peculiar to the Jaffna district the data obtained would be useful in the implementation of our Family Planning Project. Further due to the expansion of our training programmes to include training in family planning for nurses and midwives from the districts of Jaffna, Mannar, Vavuniya, Trincomalee and Batticaloa, where the social characteristics are somewhat similar to those here, the data obtained in the study would be useful in the training programme as well.

From June, 1968 through January, 1970 a total of 375 loops were inserted at the two clinics conducted by this Unit. A study according to the religion of the acceptor gives the following distribution as shown in Table 1.

Religion	Number	Percent. of Total
Hindus	360	96
Christians	7	2
Catholics	6	1.5
Buddhists	2	0.5

Table 1. Shows distribution of cases fitted with I. U. D. according to religion.

Hinduism is the predominant religion here, being over 90% and there is no doubt that this method is acceptable to them. The number belonging to the other religious groups is too small to draw any statistical conclusion but no significant resistance was shown by the other religious groups to this method.

A study of the frequency distribution by age and the number of living children of the acceptor is shown in Tables 2 & 3.

Age group	Number	%age of total
16--20	15	4
21—25	81	22
26—30	118	31
31—35	94	25
36—40	61	16
41 and over	6	2

Table 2. Shows age distribution of acceptors of I. U. D.

No of living children	No. of Acceptors	%age of total
1	15	4
2	54	14
3	58	15
4	60	16
5	61	16
6	52	14
7	32	9
8	24	6
9	16	4
10	3	1

Table 3. Shows distribution of acceptors according to the number of living children.

The average age (median) of the mother who accepted the loop was 29, and the average number (median) of living children of the acceptor was 5. It was observed that in this group the females married in their early twenties.

In an earlier study by Wright in Jaffna (1965—1968) the average age of the acceptor was much higher. At this time the acceptors were the older mothers with several children. The programme is now gradually reaching the younger mothers.

Also initially, we found that most mothers seek advice in the use of contraceptives after they have had adequate number of children. The fact that the contraceptive methods could be used to space the family was not put across effectively. We have repeatedly emphasized this to our staff and our trainees and it is encouraging to note that 33% of the acceptors had 3 children or less.

With a view to ascertaining the retention rate of the I. U. D., a prospective study was carried out from June '68 through December '68, on 106 cases with loops. These cases were reviewed after a period of 12 months. Though we made every endeavour to trace all cases, 8 were lost to follow-up. These were either cases from outside the area or those who had left the area subsequently. The 98 cases traced have been analysed below (Table 4.)

	No. of Cases	%age of Total
Loop in place, No complaints	81	83
Loop removed due to excessive bleeding	8	8
Loop removed due to other causes	3	3
Loop fell off and not re-inserted	4	4
Pregnancy ending in abortion	1	1
Pregnancy continuing to term with normal delivery	1	1

Table 4. Shows the picture in 98 cases who had an I. U. D. after 1 year.

Some of the causes given for the removal of the loop were vague such as pain all over, general weakness etc.. It is very likely that in these cases the reasons were more social than medical. In one case the woman was to travel abroad alone for a short period, and her husband wanted it removed during the period of travel. Nevertheless bleeding was the commonest side effect of this method.

The retention rate of 83% is very satisfactory. Even if it is assumed that in all 8 cases lost to follow-up, the loops were not retained (a very unlikely event), the retention is 77%. In the only other study carried out in Jaffna by Wright[1] the retention rate after one year was 79%.

The pregnancy rate of 2% is similar to studies carried out in most places, where pregnancy rates between 1—3% have been reported. Also, in cases reported elsewhere the incidence of abortion of pregnancy, after the insertion of an I.U.D. has been high. It is interesting that out of the 15 cases where the loop was removed or fell off, 5 cases conceived again.

The methods of contraception commonly used in our Unit are oral contraceptives, I.U.D., female sterilisation, and condoms. 80% of the new acceptors choose either the oral contraceptives or the I.U.D. in equal proportion. In a study carried out in Batticaloa[2] it was found that after six months, only 30% were continuing to take the oral contraceptives. Our own impressions are that the pattern is similar in Jaffna and that only 10—15% continue to take the oral contraceptive after one year (a statistical study of this is in progress). This pattern is probably due to lack of sustained motivation.

The effectiveness of the programme will depend on the continuance of the method rather than the number of new acceptors. Hence until a more acceptable method is introduced great reliance has to be placed on the I.U.D. as an effective contraceptive method for this area.

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PHYSIOLOGICAL BASIS OF PHYSIOTHERAPY IN STROKES

By

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A stroke is a rapidly appearing set of symptoms in the locomotor system caused by a variety of cerebral disturbances. Cerebral vascular disease, neurosyphilis, brain tumours, and traumatic injury to the brain are causes of stroke. By far the commonest of these is cerebral vascular disease, and this may be a thrombosis, haemorrhage, or embolism. Vascular disease not only of the cerebral vessels but also of the main arteries, such as the carotids and vertebrals, also cause strokes.

The predominating clinical features are one or more of the following: hemiplegia, aphasia, loss of consciousness,—the commonest feature ofcourse is hemiplegia.

The components of a hemiplegia may be outlined as follows:—

I Movement:—

(1) Paresis—Deficient motor power.

(2) Paralysis—Absence of voluntary movements.

II Postural reflexes:—

(1) Spasticity — This is a 'release' phenomenon strongest in the flexors of the arms and the extensors of the legs.

(2) Exaggerated deep reflexes—Spasticity and exaggeration of deep reflexes are fundamentally the same phenomenon. So is clonus.

III Other reflexes:—

(1) Babinski's sign — Dorsiflexion of the toes, especially of the big toe, with or without fanning of the other toes on stroking the outer border of the sole of the foot. This is often accompanied by a flexion contraction of the knee and hip.

(2) Absence of abdominal and cremasteric reflexes. Contraction of the abdominal muscles and retraction of the testicle to stroking of the abdomen and inner side of the thigh respectively does not occur.

IV Muscles:—

(1) No atrophy of muscles occurs but disuse atrophy soon sets in if the wasted muscles are not sufficiently exercised.

(2) No fasciculation of muscle is observed.

V Electrical reaction:—

There is no electrical reaction of degeneration. As the motor unit integrity is preserved the strength-duration curve shows a normal pattern. The E. M. G. shows no evidence of fibrillation potentials or other evidence of a neurogenic lesion.

Investigations of the motor system based on cortical ablation and section of the medullary pyramids have profoundly altered the views on the interpretation of hemiplegia. What were thought to be classical signs of damage to the pyramidal tracts

are in fact caused by damage to the extra-pyramidal system. The main signs of hemiplegia from damage to the internal capsule are paralysis or paresis; spasticity, exaggerated deep reflexes, clonus, Babinski's sign and absence of abdominal and cremasteric reflexes. These signs can be separated out into those caused by damage to the pyramidal tract fibres, and those caused by damage to the extra-pyramidal systems.

Signs caused by damage to the pyramidal tract

(1) Paralysis (mainly).
(2) Babinski's sign.
(3) Loss of abdominal & cremasteric reflexes.

Signs contributed by damage to the extra-pyramidal system

(1) Paralysis (Minor component)
(2) Spasticity.
(3) Exaggerated deep reflexes & clonus.

The experiments by Foulton[1] and his colleagues have also helped to make out this distinction between the pyramidal and extra-pyramidal components. Damage to the pyramidal tracts only causes flaccidity rather than spasticity. In experimental animals Foulton proved that when the cortex originating extrapyramidal fibres (COEPS) were interrupted as well, spasticity of hemiplegia resulted.

