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The Madras

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(With which is incorporated the "Miscellany")



Vol. XXVIII

July 1961

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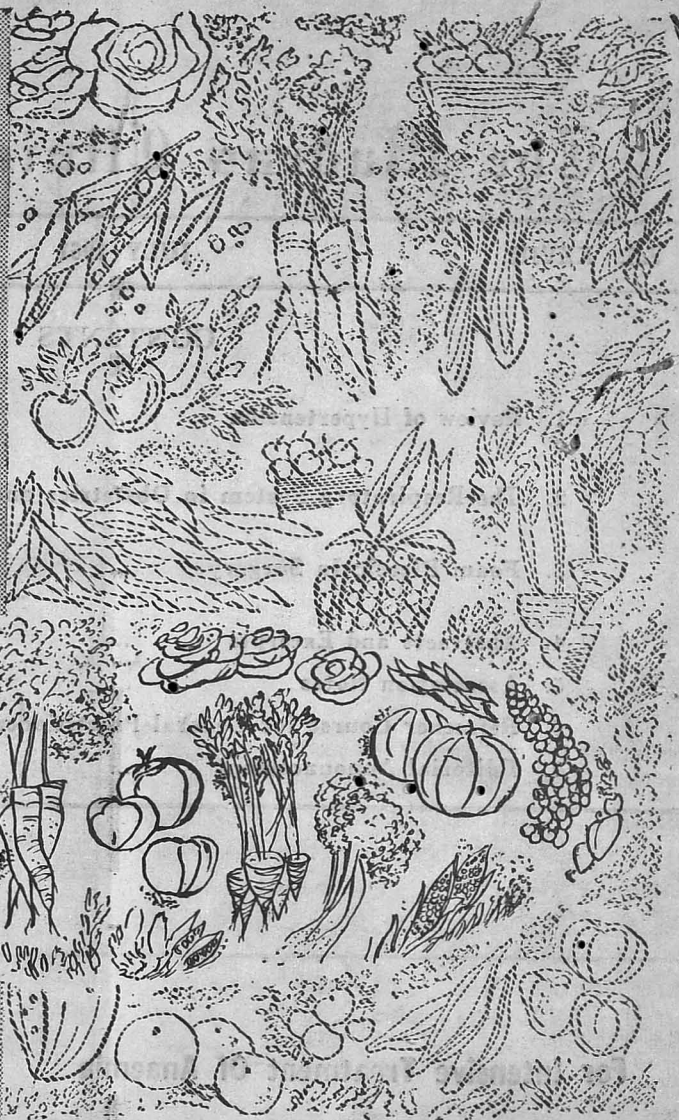
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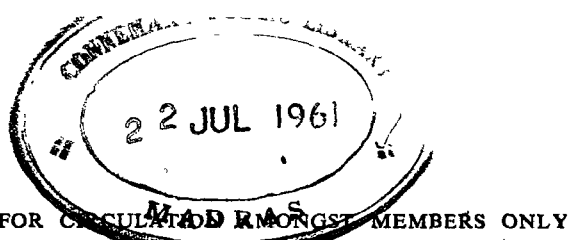


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Vol. XXVIII

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No. 1

REVIEW OF HYPERTENSION

G. VICTOR, M. D.,
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The blood pressure in health varies widely, the systolic ranges from 100 - 145 mm Hg. and the diastolic from 60 - 90. Readings above 160 mm Hg. systolic and 90 mm Hg. diastolic suggest "Hypertension". The following classification would help to specify the type of hypertension that could occur in man under varied conditions:—

1. Persistent or Transient Hypertension.
2. Primary or Secondary Hypertension.
3. Systolic or Diastolic Hypertension.

Persistent or transient hypertension occurs in essential hypertension, renal disease, endocrine glandular disease (suprarenal, pituitary, sex glands, thyroid), arteriosclerosis, blood conditions (increased viscosity or volume, e. g. erythrocytosis, Geisboch's polycythemia hypertrophica), increased intracranial pressure, obesity.

Primary or essential hypertension will be in the form of benign or

malignant varieties. Secondary hypertension may occur in C. N. S. disorders, adrenal and chromaffin diseases, renal disturbances, toxæmias of pregnancy, acute intermittent porphyria, coarctation of aorta, drugs and poisoning and others (exercise, emotion, acute nephritis, onset of uraemia and eclampsia, menopause).

Systolic hypertension is usually found in: Increased emptying of the arterial system during diastole, arteriosclerosis, fevers, anaemia, hyperthyroidism, heart block, P.D.A., Paget's disease of bone. Diastolic hypertension is found in essential hypertension, renal hypertension, endocrine disease, coarctation of aorta, neurological conditions like haemorrhage into cerebral tumours, increased intracranial pressure, encephalitis.

Intermittent diastolic hypertension may occur in emotional stress or anxiety, diabetes, elderly or other subjects with atherosclerosis, as an early manifestation of arterial

hypertension, paroxysmal hypertension in pheochromocytoma, diseases of the brain stem or spinal cord.

AETIOLOGY :

The course of essential hypertension is still obscure. However, the following facts regarding the development and occurrence of essential hypertension are noteworthy :

- (1) Hereditary factor.
- (2) Age - highest incidence in the sixth decade.
- (3) Sex - more common in men.
- (4) Racial variation - rare in the Chinese and Negroes.
- (5) Nervousness, emotion, activity.
- (6) Stress.
- (7) Obesity.

Variations in the systolic and diastolic blood pressure levels in normal as well as in hypertensive subjects correspond closely to variations in the individual's attitude towards his life situations.

There is a strange relationship between vascular reactivity and hypertensive disease. The term "Vascular Reactivity" refers to quick rises in the blood pressure resulting from intermittent increases in the peripheral resistance produced by vasoconstriction. The change in the diastolic blood pressure as the result of strong emotional or external stimulation is a measure of vascular reactivity. Persons may be grouped as hyporeactors, normoreactors and hyperreactors. Vascular hyporeactors do not, and vascular hyperreactors do, subsequently have hypertension. Excepting those in the late and fixed stages, all patients with essential hypertension are vascular hyperreactors.

As far as the pathogenesis of arterial hypertension is concerned, the following mechanisms could conceivably produce an increase in blood pressure :-

Increase in the out-put of the heart, increase in the blood volume, increase in the viscosity of the blood, decrease in the elasticity of the arteries, and narrowing of the cross-section of the peripheral vascular bed.

There are experimental evidences to suggest certain factors which may contribute towards the production of increased blood pressure :

1. The Renin-Angiotonin Pressor System :

Renin is an enzyme which enters the blood stream by the renal vein and acts on a globulin precursor in the plasma called hypertensionogen produced by the liver to produce the active vaso-constrictor agent hypertensionin or angiotonin. Hypertensinase found in all the tissues of the body tends to destroy hypertensionin.

2. Renal Ischaemia : In the rabbit, the release of Renin from the renal vein may be the chief factor in producing hypertension in the early stages after renal artery constriction. In man, hypertension may occur either secondary to obvious renal disease or as a result of a congenital hereditary functional disturbance involving a non-excretory activity of the kidney, as in essential hypertension.

3. Neurogenic Hypertension : This view is held because of marked initial control of hypertension effected by sympathectomy.

4. Hormonal or Endocrine Hypertension : Disease of the adrenals, the thyroid and the pituitary may produce raised blood pressure.

5. Metabolic Hypertension : Excessive ingestion of meat is particularly potent in elevating the blood pressure. There is no evidence to indicate that abnormalities in lipid metabolism or the concentrations of the lipid fractions in the blood participate in the pathogenesis of essential hypertension. Essential hypertension, diabetes mellitus and obesity are a triad which is often found in the same person of the same family. This fact points strongly to a constitutional peculiarity being responsible for both diabetes and hypertension.

6. Choline Deficiency Hypertension : Hartroft was able to produce hypertension in rats when fed on diet deficient in choline.

7. Carotid Sinus Hypertension : Degenerative changes in the wall of the carotid sinus may involve the secondary receptors and give rise to hypertension.

8. A close correlation exists between the *accumulation of water in the extracellular spaces* and hypertension. Increase in the blood volume and extracellular fluid volume may be a co-factor in the genesis of hypertension.

9. Increased Corticoid Production : This plays an important part in the genesis of certain types of clinical hypertension, e.g. basophil adenoma of anterior pituitary, adreno-cortical tumours. Probably both the actual amount of corticoids secreted and the metabolic factors which determine their activity play an important part in the development of clinical hypertensive disease.

INTERNAL PATHOLOGY OF HYPERTENSION :

Heart : Cardiac hypertrophy, predominantly left ventricular, occurs. This is due to the increased load

under which the heart labours. Two main types of changes take place : (a) Muscular hypertrophy due to overwork eventually leading to dilatation and failure. When the strain on the left ventricle causes hypertrophy, the right ventricle may also enlarge. Later, the high pulmonary artery pressure induced by left ventricular insufficiency can be a decided strain on the right ventricle. When the strain on either ventricle becomes excessive so that cardiac work cannot be efficiently performed with the available muscle, dilatation occurs. (b) The next one is that associated with arteriosclerosis of the coronary arteries. Decreased coronary blood supply due to narrowing of the arteries limits the hypertrophy. . . .

Coronary Circulation : Because the left ventricle is hypertrophied, the total coronary flow and oxygen consumption for the whole heart must be increased. The resistance to flow in the coronary circulation is increased, but not enough to allow a normal total coronary flow. Therefore there is relative vasodilatation in the coronary circuit.

Renal Circulation : In the kidney there is reduced total blood flow, reduced total oxygen consumption and increased vascular resistance, indicating vasoconstriction.

Cerebral Circulation : Resistance to the flow of blood is increased in proportion to the elevation of blood pressure.

Blood Vessels : The aorta is dilated to a greater degree than normal by the high diastolic pressure. Diastolic hypertension leads to augmented atherosclerosis (degenerative alterations in arteries). In benign hypertension — (1) Hyaline degeneration

(the commonest manifestation of arteriosclerosis) is best seen in the smaller vessels. (2) Elastic hyperplasia is most marked in the larger arterioles and medium sized arteries. In malignant form — arteriolar necrosis (also called "necrotising arteriolitis") and cellular hyperplasia (also called "productive endarteritis") take place.

Nephrosclerosis : The chief kidney changes are in the smaller arteries and arterioles. There is only hyaline and fatty degeneration of the arterioles. There may be renal ischaemia and consequent irregular contraction and fibrosis of the renal parenchyma. In some cases, this condition is marked and a granular contracted kidney results. There is then a patchy fibrosis of the glomeruli with tubular atrophy. Because of its patchy distribution, renal function is not impaired. In malignant nephrosclerosis, the chief kidney changes are in the smaller arteries and arterioles.

Nervous System : Nervous system disturbances are the most prominent. These may be due to *irritation* (as represented by twitchings and convulsions) which may be attributed to a deficiency of calcium and retention of potassium and guanidine, or to *depression* in the form of drowsiness and coma, for which cerebral dehydration or accumulation of toxic phenol derivatives may be responsible.

SYMPTOMS AND SIGNS :

Headache, giddiness, nervousness, palpitations.

Intractable headache on waking in the morning, lasts for a greater part of the day, associated with morning nausea or even vomiting. May also be migrainous in type.

Breathlessness, if myocardial insufficiency develops, then proxysmal nocturnal dyspnoea.

Blurring of vision or sudden blindness in one eye due to haemorrhage or thrombosis in one of the main central veins or arteries.

Hemiplegia from haemorrhage or thrombosis of the lenticulostriate branch of the middle cerebral artery.

Sub-arachnoid haemorrhage.

Focal paralysis - diplopia, facial palsy, aphasia, repeated attacks of paresis.

In older people, progressive cerebral arteriosclerosis leading to generalised convulsions and progressive dementia.

Haemorrhagic manifestations - haemoptysis, epistaxis, haematemesis, haematuria.

PHYSICAL SIGNS :

Thickened radial and brachial arteries because of medial hypertrophy.

Heart enlarged - forcible apex beat, apical first sound loud and split, aortic second sound accentuated.

Fundus - "Hypertensive retinopathy" i. e., tortuosity of the arteries, nicking of the veins at the arterio-venous crossings, irregularity in the calibre of the arteries, inconstant "silver-wire", veins congested, haemorrhages - superficial, flame-shaped or small, discrete, deep ones in the fundus most frequently in the macular region, scanty grey or creamy exudates.

Urine shows albumin - only in advanced renal arteriosclerosis, renal congestion due to heart failure, renal infarction, coincident diabetes.

Moderate elevation of blood urea, in elderly patients with long-standing benign hypertension and severe arteriosclerosis.

Convulsions, complete blindness, coma-leading to reversible rapid improvement following hypotensive drugs.

Malignant Hypertension: Frontal or vertical headachè.

Organic cerebral vascular lesions producing permanent paralysis.

Blurring of vision due to papilloedema in the region of the macula, exudates or haemorrhages.

Physical signs: B. P. more than 220/120, cardiovascular hyper trophy, fundus - papilloedema (bilateral), retinal oedema, haemorrhages and exudates producing "star" figure, renal involvement, albuminuria, R. B. Cs +, moderate elevation of blood urea.

Transient paralysis. mild convulsive attacks, later hypertensive encephalopathy.

COMPLICATIONS OF HYPERTENSION

- | | | |
|-----------------|--------|---|
| A. Cardiac | ... 1. | Congestive Heart failure. |
| B. Vascular | ... 2. | <i>Coronary artery disease.</i> The ratio of males to females with coronary occlusion associated with hypertension was 1.73 : 1. In men, coronary occlusion was rare in the third decade, their incidence increased rapidly in successive decades and reached a maximum in the sixth decade, followed by a marked drop in the seventh decade. In women, coronary occlusion was not observed in the third decade and relatively few were recorded in the following two decades. The incidence rose markedly and reached the maximum in the seventh decade. Among males 40 years and older, the percentage of coronary occlusion associated with hypertension remains fairly constant from decade to decade. Among the females, 5 out of 9 of the subjects in their fourth decade with coronary occlusion had hypertension. It is postulated that hypertension in both sexes is one of several factors involved in atherogenesis, atherosclerosis, and the causation of coronary occlusion and myocardial infarction. |
| | 3. | Atherosclerosis. |
| | 4. | Arteriosclerosis of arterioles. |
| | 5. | Malignant hypertension. |
| C. Renal | ... 6. | Nephrosclerosis - benign and malignant. |
| | 7. | Renal azotaemia. |
| D. Neurological | ... 8. | Increased intra-cranial pressure. |

9. *Hypertensive encephalopathy.* This is characterised by convulsive attacks resulting from arteriolar spasm-in turn due to increased blood pressure. Onset is with intense headache, vomiting drowsiness or semi-coma. There may be hemiparesis, aphasia, hemianopia, rarely generalised convulsions. However, there is hypertensive retinitis but no papilloedema. Renal efficiency is normal.

10. Cerebral vascular accidents — thrombosis, haemorrhage.

E. Ophthalmic ... 11. Hypertensive retinopathy.

DIAGNOSIS :

Ayman was probably the first to show that "casual" readings of blood pressure made under the tension of a visit to a physician's office might be erroneously high. Janeway, in 1904, was well aware of the hypertensive effect of emotion. As Ayman has shown, it is possible that in some people the blood pressure becomes elevated only under stress and may appear so for years. If the blood pressure of these patients had been measured daily rather than every 4 hours, it might not have been as great. There may be such a thing as "manometric reflex" in patients sensitized to the existence of their own hypertension. When the cuff is wrapped about the arm, intense neurogenic vasospasm may occur before the examiner has time to inflate it. Further more, the act of compression of the cuff may raise the blood pressure. In such an event, a false hypertension would be exhibited and mislead the physician.