Spasticity is believed to be a release phenomenon caused by the damage to the vestibulo-spinal, reticulo-spinal and other extra-pyramidal descending pathways. It was formerly believed, after experiments on rats and guinea pigs, that spasticity was due to a spinal reflex. This view is incorrect as in higher primates and man the spinal reflexes are not very strong. "Pyramidal tract disease" and "upper motor neurone disease" are not synonymous and the COEPS must be taken into consideration in the understanding of the mechanism of hemiplegia. Interference of the pyramidal tract at all levels from the cerebral cortex to the spinal cord necessarily involves simultaneous interference with the COEPS except in the medullary pyramids. (The pyramids alone are rarely involved in an isolated disease process.) The pyramidal tract fibres and the COEPS work together to produce voluntary movements. The pyramidal tract fibres give off collaterals before reaching the pyramids. These collaterals reach the pontine nuclei and the medial reticular formation and from these a fresh relay of fibres descend downwards exerting an inhibitory effect on the parent pyramidal fibres (a negative feed-back mechanism). These concepts help to interpret the recovery of voluntary power. Other salient points in the motor apparatus are that a significant part of the innervation of the affected side comes from the cortex of the same side which is usually undamaged. There is also a supplementary motor area described. This is an area about 1—2 cm in diameter lying on the medial aspect of the cerebral cortex. There is a special representation of the whole body, with the leg area lying posteriorly and the head area lying forwards It normally aids the motor cortex, especially in the postural functions. The fibres from all these accessory sources of motor power could be retained in order to obtain maximum recovery. This is the neurophysiological basis for an optimistic outlook as regards recovery of function in many cases of stroke.

Sherrington's studies of the stretch reflex (myotactic reflex) led to the discovery of a variety of stretch sensitive receptors in muscles and tendons e.g. afferent free nerve

endings, Golgi tendons organs, the muscle spindles, and the encapsulated Paccinian corpuscles. The muscle spindles form the most important source of afferent impulses to initiate a reflex are through the spinal cord to the self-same muscle (or group) to make it contract. Tension on the spindle distorts or displaces these endings and causes a receptor discharge. The Golgi tendon organ, because of its location in the tendon, is equally susceptible to and does not distinguish between mechanical stretch applied by a passive pull on the muscle and that caused by active muscular contraction, both being actions which exert tension on the tendon. The tendon organ discharges afferent impulses both on passive stretch and active muscle contraction whereas a muscle spindle ceases to discharge on muscle contraction. It is now known that the sensitivity of the muscle spindle to stretch is itself variable, and that this sensitivity is determined by the activity of the small motor neurones which supply the intrafusal muscle fibres of the spindle itself. i.e. the gamma motor neurones. These gamma motor neurones of the spinal cord are in turn controlled by the descending COEPS pathways which can either facilitate or inhibit the gamma motor neurones, thus increasing or decreasing the sensitivity of the muscle spindle to stretch. It is believed that the spasticity which usually results after a stroke is due to the disruption of the descending inhibitory pathways of the COEPS. The gamma motor neurones are thus released from their usually inhibited state and produce a hypersensitivity of the spindle to stretch, resulting in the exaggeration of the deep reflexes, clonus and spasticity.

The practical application of this in physiotherapy is seen when the muscle spindle is first made to discharge by placing the limb in a position so as to stretch one group of muscles e.g. the extensors of the whole limb. This commences an afferent discharge followed by a spinal reflex. Concomitant with this the patient is prevailed upon to initiate a voluntary contraction of the same group of muscles. Thus all the undamaged corticospinal fibres are made to function, together with the uncrossed pyramidal tract. The tension on the stretch receptors now increases as the contraction of the voluntrary muscles occurs. This potentiates the spinal reflex further and results in further augmenting the flow of impulses through the brain and spinal centres to the muscles. Sufficient counter pressure is deployed to maximise this build-up and carry the affected limb through certain patterns, to obtain maximum function of that limb. These patterns have been worked out so that physiologically similar muscles will function together. This forms the basis of Kabak's technique[2] of "Proprioceptive Neuromuscular Facilitation (P.N.F.) The basis of it is, as we have seen, a positive-feed-back mechanism to augment the deficient impulses from the cortex. Before the intricate neurophysiology of this was worked out as we understand it today, Starling expressed it qualitatively in his well known law of muscle contraction which states that the force of contraction of muscle is directly proportional to the initial length of muscle fibres, provided that it is not overstretched. In simple terms when the muscle is unable to contract fully following a stroke, we make the contraction stronger by stretching the muscle. By repeatedly doing this we increase the afferent discharge to the muscles and re-educate its functions. Spasticity acts as a brake to this whole mechanism.

Aphasia is another clinical feature of strokes. Aphasia may manifest in different forms. Firstly it may manifest as an inabi-

lity to comprehend spoken or written speech (sensory aphasia); secondly as a loss of power of speech in the absence of paralysis of the muscles of articulation (motor aphasia); thirdly as an interference with the use of language in thinking (intellectual type of aphasia). In sensory aphasia, the lesion involves the fibres to the superior and middle convolutions. Sensory aphasia may be manifest as a lack of comprehension of spoken speech or a lack of understanding of the written word (alexia). In motor aphasia there is damage to their motor fibres from Broca's area and contiguous areas. A special type of motor aphasia is the loss of ability to write (agraphia). Intellectual aphasia results from widespread cortical damage. Amnesic aphasia is a type of intellectual aphasia in which the memory for recent and past events is lost. A common error is to make a diagnosis of dementia when there is only a speech disturbance. When sensory aphasia or the intellectual type of aphasia are present the treatment of the stroke is extremely difficult. Motor aphasia could make a good recovery with proper speech therapy. Much work remains to be done in adapting the methods of speech therapy to the peculiarities of Singhalese and Tamil phonetics.

When a stroke occurs it is best to treat the patient in Ceylon in an institution. The transport to hospital may be hazardous and a trained person should accompany the person as far as possible. On reaching the hospital the patient should get continuous care and a team led by a physician should be in charge at the early stage.

On admission to hospital and thereafter the patient's condition should be periodically assessed with reference to the following:

(1) Can he swallow?
(2) Has he retention of urine?
(3) Has he respiratory difficulty?
(4) What is the extent of paralysis?
(5) What is his level of consciousness?

Nursing care is very important in the initial stage of management. An intelligent relative as a bystander is very helpful. To prevent respiratory complications it is best to nurse the patient in the prone lateral position and to establish a clear airway. If the patient cannot swallow he should be fed by an oesophageal tube. Catheterisation of the bladder may be necessary, but should be avoided as far as possible. Attention to the skin is also very important. A record should be kept of the progress of level of the conciousness and the extent of paralysis.

Lumbar puncture or cerebral angiography may occasionally be indicated as diagnostic procedures. The clinical differentiation between a cerebral haemorrhage and a thrombosis is be set with pitfalls, as the classical criteria for the diagnosis of one may be mimicked closely by the other. As such it is difficult to establish clear-cut indication for the use of anticoagulants in strokes. Steroids in large doses may be indicated in those cases which show deterioration in the level of consciousness which may be attributed to increasing intracranial pressure possibly due to cerebral oedema. Associated illness such as diabetes and hypertension needs treatment. Caution should be exercised in attempting to reduce an elevated blood pressure rapidly.

In the latter stages the patient comes under the care of the Physiotherapy Unit where exercises, rehabilitation and if necessary speech training are carried out. Occupational therapy and vocational retraining are also important, but in this country there is much to be done in these fields.

Following a stroke the patient may develop a depressive illness, or a mental barrier to recovery. Too much misplaced sympathy by relatives and insufficient active exercise therapy may help to develop this attitude of mind in the patient. The patient develops a cripple complex and eventually refuses to do the things he could very well do for himself. Psychiatric help may be necessary in such cases. The following is a regime of physiotherapy adopted in our clinic to treat hemiplegics, the treatment being tailored to suit each case.

The Medical Units are requested to call the physiotherapist as early as possible. An intelligent relative or bystander is given instructions to carry out passive movements to the affected side every hour. Postural drainage and deep breathing exercises are carried out by the physiotherapist. The ward staff are requested to turn the patient in bed several times a day. The patient is encouraged to pass urine frequently (2 hourly).

The signs of the acute phase may pass off in two or three days in most cases. The patient is now propped up in bed. The normal side is actively exercised if there are no contraindications like a concomitant coronary thrombosis or cardiac failure. Deep breathing exercises are continued.

Depending on the progress, the patient is put out of bed to sit on a chair. He is made to stand for a minute or two at a time P. N. F. exercises to the affected side are given. The treatment so far is carried out in the ward. If the patient has responded well, then he is assessed as to the suitability for treatment in the Department of Physical Medicine.

In the department, active and P.N.F. exercises are carried out, and the patient made to walk in parallel bars. A walking stick is provided if necessary. We hardly see any spasticity in cases where we commence this regime of treatment early. Where spasticity has set in we have devised a special splint for the arm, to be applied intermittently during the day and continuously at night. Electrotherapy is seldom used. It is sometimes used if periarthritis has set in; faradic stimulation to the quadriceps if they do not respond within a few days; faradic stimulation to the throat muscles in selected cases of motor aphasia. The recovery of the hand is slow and incomplete. It must be remembered that the hand occupies a motor area nearly as half as great as the rest of the muscles of the same side. It is very easy to neglect the proper treatment of the hand in the early stages. Roughly half the treatment time must devoted to the hand, if the maximum functions are to be regained in the hand. Routine electrical stimulation of the hand appears to be a waste of time.

In fitting these patients to the hazards and turmoil of normal society it is necessary to make adjustments where necessary for their daily routine of diet, drinking habits and toilet. Vocationally we encourage them to get back to their old jobs as far as it is possible. In desk jobs, teaching, routine bench work we recommend that the patient is fit if he makes a reasonable recovery. One patient, a driver of motor cars who had a left sided stroke following an undiagnosed diabetes mellitus eleven years ago has made a good recovery, except for weakness of the left leg, he is driving a clutchless car for his employer and up to the time of writing has a clean driving record. In the driving of public transport the situation is more difficult and generally we advise the patient to find alternative employment or to retire.

Several factors affect the duration and the ultimate degree of paralysis:—

(1) The extent of the fibres damaged-if the fibres from a larger area are damaged then the paralysis is more profound. When a considerable area of the cortex is damaged the recovery of the hand is poor.

(2) Where repeated attacks occur, especially if the time intervals are short, the prospects of full recovery are less.

(3) In the older individual the recovery mechanisms are less efficient.

(4) Associated diseases like diabetes and hypertension have a retarding influence on recovery.

(5) Proper and early management is the biggest positive influence in obtaining a good recovery. An old and neglected case is an unrewarding and a frustrating experience. Travis and Woolsey[3] have shown in control animal experiments in higher primates that passive exercises to prevent contractures, and nursing care to prevent bed sores, wasting, etc. are the most important factors in recovery.

The onset of spasticity is one of the major factors which act against obtaining a proper recovery. The main reason why early physiotherapy is advocated is to prevent spasticity. Keeping the recovering patient too long in bed was a fad of the past. This was mainly due to equating cerebral thrombosis to coronary thrombosis. The patient who has been kept too long in bed develops dizziness and loss of balance when he is eventually put up. Part of the picture may be caused by postural hypotension. Apart from recumbency, brain-stem damage may also cause postural hypotension.

The exact pathological processes in the recovery mechanisms are ill understood. In most vascular accidents some symptoms are due to reversible causes, such as venous occlusion, extravasation of free blood, oedema, and inflammatory reaction. When these begin to subside, the remaining tissues undergo recovery and begin to function normally resulting in some recovery of muscular function.

Where the vascular accident is a gross one and the symptoms due to the above factors fail to subside and in fact cause a chain reaction of increasing brain damage, then the outcome is usually a fatal one. In those that recover, the motor apparatus remaining undamaged can be made to improve by re-training. Motor skills are improved with learning, usage and training.

In conclusion, the prognosis as regards the degree of recovery of function, will depend upon the following factors.

(1) The degree of paralysis, sensory loss and aphasia.

(2) Associated disease.

(3) Onset of complications.
   (a) Head injury at the time of stroke
   (b) Respiratory complications
   (c) Injudicious medication e. g. Morphia
   (d) Urinary complications, and uraemia
   (e) Focal epilepsy following a stroke
   (f) Repeated attacks.

(4) Associated brain damage causing unconsciousness mental disturbances and inability to swallow.

(5) Relatives—Intelligent and willing relatives go a long away to a successful recovery and rehabilitation. Misplaced sympathy may be a detrimental factor in recovery.

(6) Hospital care — A high standard of nursing is very important. In several countries such as U.K., Sweden, U.S.S.R. and U. S. A. the subsequent management of strokes is carried out at home. However in Ceylon this is not possible as our standards of domiciliary nursing are not sufficiently well developed, and home physiotherapy is a non-existent service, except to the very affluent.

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PRIMARY OVARIAN PREGNANCY

By

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PRIMARY ovarian pregnancy probably occurs more frequently than previously realised. Curtis[1] put its incidence at 1:25,000 pregnancies or 1 in 117 ectopic pregnancies. Baden and Reins[2] found more than 100 cases in the literature. Even its presently estimated incidence might be increased by many authors who take exception to the rigid pathological criteria established by Spiegelberg[3] as necessary for diagnosis. These widely accepted criteria are :

1. The tube including its fimbria should be intact and separated from the ovary.
2. The gestation sac should be in the normal position of the ovary.
3. The pregnancy should be attached to to the uterus by the ovarian ligament.
4. Unquestionable ovarian tissue should be found in the walls of the sac.

A case of ovarian pregnancy fulfilling all the above criteria enunciated by Spiegelberg was seen at the General Hospital, Jaffna and is reported below.

Case report:

Mrs. S. aged 29 years gravida 7, para O was admitted to the General Hospital, Jaffna on 19th January 1970. She complained of pain in the right lower abdomen of ten days, duration. The pain was continuous. She had bleeding per vaginam for three days prior to admission. Her last regular menstrual period was on the 4th of November 1969.

Her first pregnancy had ended in an abortion at the sixth week of gestation.

Her pulse rate on admission was 100/min. volume and tension was good. The blood pressure was 130/80 mm Hg. There was no pallor. The abdomen was soft. There was tenderness in the right iliac fossa. There was no guarding or rigidity. There were no palpable lumps.

Pelvic examination revealed that the cervix was soft. The os was closed and the uterus could not be defined. There was a soft tender lump felt through the right fornix about 6 cms X 4 cms in size. There was tenderness on rocking the cervix. Speculum examination showed no abnormality in the cervix. There was fresh bleeding through the cervical canal.

Blood examination showed that the haemoglobin was 60%. The leucocyte count was 5200, with polymorphs 62% lymphocytes 35%, monocytes 1% and eosinophils 2%.

A diagnosis of ruptured ectopic gestation was made. Laparatomy was performed through a right lower paramedian incision. There was a small quantity of fresh and clotted blood in the peritoneal cavity.