The normal blood pressure : It is as well to take the systolic pressure first by palpation (to avoid the auscultatory gap). When the loud sound becomes abruptly muffled, it denotes the diastolic levels, If the difference between muffling and complete disappearance is more than 10 mm., three pressures

should be recorded, Direct brachial pressures recorded by electrometer have shown that the actual systolic pressure is about 12 mm. above the sphygmomanometer reading. The diastolic pressure is about 3 mm. below the point of muffling, but 7 mm. above the point where the sounds disappear.

Make certain that an elevated diastolic pressure does, in fact, persist. A minimum of 20 minutes' rest on a couch in quiet comfortable surroundings should be allowed before the lowest of a succession of readings at intervals of a few minutes is accepted as abnormal.

(a) *Amytal sedation test :* To abolish the effects of emotion, sodium amytal gr. 3 are given, repeated for the next 2 hours. Pressures are taken at intervals of 30 minutes, but the record when asleep is the most informative.

(b) *Cold pressor test :* Used to discover hyper-reactors. One hand is immersed in water at 46°C for a minute and the pressure measured on the other arm. An abnormal reaction consists of a rise in the systolic pressure of 20 mm and in the diastolic of 15 mm. This occurs within 50 or 60 seconds after immersion.

In the early stages, hypertension may be diagnosed in the presence of the following features. Blood pressure readings above 140/90 mm Hg, increase in pulse rate, more forceful heart beat, examination of retinal vessels and evidence of left ventricular hypertrophy (by electrocardiography and radiography). Grading of established hypertension is based on ophthalmoscopic appearances.

- Grade I—Narrowed and thickened arteries.
- Grade II—Those with nipping of veins.
- Grade III—In addition, haemorrhages.
- Grade IV—Cotton-wool exudates and papilloedema of malignant hypertension.

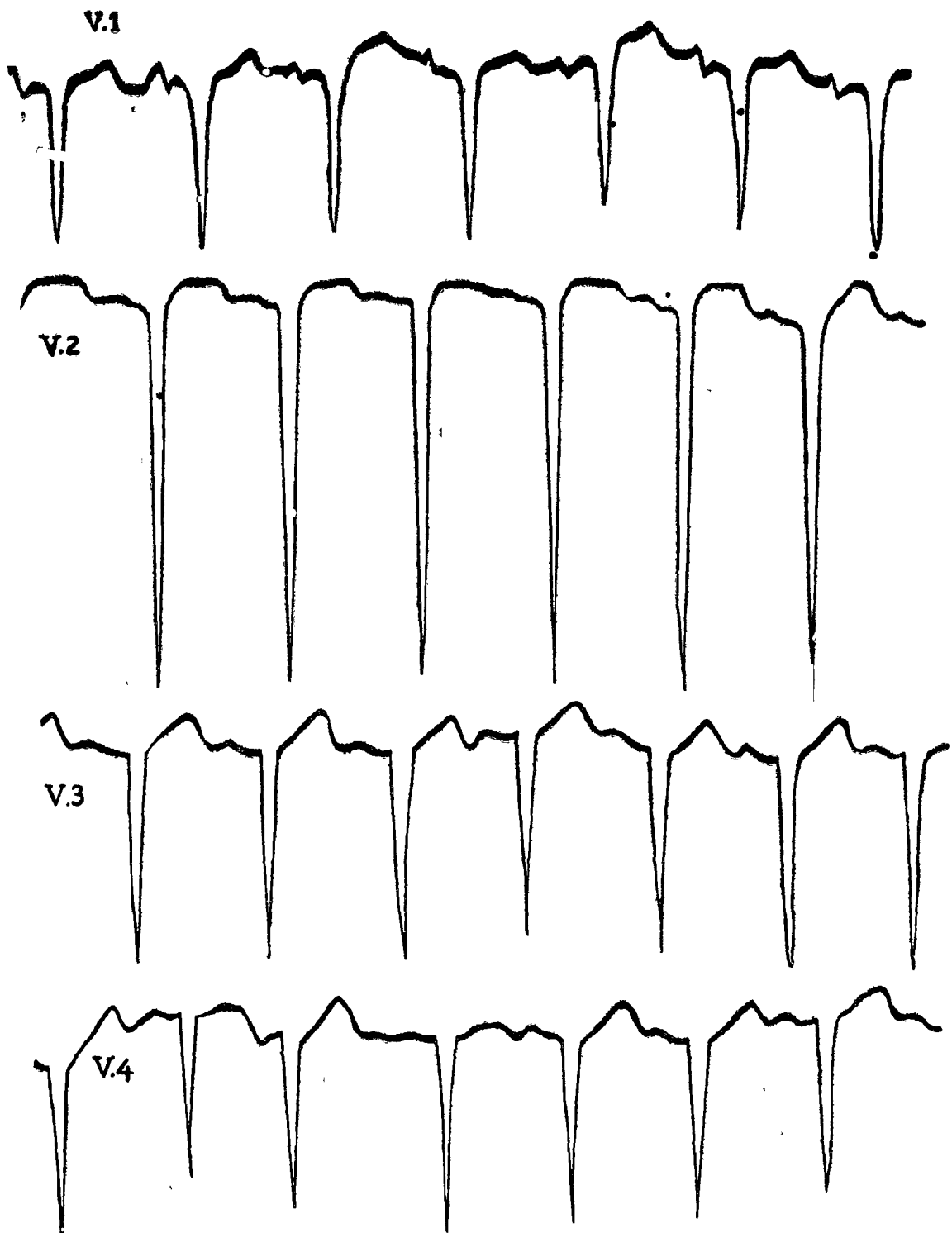
TABLE I.
Retinal Grading.

	Grade I	Grade II	Grade III	Grade IV
Symptoms	None to slight	Slight Morning headache Vertigo	Moderate Frequent headaches Fatigue Dyspnoea Nocturia	Severe Intense headaches Weakness Loss of weight Dyspnoea Confusion
Blood Pressure	150/100— 200/120	180/100— 270/130	180/110— 280/140	240/130— 300/180
Retinae	Minimal arterial narrowing	Definite sclerosis Arteriovenous compression No retinitis	As in Grade 2 with either exudates, star figures, cotton wool patches or haemorrhages. Definite retinitis.	Papilloedema, with or without grade 3 changes. Advanced retinitis usual
Renal function	Normal	Satisfactory: faint trace of albumen	Impaired: albumen with casts and R. B. C.	Impaired, as in grade 3, but progressively deteriorating

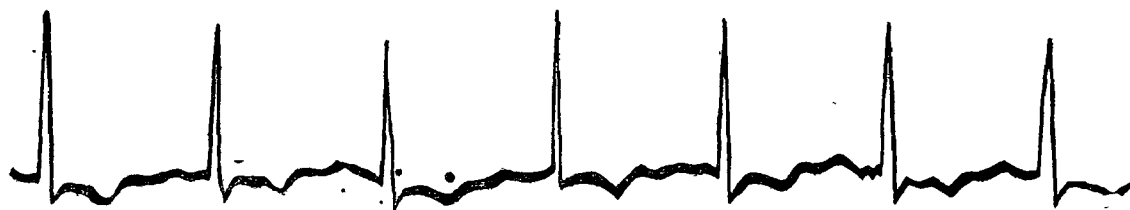
Electrocardiography: Left ventricular hypertrophy is indicated in the standard leads by the high R waves with slight ST depressions and inverted T waves in lead 1 and the left axis deviation. This impression is confirmed in the unipolar limb leads by the abnormally high R waves with inverted T waves in aVL, and in the precordial leads by the deep S waves in V₂, the high R waves in V₆ and the inverted T waves in V₅ and V₆.

Left Ventricular hypertrophy causes (a) increased QRS duration, (b) increased QRS amplitude, (a) isoelectric T waves, (d) inverted T waves with a wide QRS-T angle, and (e) increased QT interval.