There was large mass 6 cms X 4 cms in size occupying the position of the right ovary (Fig. 1) The lateral part of the mass was composed of normal ovarian tissue 2 cm X 1 cms in size. The medial part of the ovary consisted of a large haemorrhagic mass which was connected to the uterus by

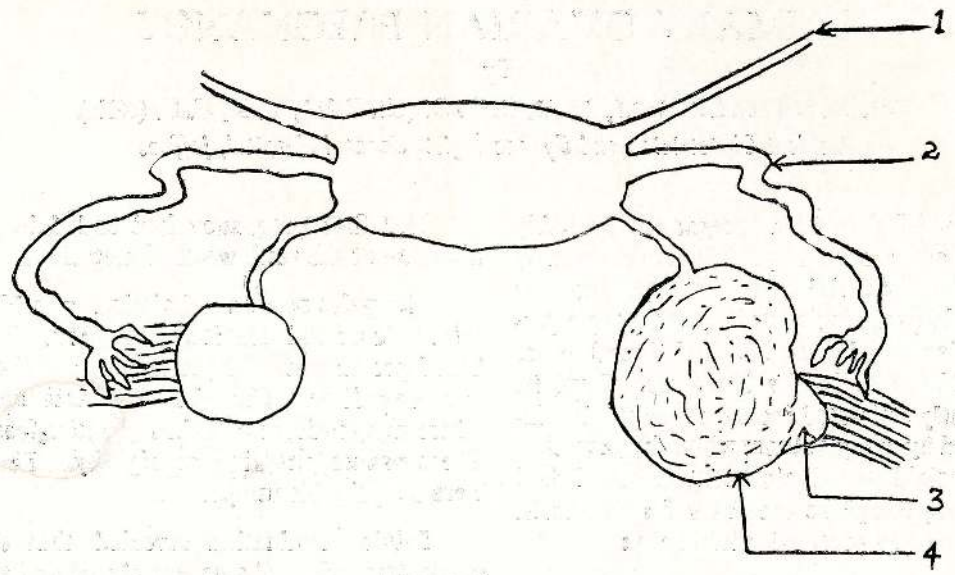


Fig. 1. Diagrammatic representation of findings at operation.
1. Right round ligament.
2. Intact fallopian tube.
3. Normal ovarian tissue.
4. Haemorrhagic area occupying medial aspect of right ovary.

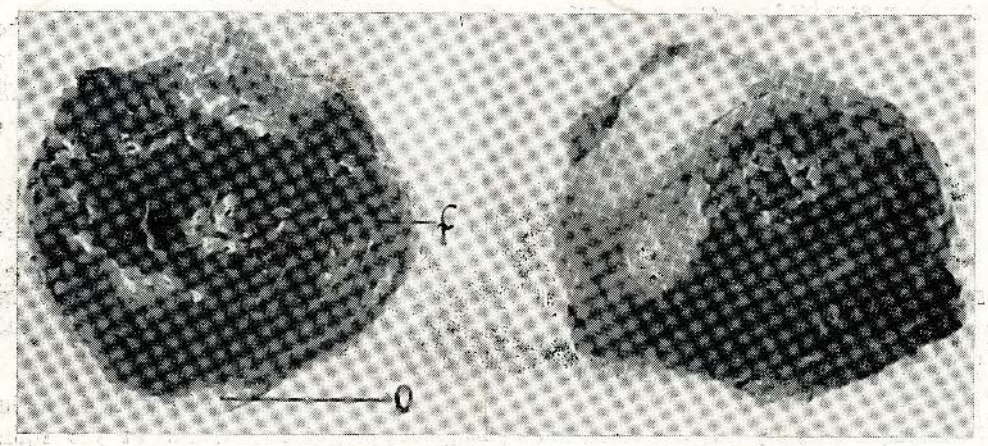


Fig. 2. Two views of the specimen, A show the superior aspect demonstrating the pregnancy sac with the fetus (f) in the centre and the small area of normal ovarian tissue (o) below.

B shows the lateral aspect with the area of normal ovarian tissue clearly.

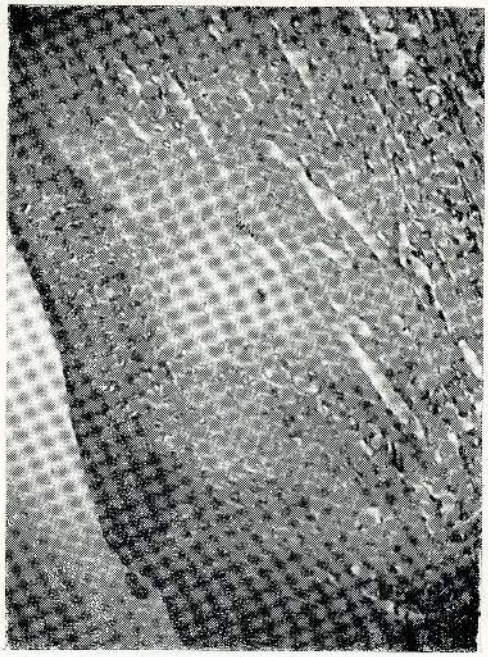
the ovarian ligament. The right tube and its fimbrial end were intact and normal in appearance. The uterus and adnexae on the left side were normal.

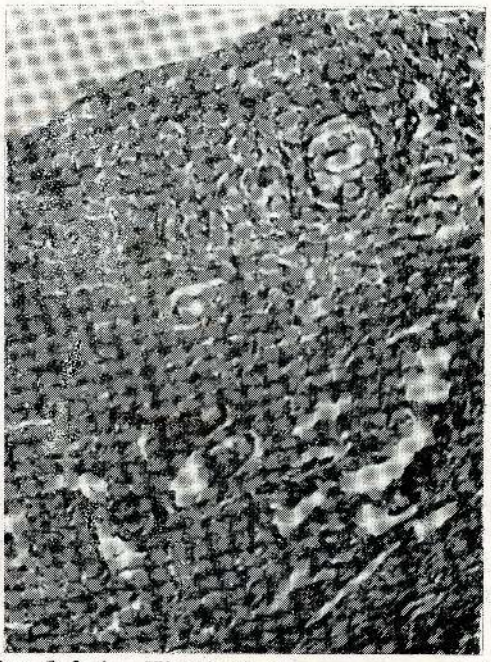
Right sided ovariectomy was done. On cutting into the mass colourless fluid resembling liquor amnii escaped from a cavity in the centre of the haemorrhagic mass and a small embryo 0.25 cms in size was found to be in the cavity which was lined by a smooth membrane. The specimen was sent for pathological study (Fig. 2).

Post operative recovery was uneventful and the patient left hospital on the 10th day. Histological examination of the specimen showed ovarian tissue and degenerate chorionic villi. (Fig. 3)

Discussion :

Clinically the case illustrates the difficulty in distinguishing ovarian from other forms of ectopic pregnancy. Taber and Crossettes[4] statistics indicate the unreability of a missed menstrual period as a sine qua non to the diagnosis. In 44% of their cases symptoms occured within 28 days of the previous normal period. This is because the ovary can accommodate the pregnancy only for a very short period. Usually within two to three weeks the capsule bursts and causes intra abdominal haemorrhage. This case was unusual as she had missed two periods before the onset of symptoms.





Figs. 3 & 4. Histological appearances of the sections from the specimen showing ovarian tissue and chorionic villi.

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POISONING BY AGRO-CHEMICALS SOME ASPECTS OF MANAGEMENT

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A number of chemicals are used in agriculture as insecticides, fungicides and weed-killers. The number of such chemicals is rapidly increasing, and every year the Ministry of Agriculture puts out a Formulary of Agrochemicals[1] available in Ceylon One group is the organophosphorus group, which includes drugs such as 'Folidol'. These are powerful insectides, they are also very toxic to man and are hence used for suicidal purposes. Carbamates are another group which are being used more often now.

The organophosphorus compounds act by more or less irreversibly inhibiting cholinesterase in the body. As a result acetyl choline is not destroyed and hence accumulates in large amounts. The symptoms and signs are due to the increased amounts of acetyl choline and include headache, giddiness, weakness, nausea, cramps, diarrhoea, sweating, miosis, tearing, salivation, increased bronchial secretions, vomiting and muscle twitchings. Convulsions, coma, loss of reflexes, and loss of sphincter-control are later manifestations. Following a massive oral dose death may occur in 5 minutes or less. Some patients may require artificial respiration, and some may show the results of severe brain damage as a result of anoxia. These patients remain comatosed and continue to have inadequate spontaneous respirations.

The carbamates are reversible inhibitors of cholinesterase. The reversal is very rapid. The symptoms are very similar to organophosphorus poisoning.

We give below the clinical features and management of two patients poisoned with agrochemicals. These patients showed some unusual features.