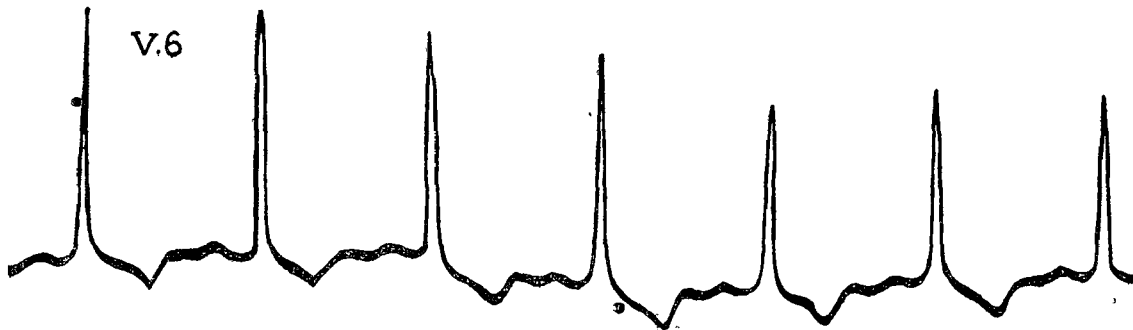
In the majority of cases, E. C. G. shows varying degrees of left ventricular hypertrophy associated with ischaemic changes. In later stages, left bundle branch block is seen or the R waves become low in voltage.



V.5



V.6

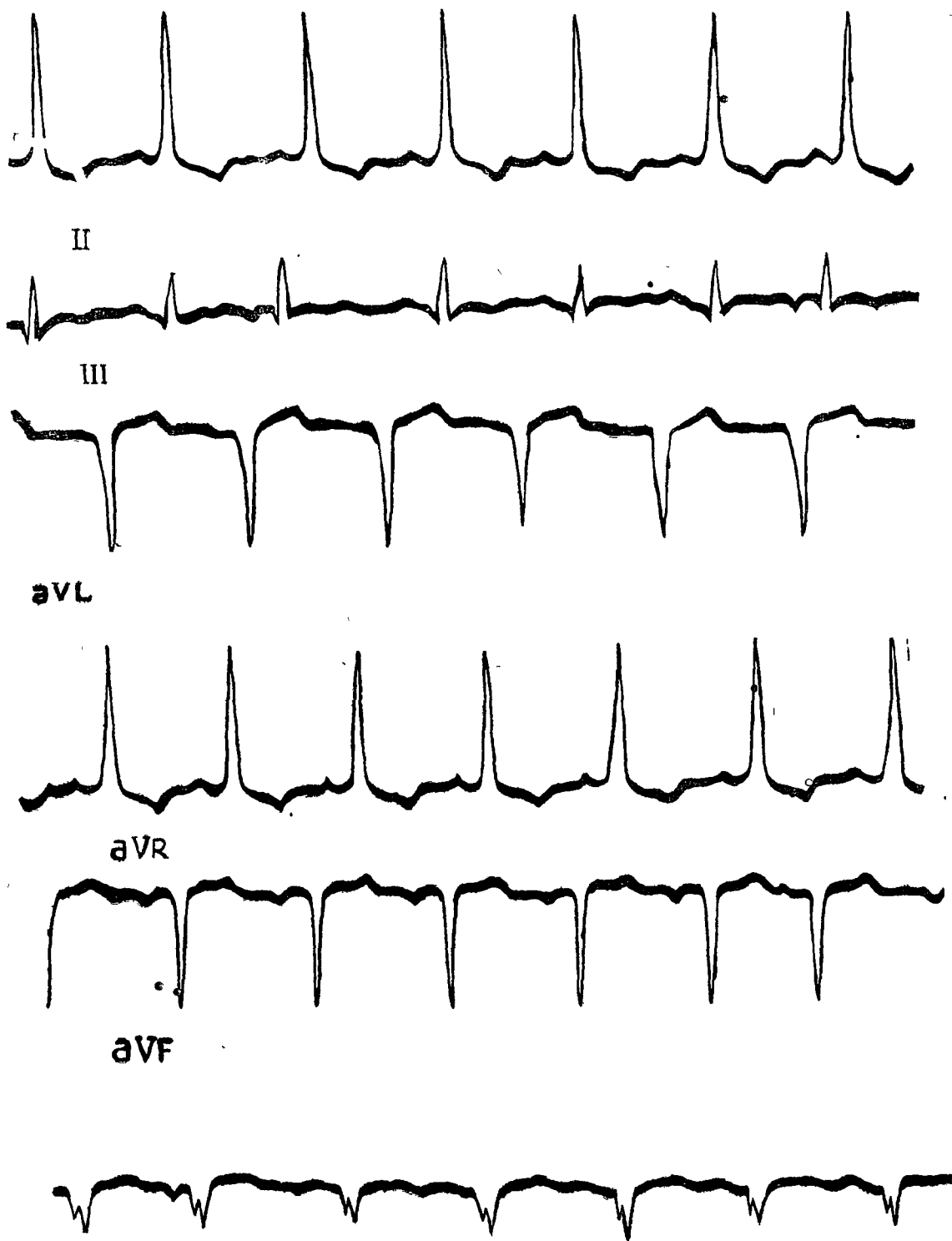


Treatment: It is not every patient with hypertension who needs to be treated for it. Readings of 200/100 mm Hg. in subjects of 60 years and occasionally in younger ones may remain stationary for the rest of a person's life and may not appreciably affect his activities or shorten his life. They may avoid emotional and physical fatigue and moderate their activities to within the limits of their strength. Nine hours every night in bed is a good rate for these individuals. *Indications for treatment are:* 1. Recent hypertension. 2. Hypertension with symptoms. 3. Paroxysmal hypertension. 4. Hypertension with complications. 5. Severe hypertension with diastolic pressure above 120 mm. 6. Malignant hypertension.

General Measures: 1. Probable aetiological factors should be sought and eliminated, if possible. 2. Adequate rest and avoidance of excessive nervous tension, fatigue, and over-eating are the most important part of the routine treatment. 3. Mild sedation may be used if the patient is a hyperreactor or presents uncontrol-

lable emotion. 4. Ideally, patients with hypertension should live within their resources and avoid excess of emotion, fatigue, and mental strain. Situations involving worry or emotion should be avoided as far as possible. 5. Ensure adequate sleep at nights with sodium amytal gr. 3. 6. Obesity must be corrected by strict attention to diet. 7. All patients with hypertension should avoid taking added salt with their meals. 8. Smoking has a vasoconstrictor effect and should be given up. 9. Alcohol in moderation may be allowed.

Conservative Treatment: This should be the first stage in the treatment of any patient with hypertension. (a) Rest - a period of complete rest after lunch. Rest in bed for a period from 2 - 8 weeks or rest from work for 1 - 3 months. Earlier to bed at nights is better, with a sedative taken at bed time. (b) Exercise - the work to which a person is accustomed is the best exercise. Physical exercise e. g., walking, riding is good for circulation and has a sedative effect. (c) Emotional state -



a too tense or anxious habit of mind may be modified by suggestion, persuasion and other psychological means. Change daily habits, not to work under pressure, not putting more into a day's work than there is good time for it. Keep off worries by choosing a hobby or going away for a week-end. (d) Diet - observe sodium restriction, use weight-reducing diet, i. e., less of proteins, fats, carbohydrate. Use extra fruit and vegetables. There is a close relationship between hypertension and arteriosclerosis and there is some evidence that an ample fat intake promotes arteriosclerosis. Fat restriction is advised within the limits of general diet prescribed for hypertensive patients. They should have an ample vitamin intake. Starvation has a salutary effect upon B. P. (e) Medical treatment - For sedation, use phenobarbitone gr. $\frac{1}{4}$ - $\frac{1}{2}$ b. d. + gr. $\frac{1}{2}$ at bed time or amytal gr. $\frac{1}{2}$ before breakfast and supper. Rutin for haemorrhagic tendency such as microscopic haematuria, presence of retinal haemorrhages. Dose 40 mgm. t. d. s. p. c. Maintenance dose is 20 mgm. t. d. s. Pill of mercury gr. 3 or gr. 2 combined with pill of rhubarb gr. 2 taken at bed time twice or thrice a week, followed by a small dose of salts in the morning may benefit some patients. (f) Venesection may be of value in the treatment of a plethoric subject with hypertension, especially if there is peripheral congestion as shown by a florid complexion, congested nose, ears and fingers. Removal of 15 to 20 ounces of blood may give symptomatic relief lasting for 3 - 6 months. If heart failure or apoplexy is threatening, withdrawal of 500 c. c. of blood would produce a gratifying drop in blood pressure within a week's time and also produce a noticeable feeling of well being.

Seven cardinal principles for a life of moderation free from emotional, social, and economic conflicts are:—

1. Avoid indecision, do something about soluable problems, eschew those beyond solutions.
2. Do not assume the worries of others.
3. Rest 30 minutes twice daily and sleep 8 hours each night.
4. Avoid competitive sports and games.
5. Concede all unnecessary arguments.
6. Never run when you can walk, walk when you can ride, or ride when you can wait.
7. Enjoy but do not abuse alcohol, sex, smoking and coffee.

Psychotherapy: The doctor-patient relationship is important. This becomes an important adjunct in therapy. The patient must find stability, reassurance and protection in this relationship as well as a reorientation of his way of life. He must be taught to recognize the stresses that constrict his vessels and raise his blood pressure. He should be assured that his condition is benign, that casual blood pressure levels lack significance, made to believe that he will not be paralysed by a stroke. He should be told that he has hypertension and that treatment is available. Some hypertensive patients have personality defects that antedate the development of persistent hypertension. They handle latent hostility poorly. They develop and sustain feelings of anger without expressing it. They have over-anxious reactions to real life problems. Psychiatric treatment directed at the personality defects and the individual's response to stresses is

relatively new as a treatment in hypertensive disease. Mild sedatives are recommended.

Management of Moderate and Severe Hypertension :

1. Sharply curtailed activity with at least 10 hours' sleep daily and a nap or at least one hour at noon, when possible the patient is to spend at least one day per week in bed.
2. Diet - a low protein, salt-free diet is recommended. The "Rice-Fruit Diet" of 400 Gram rice, fruit juice, sugar is the most radical form. In early malignant variety, the results may be dramatic. If used for a long time, it may lead to reduced renal function and azotaemia. Tea and coffee should be restricted. Alcohol may be used in very small amounts.
3. Dehydration - fluid is restricted to the amount necessary to satisfy thirst.
4. Diuretics - Ammonium chloride or mercurial diuretics may be used as a part of the dehydration regime.
5. Hypotensive drugs - may be tried and if found effective to be continued - eg. nitrites, thiocyanate, theobromine or theophylline preparations. Potassium thiocyanate lowers arterial pressure in 40% of patients, relieves intractable headache associated with hypertension.
6. Headaches may be relieved by sleeping with head of the bed slightly elevated.
7. Tobacco should not be permitted.
8. For sedation, give phenobarbitone gr. $\frac{1}{2}$ t. d. s.
9. For evidence of capillary fragility, give Rutin 20 to 50 mgm., 3 or 4 times daily.

INTENSIVE TREATMENT :

Indications for potassium thiocyanate therapy are: (1) when conservative treatment fails, and (2) when diastolic blood pressure is above 110 mm. The vascular group i. e., the cerebral cases with headache and giddiness are most likely to respond to potassium thiocyanate. Those with cardiac symptoms like breathlessness, palpitation, cardiac pain are less likely to be relieved. Patients with renal damage in the malignant phase of hypertension are least likely to respond to treatment. Those with malignant hypertension are often among those who can only tolerate small doses of the drug such as 0.3 — 1.2 G. weekly.

Outline of treatment : There should be a constant concentration of serum thiocyanate of 6-9 mgm. %. Repeat estimation of serum thiocyanate concentration every week, later at monthly intervals, ultimately the intervals may be of 3-6 months. The dose required to obtain this concentration varies widely in different individuals e. g., 1-4 G per week. Rest in bed for 2 to 3 weeks during which time sleep and regulation of tissue function may be secured. Then give potassium thiocyanate gr. $1\frac{1}{2}$ and chloroform water ounces 1-2 (1 tablespoonful with water and later 3 times a day p. c.). At the end of one week's treatment the concentration of thiocyanate in the blood is estimated. If necessary, increase or decrease the dose by 0.4 G. weekly. The quantity of potassium thiocyanate to be taken depends on serum estimation. Toxic effects include rash, malaise, asthenia, anorexia, nausea, indigestion, pain in the limbs and impotence. Uncommon symptoms of thiocyanate intolerance are myxoedema, thrombophlebitis.

TREATMENT OF THE INDIVIDUAL PAST MIDDLE LIFE :

Grade I or II: Quiet life is recommended for minor degrees of cardiac incapacity. If economic circumstances allow, a prolonged rest or leave of absence from work for 2 to 3 months may prove a desirable step. Two or three weeks in bed is a useful preliminary which will produce complete mental relaxation. Relief from emotional tension is an important therapeutic step. *Diet*—Correction of obesity. Prescription of an exact diet of 1,500, 1,200 or 1,000 calories will ease the burden on the heart and circulation. A loss of 1-2 lbs. per week is sufficient. Weekly weighing is a good guide to progress. Fresh fruits and vegetables should form a large part of the diet. *Drugs*—In the absence of renal damage, a small dose of calomel followed by a gentle saline purge is good. For emotional tension, give phenobarbitone or Chloral hydrate. The following hypotensive drugs may be tried: Veratrum viride, Rauwolfia serpentina.

Grade III: Treatment usually starts with a period of rest in bed for 3 or 4 weeks, during which insomnia is corrected and dietetic measures for weight reduction are commenced. Methonium compounds have proved increasingly useful. At present pentolinum tartrate is the methonium compound of choice. Two difficulties in pentolinum therapy call for special comment: 1. Tolerance to the drug develops rapidly at first. 2. Constipation is a source of danger.

Grade IV: Oral mecamlamine is a drug of choice. Raudixin should be administered at the same time. Recurrent vomiting may prevent administration of mevasine. Then parenteral pentolinum may be tried (3 mgm. b. d. or t. d. s.). If renal

function is grossly impaired and the blood NPN is in excess of 50 mgm. %, the response to treatment becomes less satisfactory. With further deterioration of renal function, apresoline 25 - 100 mgm. is useful.

CHOICE OF THERAPY IN HYPERTENSION :

It is helpful to divide cases into three main categories therapeutically.

Category I: B. P. 160 - 190, 95 - 105: who are symptom-free, retinal changes are confined to the vessels — Avoid overstrain, control obesity, give mild sedatives. Rauwolfia in small doses may be valuable.

Category II: B. P. 190 - 220, 105 - 120: retinal changes confined to the vessels with minimal hard exudate. A mild headache +, heart enlargement minimal or absent. Rauwolfia, if ineffective singly, give Rauwolfia + Veriloid or Apresoline. Salt restriction with or without ion-exchange resin.

Category III: Severe types, malignant phase, pre-malignant phase, B. P. 220/120, retinal haemorrhages, exudates with or without papilloedema, considerable cardiac enlargement, failing vision. Give parenteral hexamethonium or pentolinium drugs.

MANAGEMENT OF MALIGNANT HYPERTENSION :

Complete physical and mental rest is essential.

Sedation may be effected by means of phenobarbitone.

Venesection is always helpful.

To deal with cerebral oedema, the following procedure has been of avail: Concentrated mag-sulph is given as retention enema and 50% sucrose is given intravenously.

Macamylamine is the drug of choice among ganglion-blocking agents. Macamylamine is a recent addition to ganglion-blocking agents. Its oral administration leads to a fall of blood pressure lasting for 12 hours. Tolerance is rare. Onset of effect is noticed in $\frac{1}{2}$ to 2 hours after administration. Small oral dosage produces the desired effect on blood pressure. Good control is achieved when Reserpine is given along with Mevasine or Inversine. Sudden cessation of therapy may result in severe hypertensive rebound. Mevasine possesses central action on the nervous system and direct action on the heart, intestine and neuromuscular junctions. About $\frac{1}{4}$ th of the administered drug is excreted in the urine within 24 hours. Mevasine is indicated in: (a) moderately severe and severe hypertension, (b) malignant phase of hypertension, (c) complications of hypertensive vascular disease, (d) relief of angina pectoris, retinopathy, congestive heart failure and (e) to decrease cardiac dilatation. The drug is contraindicated in: (1) marked cerebral and coronary arteriosclerosis, (2) renal insufficiency manifested by a blood urea level above 50 mgm. %, (3) organic pyloric stenosis, recent myocardial infarction, and uraemia and (4) in the elderly subject. Readings are to be taken with the patient standing or sitting up.