Case—1

This patient was a man of 35 years. As a result of some domestic squabble he had bought a new bottle of Folidol, containing 100 ml of the concentrated compound, and taken several gulps from it. The bottle was brought to the hospital and it contained 45 ml, so that he may have taken up to 55 ml- assuming that none of it was spilt. He drank the Folidol and then ran about 100 yards and collapsed. The patient was admitted to Jaffna Hospital about 1 hour after he had ingested the poison.

The patient was brought to the ward at about 4-30 p.m. on 3-12-69. He was deeply unconcious, with no response to painful stimuli. Corneal reflexes were absent. The respirations were shallow and irregular and there were secretions in the lungs and air passages. The pupils were pinpoint. There were widespread fasciculations in the muscles.

He was given a stomach wash and a body wash. He was given pyridine-2 aldoxine (P2AM) 1.0 gm IV stat, and another 0.5 gm. 1 hour later; this dose was again repeated one hour later. Atropine was given as fast as possible. The only limiting factor was the rate at which the vials could be broken (each vial contained gr. 1/100 of atropine i.e. 0.6 mgm). and the solution

drawn into the syringes. We had the full co-operation of the nurses and House Officers in the neighbouring medical wards in setting up a sort of assembly line for this purpose.

He remained deeply unconcious for about 4 hours, i.e. till about 8-30 p.m. During this time 550 ml of atropine was given i.e. 330 mgm, together with 2.0 gm of P2AM. He also had roli tetracycline (Reverine) i.v., and Frusemide IV. Secretions were sucked out.

After this period he gradually showed signs of improvement. The secretions became less, he was concious for brief periods and he could respond to commands. He was however confused and would soon lapse into unconciousness. The B.P. at this time was 110/70mmHg, pulse 140/min regular. Respiration was irregular with periods of apnoea lasting 8 secs. The pupils were semidilated, but at no stage during his stay in the hospital did his pupils dilate fully.

During the next 4 hours he remained conscious for most of the time but was confused and restless. From time to time he would have secretions in his throat and crepitations in his lungs. These signs would clear up when more atropine was given. He had to be under constant observation as his condition would deteriorate from time to time. During this period i.e. from 8-30 p.m. to 12-30 a.m. he was given 220 ml of of atropine and 1.0 gm of P2AM IV.

4-12-69—7-30 a.m.He was confused, his skin warm, pupils semidilated right larger than the left. B P. 80/60 m.m. Hg. Pulse 128/min regular, lungs clear.

Till 10 a.m. 70ml of atropine was given, depending on the condition of the patient, and also .5 gm P2AM. By this time he was quite conscious, but still slightly confused. The lungs were clear. He then vomited out bile-stained fluid smelling of Folidol. A stomach wash was given, and during the stomach wash the patient became cyanosed with a thready pulse,shallow and respiration secretions in the lungs.

The secretions were sucked out and further atropine was given. He continued to have crepitations in the lungs but these cleared up in the afternoon. More atropine was given as it was assumed that he still had Folidol in his body. From 10 a.m. to 3 p.m. he was given 410 ml of atropine and from 3 p.m. to 8 p m. he was given a further 660 ml of atropine and P2AM 1.0 gm. By this time his lungs were quite clear, Pulse 120/min, BP 100/70.

No further atropine was given after 8 p.m. on 4-12-69.

5-12-69.

By morning the patient was considerably better. He was mildly confused at times, but was quite well orientated and could recognise and talk to his relatives. BP 110/70. Pulse 118/min. By evening he was talking rationally and seemed to be making satisfactory progress. However, during visiting hours he suddenly became dyspneoic, with copious secretions in the lungs, and expired in a few minutes at about 6-45 p.m.

Total amount of atropine given in 27½ hours was 1970 bulbs. i.e. 1182.0mgm

Total amount of P2AM given in 24 hours was 8 bulbs i.e. 4.0 gm.

Case. 2

This patient, a male 20 years old was admitted to Jaffna Hospital on 2-2-70 at 2-10 p. m. The admitting officer's notes stated that he had sprayed an insecticide (Folidol and? Antrocol)

After this he had fainted and vomited, and developed tremors.

On examination he was conscious. BP 140/80. pulse 84|min. The pupils were dilated and reacted to light. He had course tremors of his hands, but no other signs.

He was given P2AM 0.5 gm IV and atropine 5ml IV and kept under observation. His condition deteriorated. He became more drowsy and there were fasciculation. A further 15ml of atropine were given at 5.15 p.m. but there was no improvement in his condition. The pupils were dilated. By this time the relatives had arrived with a package of the chemical he had been using. The name was Antrocol-a carbamate. No further P2AM was given, but a further 20 ml. of atropine was administered IV in a pint of 5% dextrose.

The patient made a full recovery in a few hours and was discharged home the next day.

Comments

Case. 1

Atropine is an important drug in the management of organophosphorus poisoning. It counteracts the central and post-ganglionic parasympathetic effects, but has no effect on the motor end-plate in the skeletal muscles. The effects of IV atropine sulphate begin in about 1—4 minutes and are maximal in about 8 minutes. Hence atropine sulphate is the drug of choice in the emergency treatment of a case of severe organophosphorus poisoning.

In this patient the history and clinical features pointed to severe poisoning. In the first 4 hours this patient received 330 mgm of atropine sulphate, and 2.0 gm of P2AM. At the end of this period the patient was showing signs of improvement. These doses of atropine are much higher than those recommended in standard textbooks. Lawrence[3] recommends "atropine sulphate 2 mgm given IV or IM and repeated every 10 to 30 minutes as indicated by clinical progress. The patient should be kept fully atropinised for at least 24 hours, and may need as much as 100 mgm of atropine"

It was felt that if smaller doses were given the patient might have succumbed very quickly. There was a considerable delay in administering the atropine as each vial of atropine had to be broken individually, and the 0.6 mgm of atropine contained in 1 ml vial drawn into syringe. There seems to be strong indication for atropine to be made available in higher strengths and in bigger dose bottles i.e. 25 cc bottles containing 150 mgm (100 times the present concentration).

The total dose of atropine given to this patient was about 1200 mgm in about 30 hours. There were certainly times when we felt that the patient was receving too much atropine, but these symptoms of atropine poisoning, e.g. tachycardia of over 140|min, passed off very quickly to be replaced by the features of organophosphorus poisoning-viz, secretions in the lungs and bronchospasm.

The other drug of value is Pyridine-2-Aldoxime. This drug activates cholinesterase thus reducing the acetyl choline level in the blood. The dosage recommended by Lawrence[3] is 1.0 gm IM or IV every 3—4 hours.

This patient received 2.0 gm of P2AM within the first 4 hours, and a further 2.5 gm during the next 26 hours. No doubt if more P2AM were given, the total dose of atropine could have been reduced. However, for this patient the first few hours were the most critical, and during this

period he received the 'standard' doses of P2AM together with massive doses of atropine. It was felt that the patients, progress during the first few hours till he regained conciousness, was due to the large doses of atropine that were given. The unequal pupils are probably due to brain damage.

The cause of his sudden death could not be clearly explained. By the evening of 5-12-69 i.e 48 hours after his admission, his condition was quite satisfactory and better than it had ever been earlier. He was talking to his relatives, taking oral feeds and appeared to be making good progress. Within a matter of minutes he became acutely dyspnoeic, developed secretions in the lungs and died.

Sudden and fatal relapse has been known to occur after apparently complete recovery from organophosphorus poisoning. Perhaps the atropine and P2AM had been stopped prematurely?

Case. 2

The Carbamates are another group of insecticides that are being widely used now. They are effective against a wide range of insect pests of fruits, nuts and vegetables. They are reversible inhibitors of cholinesterase, and the reversal can be quite rapid. The symptoms are very similar to those produced by organophosphorus poisoning. The treatment is similar to the treatment of organophosphorus poisoning, but **P2AM is contraindicated and may be dangerous or even fatal.** As carbamates are reversible inhibitors of cholinesterase time alone may be enough, but the addition of atropine may hasten the process of recovery. Therefore if there is a doubt it is better to withhold P2AM and rely on atropine alone.

This patient was given P2AM on the history of having sprayed Folidol. but his condition deteriorated. However he recovered rapidly with further doses of atropine.

The Carbamates available in Ceylon at the moment are Carbaryl; Sevidol; Sevin; Antrocol; Dithane; Fermate; Ferbane; Lonocol; Microneo; Micronyl; Manzate D; Mangun Curil; Meneb; Parzate; Tubosan; Tizet; Tiezene: Zerlate; Zineb; Zebenide.

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EXTRA-CURRICULAR RADIOLOGY

By

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WHEN Professor Wilham Conrad Rontgen discovered the form of electromagnetic radiation called X-rays in 1895, he would have scarcely envisaged the variety of uses it has been put to since then. Though its practical value has been nowhere more evident than in medicine—both in diagnosis and in therapy—the various properties of X-rays have had many industrial, chemical, and biological applications.

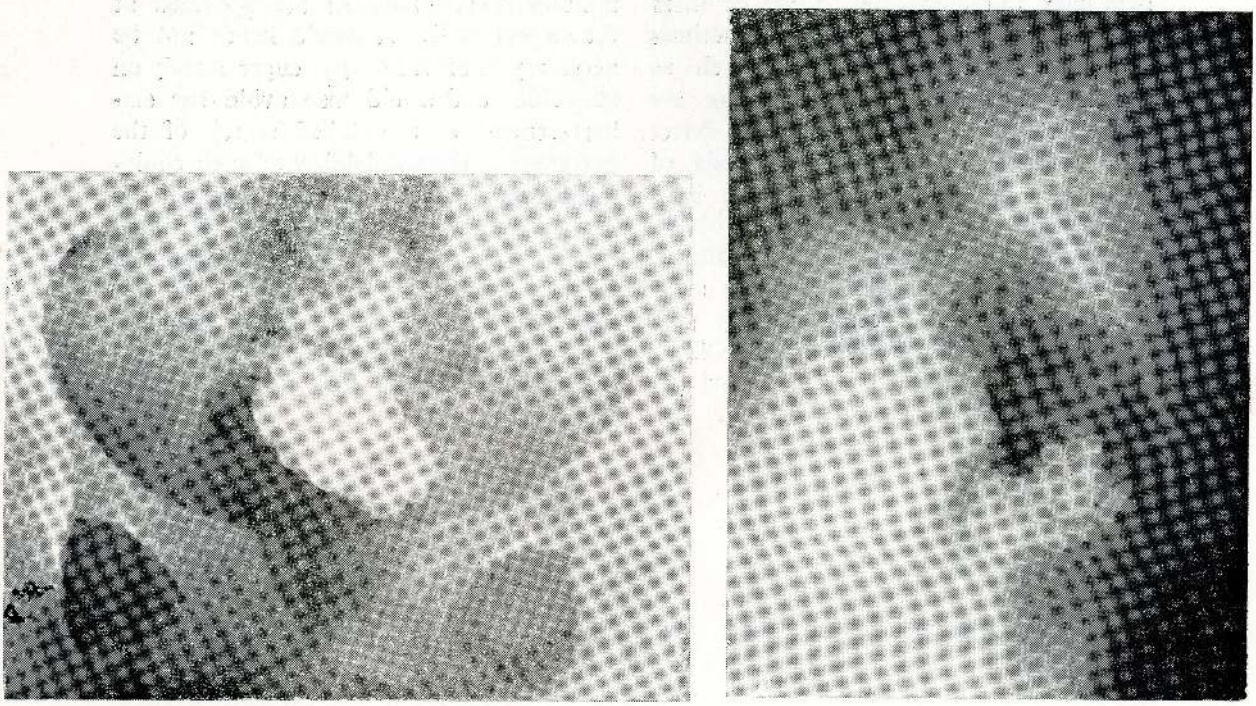
Sir W. L. Bragg showed that the property of diffraction of X-rays could be used for analysis of crystalline structures using the X-ray spectrometer. Analysis of the molecular structure of complex coumpounds have been achieved by the interpretation of the diffraction of X-rays; the synthesis of penicillin followed such analysis.

The property of scattering of X-rays is widely used in the study of proteins, viruses, catalysts, alloys, synthetic fibres, etc. Irradiation has been used for food preservation without refrigeration, sterilisation etc. It has been used to study the effects to mutations, and for producing favourable mutations in crop plants and flowers. Intensive research is being done in the study of the chemical composition of cancer cells and the changes in them following irradiation.

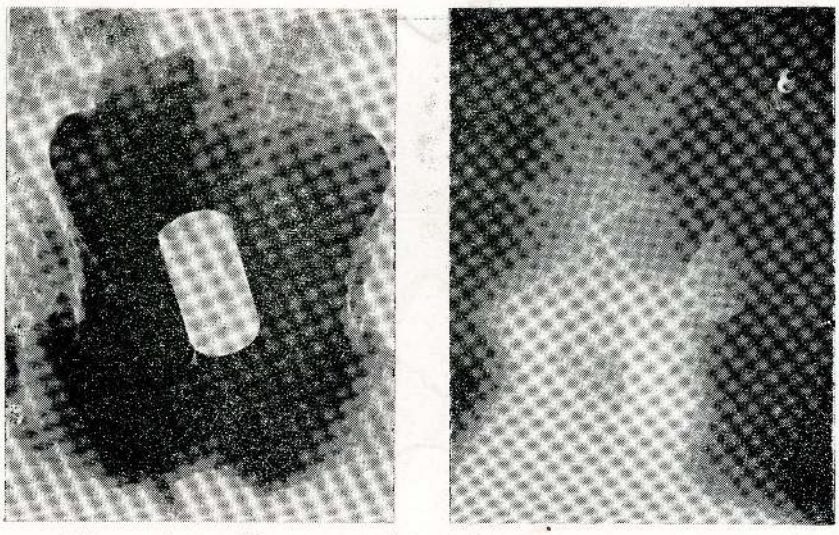
The property of differential absorption when an X-ray beam passes through a specimen of varying composition or density is used, apart for medical diagnosis, for nondestructive testing of welded parts as in aeroplanes, for detecting reasons for failure of machine parts, and in art museums for determining the authenticity of paintings. Flash radiography and cineradiography have recently been used to determine the extent of displacement of internal organs in animals under extremely high acceleration and to assess the nature of similar effects in human astronauts.

The above property of differential absorption has found its use in customs detections, and X-ray machines are now being installed in some places for this purpose. Two cases are reported of detections made of attempts to smuggle gems out of Jaffna during the last few months. A young lady, 24 years of age, was stopped on suspicion, and X-rays revealed a collection of small opacities in the rectum. (Figs 1 & 2). This was removed and 92 Ceylon gems of different varieties were found enclosed in a rubber bag. A few weeks later a youth, 21 years of age, was stopped by the customs officers on suspicion. Here too X-rays revealed a cylindrical tin in his rectum. (Figs. 3 & 4). When this was removed and opened it was found to contain over 100 rubies, a large yellow sapphire, and some other Ceylon gems. The gems were enclosed in small cloth bags and packed into a cylindrical metal container, about two inches long and one inch in diameter. There was also a note in coded language inside the container. Both passengers were leaving Jaffna in the flight to Trichinopoly.

Many have on previous occasions swallowed gems with the idea of recovering



Figs. 1 & 2. Show a mass of opaque foreign bodies in rectum.



Figs. 3 & 4. Show a cylindrical foreign body in rectum.

hem later in the excreta. Some of them have suffered agonising pain, sometimes ending in serious consequences such as intestinal obstruction. When gems are carried internally, it is impossible to detect their presence by ordinary methods of searching. Radiographical methods have to be utilised. It is not necessary to obtain radiographs for making such detections. A quick fluoroscopic examination is sufficient to locate gems concealed in any part of the person. The Airport Medical Officer could easily handle this equipment and the examination can be completed in a few minutes, if such facilities are provided at the airport itself. It would hence not be necessary to off-load a passenger merely on suspicion, and would also avoid the embarrassment of a detailed search of the passenger. The availability of such equipment would certainly act as a deterrent to those who are now trafficking in the illicit export of gems and depriving Ceylon of a valuable foreign exchange earner. In this respect, the installation of X-ray machines at our main airports—Katunayake, Ratmalana and Jaffna—will prove to be a sound investment.