Dose: Initial dose is 2.5 mgm. of Mevasine twice a day. Increase may be made by steps of 2.5 mgm. at intervals of 2 days. Administration of alkalis entirely prevents excretion of Mevasine.

Side Effects: (a) Alimentary system— anorexia, nausea, vomiting, constipation, dryness of mouth, impairment of taste. (b) Cardiovascular system— postural hypotension, shock. (c)

Central Nervous system—convulsions, disorientation, delusions, tremors, sedation. (d) Special senses—blurred vision, photophobia, stuffiness of the nose, dilated pupils.

Pyrogens: Prolonged treatment with bacterial products which produce fever is often effective in the control of the malignant phase of hypertension. A convenient form of pyrogen is the one derived from non-pathogenic bacilli. The initial dose is 0.5 c. c. of a solution containing 50 microgram of solid material per c. c. given intravenously, produces 102° – 104° F. As tolerance increases, 10–30 c. c. of the solution containing 400 microgram per c. c. may be needed daily. This line of treatment is indicated for cases with haemorrhagic retinopathy, hypertensive heart disease, proteinuria, haematuria. Bad effects are nausea, vomiting, pains in the lumbar muscles and precordium.

Pyretotherapy and sub-cutaneous hexamethonium in the treatment of severe and malignant hypertension: A combination of the two methods would enhance the effects produced by each method singly and permit a reduction of dosage or frequency of administration, thus avoiding undesirable side effects of hexamethonium and some of the discomforts of pyretotherapy.

“Pyretotherapy” by bacterial vaccines used alone is capable of producing major declines of pressure in patients with severe and malignant hypertension, but is poorly tolerated by the majority of the patients and very frequent injections are required. Injectable hexamethonium induces hypotension in many patients with severe and malignant hypertension, but habituation to the drug sets in rapidly and necessitates increase of dosage to values producing intolerable effects.

Combination of hexamethonium and pyretotherapy has been shown to be capable of markedly reducing pressure levels in patients with severe and malignant hypertension, at the same time improving eye grounds and vision, E. C. G., cardiac condition and subjective symptomatology. This treatment appears to be advisable in patients with severe and malignant hypertension resistant to hexamethonium or a combination of

hexamethonium and apresoline. The pyretogenic substance used was "Neurovaccine Beta", a water-soluble bacterial suspension containing in 1 c. c. 50 millions *B. Pyocyaneus*, 42.5 millions *Staph. Aureus*, 25 millions *B. Prodigiosus*. Treatment is started with hexamethonium, after stabilisation of results thus obtained, pyretic injection was added for 6 days in the week in doses increasing from 0.1 – 1.0 c.c. to induce fever of 102° F.

Incidence of Hypertension in Erskine Hospital, Madurai, 1958-'60.

Year	Types of Hypertension			Males	Females	Age in decades						Total
	Hyper-tension	Malignant Hyper-tension	Renal Hyper-tension			II	III	IV	V	VI	VII	
1958	181	14	...	131	64	4	20	26	65	65	11	195
1959	226	21	3	162	88	7	20	42	85	78	18	250
1960	239	24	...	206	57	8	25	40	92	69	29	263

Acknowledgment: I wish to thank the Superintendent, Erskine Hospital, Madurai for kind permission to publish details regarding incidence of hypertension in Erskine Hospital, during the period 1958-'60.

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The faculty of the Christian Medical College and Hospital, Vellore will offer an intensive Refresher Course for General Practitioners this year. A similar programme was conducted last year.

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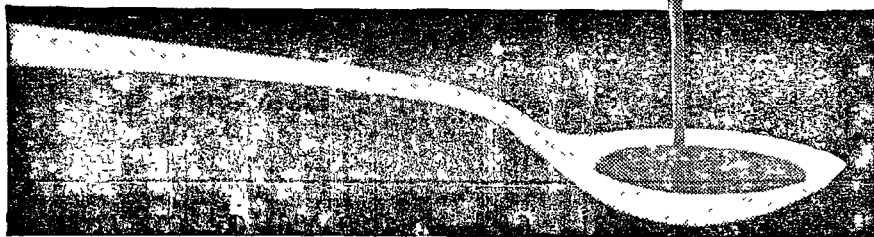
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THE RESPIRATORY SYSTEM IN OBSTETRICS AND GYNAECOLOGY*

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The respiratory system, contrary to what might at first be supposed, has quite a lot to do with Obstetrics and Gynaecology.

Obstetrics and Gynaecology is not an isolated speciality. Although it deals primarily with problems pertaining to childbirth and the normal working of the female reproductive mechanism, it cannot ignore other parts of the human body.

Procreation is an important function of the life process. General ill health can seriously thwart or even make impossible the creation of new life. Disease of the female genital tract may not, sometimes, be apparent. It may present with symptoms and signs in some distant part of the body. The real diagnosis can never be reached by a gynaecologist who lacks sound training in general medicine and surgery.

The specialist in Obstetrics and Gynaecology must be his own physician. That is not to say that he should not seek the aid of specialists in other branches of medicine when he is in doubt. At times he can profitably consult a cardiologist, a neurologist, a gastro-enterologist, an urologist, an abdominal surgeon or a chest physician.

One of my teachers in gynaecology (Howkins - 1952) would advise those of his students who were interested

in the subject to learn as much general medicine and general surgery as could possibly be learnt, because, in his own words, "there is no more a pathetic figure than the untrained gynaecologist".

The lungs are of course the organs by which blood is oxygenated. Respiratory disease may devitalise a patient, whether she be a wailing parturient in the labour ward or one about to undergo a gynaecological operation. The great strain of a difficult labour or the shock which goes with a surgical operation may aggravate the respiratory lesion. It may even prove fatal, if it does not make a chronic invalid of the patient.

Certain diseases of the female reproductive tract involve the lungs and present with pulmonary symptoms and signs. The gynaecological nature of the disease may seem insignificant. Before considering these diseases, a brief outline of the method of eliciting an adequate history and making a thorough physical examination may not be out of place. The following is reproduced from the author's private case-record and is a guide to record relevant facts obtained by examination of the respiratory system.*

During puberty nasal epistaxis is not uncommon. Epistaxis may be precipitated by sexual excitement

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during coitus. Olfactory senses play an important sexual role: The nose may be the seat for secondaries from genital cancer. In a case report entitled "Widespread skin secondaries in a case of chorionepithelioma". Marikar and Chandravada (1959) report a patient whose nose was deformed by chorionepitheliomatous skin deposits.

Infected accessory air sinuses may act as a distant source of sepsis in pelvic inflammatory disease. Infected sinuses need attention in any patient who is to undergo a gynaecological operation.

Laryngeal congestion may occur during menstruation and that is why some singers cancel their vocal appointments at this time. In genital tuberculosis examination of the larynx is a part of routine examination, but a tuberculous laryngitis may be aggravated by menstruation. The prognosis of laryngeal tuberculosis in a pregnant woman is very poor.

The other structures of the respiratory tract and the way in which they are affected by pregnancy or gynaecological ailments are considered. A diaphragmatic hernia may sometimes complicate pregnancy.

Whether menstruation has any effect on the respiratory system is uncertain. The premenstrual stage seems to have a deleterious effect on the progress of pulmonary tuberculosis. During this period hæmoptysis is more frequent.

There appears to be some relationship between the premenstrual phase and attacks of bronchial asthma.