NOTICE TO AUTHORS

Manuscripts of articles for publication should be sent with a covering letter to the Editors, Jaffna Medical Association, General Hospital, Jaffna. Articles are accepted for publication on the understanding that they are submitted solely to this journal. They are subject to editorial revision.

Manuscripts should indicate the title of the paper, the name, qualifications, and full address of the author (or authors). The text should be In double-spaced typing on one side only with a wide margin.

Tables :

All tables should be on separate sheets and be capable of interpretation without reference to the text.

Illustrations :

Photographs submitted should be unmounted glossy prints. Drawings, charts and graphs should be drawn in black Indian ink on white paper. All illustrations should be clearly numbered with reference to the text on the back and should be accompanied by a suitable legend.

Nomenclature of drugs :

Only B. P. C. approved names should be used but in the case of new or unusual drugs the trade name should appear in parenthesis after the approved name. The inital letter of the approved name should be a simple letter and of a trade name a capital letter. All weights, volumes and doses should as far as possible be given in metric units.

References :

References should be indicated in the text by superior figures in order of appearance, e.g. "Burman and Gibson[3] investgated the E.C.G. changes ..... etc."

The list of references should be set out in numerical order at the end of the article. Each reference should give in order the following : author's name and initials, the year of publication (within parenthesis), the name of the journal (abreviations used to be according to the World List of Scientific Publications), the volume number (underlined with a wavy line), and the number of the first page of the article referred to;

e.g.—

3. Burman, S. O., and Gibson, T. C. (1963). Ann. Surg. 157, 134.

If reference is made to a book, the reference should give the following in order: author's name, year of publication (in parenthesis), title of book, volume, edition, page number of reference, city where published, and name of publisher;

e. g.—

Hewer, C. L. (1948), Recent Advances in Anaesthesia and Analgesia, 6th ed., p. 120. London : Churchill.

ASSOCIATION NEWS

ANNUAL REPORT FOR THE YEAR 1969—1970

THE year under review is the first one following the reconstitution of the Jaffna Medical Association from the Jaffna Clinical Society. We have great pleasure in being in the unique position to submit the the first Annual Report of the Association.

The number of Members is now 146. This is, at least in part, due to the Membership Drive organised by the Committee.

29 Scientific Meetings were held during this year (vide schedule of meetings for details). This included eight Panel Discussions. The good attendance at all such Meetings was a measure of their popularity. At seven scientific meetings, guest speakers from outside the peninsula took part. Those who graced us in this way were: Dr. S. J. Stephen, Dr. S. A. Cabraal, Dr. A. M. Mendis, Dr. S. Anandarajan, Dr. J St George, Mr. A. T. S. Paul and Dr. Stella de Silva. We thank them for coming to Jaffna to join us in the meetings. We also thank Pfizer Ltd. (Colombo) for the two films on Diabetes Mellitus. Two of the scientific meetings were held outside Jaffna one at the Base Hospital, Pt. Pedro and the other at the Co-operative Hospital, Moolai. This enabled more members to take part in the meetings. We thank the members of these institutions for being hosts to the Association.

Four dinners were held under the auspices of the Association. This made it possible for members to meet each other socially.

A letter was received during the course of the year, from the President, Ceylon Medical Association, suggesting that we become a branch of that Association. This was discussed at a General meeting and after much delibration, a decision was taken against the suggestion.

A new Library Assistant, Mr. N. Navaratnarajah was appointed in place of Mr. F. X J. Francis who left us.

Dr. S. Subramaniam, one of the Joint Secretaries at the beginning of the year, left us in September '69. He was followed by Dr. T. Sivendran, who also left Jaffna after a short time. Dr. J. P. Manickasingham (Hony. Treasurer) and Dr. P. Shanugarajan (one of the Joint Librarians) also left us during the course of the year. We thank them and wish them luck in their new appointments.

The Association has, to a great extent, acheived the objects as set down in the constitution. We are greatly indebted to the members of the Council and all members for making this possible.

Summary of meetings held during the year 1969—1970

The five lectures given by guest speakers were:

Date	Lecturer	Subject
11-4-69	Dr. S. J. Stephen	Pulmonary Amoebiasis
4-10-69	Dr. S, A. Cabraal	Management of intra-cranial tumours.
2-11-69	Dr. S. Anandarajan	Eye changes in cardio-vascular insufficiency.
18-12-69	Dr. John St. George	Vesico-vaginal fistula.
4-2-70	Mr. A. T. S. Paul	Medical problems around the diaphragm.

Eight panel discussions were held as follows:

Date	Subject	Panel Speakers
28-5-69	Steroid Therapy	Dr. M. Kanagarajah Dr. (Mrs.) R. Kanagasunderam Dr. R. Mahendran Dr. S. Varatharajan Dr. K. Arumugam Dr. B. A. Mills Dr. T. Parameswaran Dr. P. Abeyasuriya
28-7-69	Dysphagia	Dr. C. K. Thurairatnam Dr. N. Ganeshananthan Dr. (Miss) S, Kanthapillai Dr. K. E. de S. Karunaratne Dr. T. Arulampalam
10-8-69	Termination of Pregnancy	Dr. M. Kanagarajah Dr. J. L. Amarasingham Dr. T. Arulampalam
8-9-69	Convulsions	Dr. S. Shanmugalingam Dr. (Mrs.) R. Kanagasunderam Dr. K. Ganesan
8.10-69	Backache	Dr. T. Gangatharan Dr. R. Ramalingam Dr. T. Parameswaran Dr. W. J. K. M. de Silva
6-11-69	Cardiac arrest and resuscitation	Dr. K. E. de S. Karunaratne Dr. S. Varatharajan Dr. N. Ganeshananthan
6-12-69	Snake-bite	Dr. N, T. Sampanthan Dr. A. V. A. Vethanayagam Dr. T. K. Balasingham
20-1-70	Acute abdomen	Dr. M. Kanagaraja Dr. V. A. Benjamin Dr. W. J. K. M. de Silva

Six short papers read at our meeting were

Date	Subject	Speaker
25-8-69	Management of the third stage of labour	Dr. J. L. Amarasingham
1-9-69	Blood Sugar levels in diabetics	Dr. J. Balachandran
23-9-69	Bio-energetics of diet (I)	Dr. J. Balachandran
23-10.69	Corneal Ulceration	Dr. P. Abeysuriya
21-11-69	Management of strokes	Dr. A. C. Jayasuriya
26-2-70	Bio-energetics of diets (II)	Dr. J. Balachandran

Fifteen Clinical demonstrations were held and the following cases were shown:

Date	Cases
23-3-69	(1) Oesophagectomy (for carcinoma) and left pnenmonectomy (for tuberculosis done simultaneously. (2) Traumatic haemopericardium with cardiac tamponade. (3) Spontaneous pulmonary interstitial emphysema in a child. (4) Lymphosarcoma of the mediastinum. (5) D. C. defibrillation for auricular fibrillation in cases after mitral valvotomy.
14-4-69	(1) Two cases of ectopic anus (2) Retro-peritoneal fibrosarcoma (3) Intra-peritoneal fibrosarcoma (4) Pseudo pancreatic cyst (5) Eventration of the diaphragm (6) Horse-shoe kidney with recurrent renal calculi (7) Diabetes mellitus with pancreatic calculi
12-6-69	(1) Rheumatoid arthritis with subluxation of the hip joint following steroid therapy. (2) Supraclavicular lump caused by an anomalous first rib. (3) Case of myocarditis (4) Two cases of tracheo-oesophageal fistulae
11-7-69	(1) Manic-depressive psychosis (2) Schizophrenic illness (3) Hysterical disorders. (4) Obsessive compulsive neurosis (5) Atrio-septal defect (6) Atrio-septal defect with dextro cardia (7) Nephrotic syndrome in a child resistant to steroids treated with phosphamide. (8) Multiple lumps of obscure origin (9) Habit spasm following snake-bite.

Date	Cases
28-8-69	(1) X-rays of cases uretero-vaginal and vesico-vaginal fistulae following surgery.
	(2) Two cases of ruptured ectopic gestation presenting problems in diagnosis.
	(3) Vaginal atresia
	(4) Foetal abnormality (seen on X-rays) in a mother already having a child with congenital defects.
1-9-69	(1) Intra-abdominal lumps with mediastinal lymph node enlargement.
	(2) Carcinoma of the pyloric end of the stomach.
	(3) Intra-abdominal lump seen off and on due to intermittent hydronephrosis.
	(4) Large right lobe liver abscess the progress of which was followed by injecting a radio-opaque dye.
23-9-69	(1) Gonococcal ophthalmia neonatorum.
	(2) Two cases of syphilis spread by homosexual contact.
	(3) Penile syphilitic ulcer, diagnosis of which was made difficult by penicillin therapy.
	(4) Five cases of repeated intrauterine deaths.
	(5) Hydrocephalus detected in utero.
	(6) Empyema of obscure origin with biopsy reports of secondary carcinoma in the intercostal lymph nodes and tuberculosis in the chest wall.
23-10-69	(1) Repaired cleft palate
	(2) Pelvic hydronephrosis
	(3) Sialography
	(4) Retro-peritoned air insufflation
	(5) Carcinoma of the oegophagus with pulmonary osteoarthropathy.
21-11-69	(1) Craniostenosis in a four year old
	(2) Morquio-Brailsford disease
	(3) Fanconi's anaemia
	(4) Lymphatic leukaemia
12-12-69	(1) Suspected hydatid disease of liver
	(2) Chronic lymphatic leukaemia presenting with epistaxis
	(3) Grave's disease with unilateral exophthalmos.
	(4) Two cases of nephrotic syndrome with enlarged liver.
	(5) Intermittent claudication of the spinal cord.
	(6) Addison's disease.
	(7) High vesico-vaginal fistula.

Date	Cases
21-12-69	(1) Myopathy presenting with weakness of abdominal muscles.
	(2) Two cases of myopathy in the same family.
	(3) Three cases of facial palsy.
	(4) Thyrotoxicosis in a middle-aged woman.
	(5) Cervical lymph node enlargement.
	(6) Carcinoma of the colon.
	(7) Bulbar Palsy.
4- 1-70	(1) Anterior dislocation of radius in a child.
	(2) Dislocation of the metacarpo-phalangeal joint.
	(3) Tuberculosis of the spine presenting as dysphagia.
	(4) Myositis ossificans of the elbow.
	(5) Pathological fracture through a bone cyst.
	(6) Chorion-epithelioma treated with chemotherapy.
	(7) Bilateral dermoid cysts of the ovary.
	(8) Bilateral chocolate cysts of the ovary.
	(9) Mesenteric cysts resembling ovarian cyst.
	(10) Amoebic liver abcess simulating a malignant disease of liver.
	(11) Bilateral sinuses in the cheeks
	(12) High anal fistula
13- 2-70	(1) Oesphageal obstruction in a 20 day old infant due to foreign bodies.
	(2) 5 cases of neonatal meningitis
	(3) Hand-Schuller-Christian disease in a 3 year old presenting as diabetes mellitus.
	(4) Adreno genital syndrome.
	(5) Persistent pneumonia.
	(6) Epigastric swelling of obscure origin.
20- 2-70	(1) 2 cases of cardiac failure.
	(2) Carcinoma of the prostate with secondary deposits in the pelvis.
	(3) Myaesthenia gravis.
	(4) Hodgkin's disease.
	(5) Five case of ankylosing spondylitis.
	(6) Tracheo-oesophageal fistula with atresia repaired succesfully.
	(7) Boy with hysterical manifestations.

On 13-3-70 Dr. K. E. de S. Karunaratne delivered the Presidential Address on Disorders of the Myocardium.

JAFFNA MEDICAL ASSOCIATION

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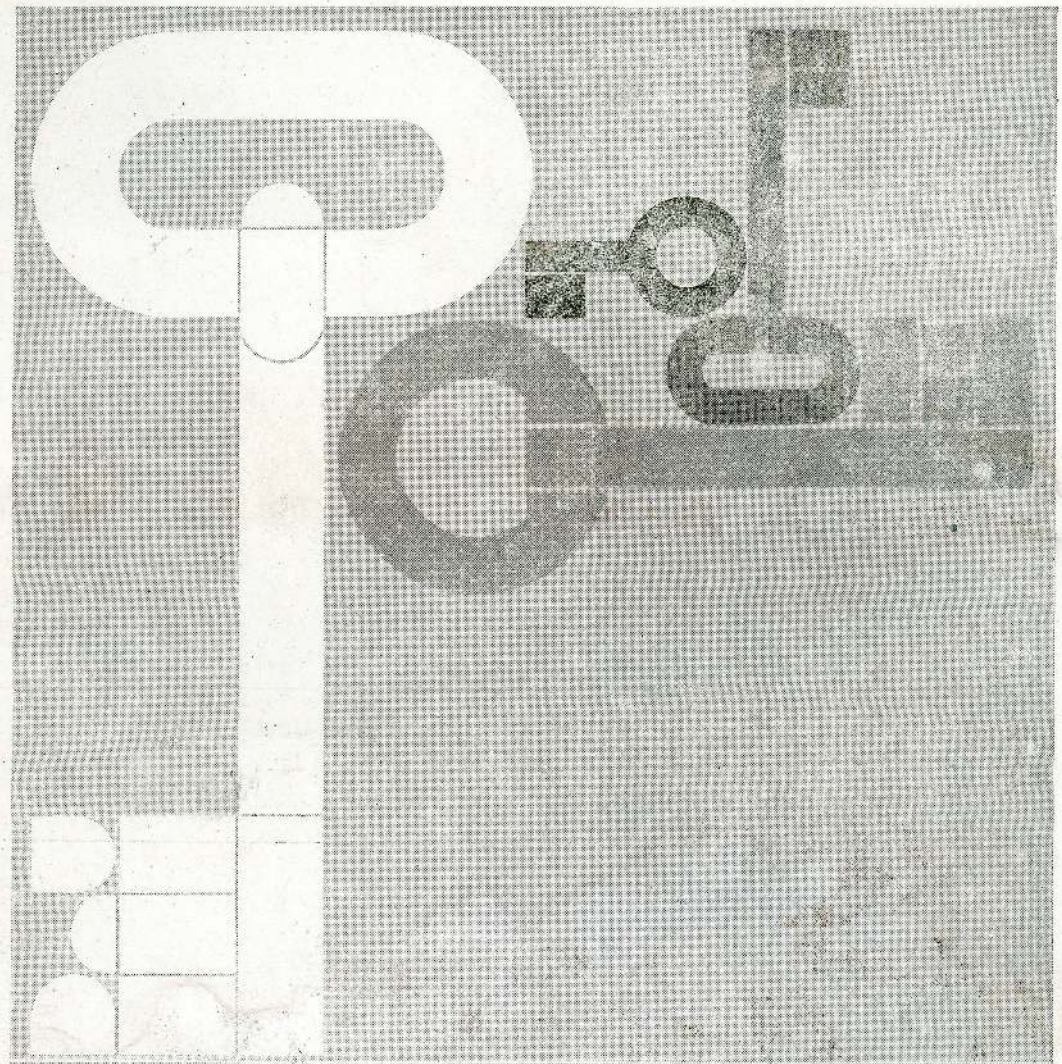

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