When the patient becomes pregnant, the growing uterus does distort and disturb the normal anatomy of the

respiratory organs, if it does not actually interfere with aeration in the last weeks of pregnancy. In the last months of pregnancy, the diaphragm is raised and there is restriction in the movement of the abdominal wall. Although abdominal breathing is restricted, the vital capacity is increased due to a rise in the oxygen demand. During labour the type, rate and intensity of breathing are influenced by the pains and in the second stage of labour there is the additional stress of expulsion of the baby. The intensive straining may cause small extravasations of blood to appear in the upper part of the body notably in the skin and conjunctiva and swelling of the thyroid gland. Sometimes pulmonary alveoli rupture and result in emphysema of the mediastinum and the neck. The emphysema disappears within the first few days of the puerperium.

Of greater importance than the physiologic changes of pregnancy are disease such as eclampsia, which make the patient unconscious. Because respiration is shallow, aeration incomplete and protective reflexes diminished, if not altogether absent, mucous secretions of the respiratory tract may accumulate and cause atelectasis and infection of lung tissue. Sometimes vomitus is inhaled and this causes aspiration pneumonia, if the patient does not die immediately of anoxia. Acidosis is a common feature of eclampsia and this may stimulate the respiratory centre and make for rapid breathing.

The premenstrual period, it has been said, has an unfavourable effect on pulmonary tuberculosis. When a patient suffering from active lung tuberculosis conceives, she offers a problem of considerable importance in the management of her pregnancy.

Correct decisions require great clinical skill and judgement to arrive at. To decide whether a pregnancy may be permitted to continue or whether it should be terminated (if so, when) in the best interests of the patient, require from the obstetrician much more than a superficial knowledge of chest disease. Pulmonary tuberculosis frequently causes menstrual disturbances. Amenorrhœa may be the first presenting symptom of pulmonary tuberculosis. Often the menarche may be delayed. It is said that tuberculous patients have an increased libido.

There is a clinical impression that babies born to tuberculous mothers are often larger and heavier than normal. As with all diseases in an advanced stage, the toxæmia of extensive tuberculosis may precipitate spontaneous abortions in the early months. The disease can infect the placenta sometimes. When the placenta is diseased, the organisms of tuberculosis can cross the placental barrier and give rise to congenital tuberculosis. However, this is extremely rare.

Pulmonary tuberculosis does not have any direct effect on labour; the second stage of labour should be shortened. Over-sedation with morphia may diminish the cough reflex and is best avoided. Experience is necessary both in the choice of the type of anæsthesia (general, spinal or local) and of the reagents to be employed.

An x-ray of the chest is essential to discover the primary lesion in genital tuberculosis. In some cases an active pulmonary lesion may be demonstrated. The principles of good treatment is based first and foremost on the general management of the patient and only next on local gynæcological therapy.

No patient should be submitted to any obstetric or gynæcological operation without adequate evaluation of her chest lesion. This applies to tuberculosis. Equally well it applies to all other diseases. The wisdom of examining the chest as a pre-operative precaution is firmly established. To proceed with an operation without examining the chest is tantamount to criminal clinical negligence.

Even where an emergency operation is necessary, the findings on chest examination may govern the type of anæsthesia to be given and the quantities of the drugs to be administered. Where operation is not urgent, postponement until the chest disease has been cured, if not greatly improved, may be to the patient's best advantage and safety.

Two thirds of anæsthetic deaths in obstetrics are due to inhalation of vomit-causing gross bronchial spasm and pulmonary œdema or overwhelming bronchial obstruction and pneumonic consolidation. Gastric atonia is common in labour and a large quantity of partially digested food and fluid may be present. The administration of general anæsthesia in these circumstances is hazardous.

The aspiration of stomach contents into the lungs is preventible, and the following brief report demonstrates a typical case in which such a disaster could easily have been avoided by skilled anæsthesia.

“A 22 year old patient, pregnant for the second time, was admitted in labour at full term. Her first child had been delivered by Cæsarean section 3½ years ago and was alive and well. The indication for abdominal delivery had evidently been an unengaged head. The present labour did not proceed satisfactorily and

the head did not engage and during the course of observation, the patient developed distension of the bowel and other evidences of prolonged labour. A lower segment Cæsarean section and sterilisation was performed under general anæsthesia. During anæsthesia, the patient vomited a large quantity of undigested rice and coffee and inhaled quit a lot of it. In spite of an endo-tracheal tube having been put in, brownish fluid was flowing out through the tube. The operation itself was successfully performed and a live female child weighing $5\frac{3}{4}$ lbs. was delivered. The patient had a stormy post-operative course and kept pouring out blood-stained discharge through the nose. Both lungs were full of moist sounds. Respiration was laboured. The pulse became rapid and its volume and tension were very poor. Within three hours of operation, the patient died and blood-stained thick dark fluid was escaping from the air ways”

In obstetrics, the service of a skilled anæsthetist is a necessity.

Bronchial asthma is sometimes better with pregnancy and at other times worse. Asthma may appear for the first time in pregnancy or the puerperium. Cystic disease of the lung, bronchiectasis and pneumonia may all complicate pregnancy. Another interesting condition is pulmonary complications associated with amœbic hepatitis which sometimes complicates pregnancy in tropical countries. Pneumonia has become much less formidable as a complication of pregnancy than in the past—thanks to powerful antibiotics. If inadequately treated, pneumonia may be responsible for an increase in maternal and foetal mortality. Inadequate oxygenation of the foetal blood and profound toxæmia are two factors which

contribute to premature labour and abortion in this disease. Rarely there is a transplacental infection of the foetus by pneumococci leading to its death and premature expulsion. Changes in intrathoracic pressure during the second stage of labour may unduly strain maternal respiration. In addition, the decrease in intra-abdominal pressure following delivery increases the excursion of the diaphragm. This in turn increases the activity of the lower lobes of the lungs and causes aspiration of inflammatory exudates from affected portions of the lungs, thereby extending the pneumonia. Another danger is the infection of the puerperal uterus by blood borne pneumococci to lead to a fatal pneumococcal fibrinous peritonitis. The second stage of labour may usefully be cut short by a low forceps under pudendal block anæsthesia in the patient with pneumonia.

Amniotic fluid embolism is a rare but interesting complication in obstetrics. Embolic debris from the amniotic fluid become disseminated and get to the pulmonary arterial circulation and cause occlusion. The anaphylactoid shock associated with this is thought to be responsible for shock.

Air embolism is also a rare complication which can occur during Cæsarean section when the large venous sinuses which are severed are not clamped speedily.

Lung Lesions in Diseases which are Primarily of Gynæcological Origin :

Pelvic sepsis may go on to a pyæmia and give rise to multiple lung abscesses, but this is very rare. A pelvic infection may track up towards the diaphragm and give rise to a subphrenic abscess. Such an abscess can involve the base of the right lung by extension.

An exceedingly rare but interesting lesion of the lung is endometriosis. Latters *et al* (1956) report its occurrence in a 34 year old woman who for about 3 years had episodes of hemoptysis associated with the menses. These hemoptysis started following Cæsarean section and an endometrial curettage for menorrhagia and continued irregularly in spite of various hormonal treatments, until she again became pregnant. At about this time, x-ray studies of the chest, which had previously been negative, showed a discrete coin lesion in the right middle lobe. Exploratory thoracotomy followed by segmental resection showed that the pulmonary mass consisted of endometrium with marked decidual reaction of the stroma. It was this decidual reaction which caused the previously present and functioning endometrial implant to enlarge and become detectable roentgenologically. The patient had since been delivered at term by Cæsarean section, and to the date of this writing, further hemoptysis had not occurred.

Two gynæcological lesions should be mentioned which usually cause hæmoptoeum. They are the ruptured ovarian follicle or the chocolate cyst (endometriosis) and tubal abortion or tubal rupture. Other lesions may exist as well. The blood collects beneath the diaphragm and breathing may be painful.

Pulmonary embolism may occur under certain circumstances. Vaginal insufflation with chemicals in the treatment of vaginal discharge especially during pregnancy may cause fatal air embolism. When a patient is being investigated for sterility, tubal insufflation should invariably be carried out using carbon dioxide. Fatal cases of embolism, when air has been

used for this purpose, has been described. Fatal air embolism has followed intrauterine injections in attempts to procure criminal abortion. In late pregnancy certain procedures like amniography are not without danger.

Oil embolism used to complicate the performance of hysterosalpingography with oily media, but this danger has been minimised by the introduction of water soluble contrast media.

Pulmonary embolism from a detached clot lodged in the pulmonary artery is a well-known postoperative complication in surgery. The thrombus may come from veins of the calf muscle or the deep pelvic veins.

Malignancy in any part of the female genital tract can in theory produce lung metastases, but such lesions are rare. In carcinoma of the cervix, among the viscera, the lungs are one of the commonest sites for secondary metastasis (Alvarez 1954). The frequency of pulmonary involvement is confirmed by Holzaepfel and Ezell (1955) who found a high incidence of pulmonary involvement in uterine cancer. Involvement of the pleura and lungs was present in 12.5% of treated cases and 23.2% of untreated cases in their autopsy studies. In advanced ovarian malignancy, secondary deposits usually manifest themselves as pleural effusions. The fluid is often blood stained and malignant cells may be found when cell cytological studies are made. Sarcoma of the uterus sometimes gives rise to multiple deposits in the lungs. There are, however, two extraordinarily interesting conditions of the genital tract with close pulmonary associations. One is a benign tumour (fibroma) of the ovary which produces a pleural effusion in addition to

ascites (Meigs' syndrome). The effusion and ascites disappear when the tumour is removed by operation. The other is the fascinating but sinister lesion—the dreaded chori-epithelioma.

Fibroma of the Ovary :

In January 1890, Lawson Tait (who at that time was Professor of Obstetrics and Gynæcology at Queen's College, Birmingham, England) encountered at his clinic a 36 year old patient. She complained of cough and dyspnoea and her abdomen was enlarged. Lawson Tait found on examining her that her abdomen was greatly distended, the superficial veins were enlarged and the umbilicus was everted. There were all the signs of ascitic fluid free in the peritoneal cavity. In addition, deep pressure through the fluid revealed the presence of a large rounded solid tumour apparently moored in the pelvis and floating freely in the ascitic fluid. There was fluid present in the left pleural cavity which seemed to be the cause for the dyspnoea. To relieve this, he aspirated 95 ounces of serum. It was blood stained. A few days later, fluid collected in the right pleural cavity and this was similarly aspirated. He made the diagnosis of malignant disease of the peritoneum with secondary involvement of the pleural surfaces. He declined to operate on the abdominal tumour and the patient returned home to die.

However, she returned some weeks later and Lawson Tait aspirated pale yellow fluid from the left pleural cavity. The pleural effusion did not subsequently recur. During the next twelve months, the abdomen was tapped of its ascitic fluid more than thirty times and each time about 8-14 quarts of thin clear yellowish fluid was obtained. Except for transitory

œdema of her lower extremities, her general condition, contrary to all expectations, remained satisfactory. The patient's persistent refusal to die was finally rewarded when in March 1891 Lawson Tait performed a laparotomy. He removed a large fibroma of the ovary. The patient was cured and he concluded, "I think it is perfectly certain from the result that the disease was not cancerous and an operation has resulted in a cure absolute and, I trust, permanent".

Lawson Tait was responsible for advocating exploration of the abdomen in patients with pelvic tumours who had in addition fluid in their abdominal and pleural cavities. He considered that such a combination did not always mean malignant disease.

In 1937 Joe Vincent Meigs and Cass in a paper from the Massachusetts General Hospital revived interest in the subject. They described the association of hydrothorax and ascites with ovarian fibromas (Meigs' syndrome).

If cardiac, renal, or liver disease is absent, a pleural effusion and ascites in a patient is usually the result of tuberculosis or carcinomatosis.

Meig's syndrome should, however, be borne in mind. It is uncommon, but when present the patient can be cured. The ovarian tumour is always benign. The amount of fluid in the abdominal and pleural cavities bears no relation to the size of the tumour. The fluid is serous and sterile, but in exceptional cases it may be blood stained. Unless infection is introduced in the tapping, there is no fever. After thoracentesis, the fluid re-accumulates rapidly. When the tumour is removed by operation, the fluid both in

the abdomen and chest disappears and does not recur. The fluid is found more often in the right pleural cavity than the left. In some cases it is bilateral. The cause for the accumulation of fluid in the chest is thought to be due to some form of transdiaphragmatic lymphatic transport, but this is quite conjectural.

Certain benign ovarian cysts and sometimes fibroids of the uterus also are associated with small quantities of serous fluid within the peritoneal cavity. The fluid disappears when the cyst or fibroid is removed. Except in Meig's syndrome, fluid in the pleural cavity is never found.

Malignant ovarian tumours produce blood stained fluid in the peritoneal cavity. Pleural effusion when it occurs is often blood stained and indicates the presence of a generalised carcinomatosis with lung involvement.

Chorionepithelioma :

This is a parasitic tumour which arises from foetal trophoblast (chorionepithelioma). In 50% of cases it follows vesicular degeneration (Hydatidiform mole). Sometimes it follows miscarriage. Pathologists have not yet been able to correlate pathological appearances with the clinical behaviour of these tumours, but it would appear that all grades exist ranging from the locally destructive chorioadenoma destruens to the terribly malignant moles which metastasize widely and prove rapidly fatal.

Although a characteristic history which includes intermittent hæmorrhage may be obtained from a patient with this condition, the symptoms and signs produced by metastatic deposits may be the most prominent and presenting feature.

The lungs are a favourite site for secondaries which show up on the x-ray as discrete spherical opacities—"cannon ball appearance". The patient may complain of respiratory symptoms such as cough, hæmoptysis, blood stained sputum, dyspnœa, cyanosis and chest pain. Loss of weight and anæmia may also occur. The primary uterine trouble may be overlooked.

Conclusion :

This article has been a general survey of the inter-relationship which exists between the female genitalia and the respiratory system. It is by no means comprehensive, but it is very important to appreciate that the specialist in Obstetrics and Gynæcology must possess a sound knowledge of general medicine. Specialisation is necessary because medical knowledge is too vast for one person to master. To develop efficiency, the field in which one practises must be circumscribed.

Yet, to be ignorant of how certain systemic maladies—both psychological and somatic—manifest themselves by altering the anatomy and disturbing the function of the reproductive organs, is to be an imperfect physician. A good gynæcologist is first and foremost a sound physician and an able surgeon.

If he confines his interest to the pelvis alone and remains ignorant of how disease in this area may spread to involve other parts of the body and even affect the psyche, he is a mere charlatan, a "peddler in the pelvis".

The late John Ryle was one of the most distinguished physicians of Britain. For a time he was Regius Professor of Physic at Cambridge University and before his death he

occupied the newly founded Chair of Social Medicine at Oxford. He would urge everyone to try and become "a good naturalist"; and this should be the constant endeavour of all of us.

Acknowledgment :

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EXAMINATION OF THE RESPIRATORY SYSTEM *

Respiratory System :

- | | | |
|----------------------|----------------------------|----------------|
| 1. Nose | 4. Trachea | 7. Pleura |
| 2. Accessory sinuses | 5. Bronchi and bronchioles | 8. Diaphragm |
| 3. Larynx | 6. Lung | 9. Mediastinum |

Loss of smell / sinus pain / nasal discharge / epistaxis / nasal voice / hoarseness / stridor / sterterous respiration / Cheyne Stokes / retrosternal pain / pleuritic pain / other / dyspnoea / orthopnoea / slow respiration / paroxysmal, nocturnal / wheeziness / Cough, onset, character, duration, productive, paroxysmal. Sputum, quantity, nature, consistency, mucoid, mucopurulent, offensive, odourless, bloodstained, haemoptysis / other

Inspection : Form of the chest : normal, abnormal / postural and developmental defects / evidence of disease, past or present

Movements of the chest, normal, decreased, increased, excursion

Normal rhythm and rate of respiration, thoracic, abdominal

Palpation : Form and movement of the thorax

Position of the apex beat

Position of the trachea

Vibrations, tremor, friction, rhonchi, tenderness

Tactile vocal fremitus, normal, increased, decreased

Percussion : Sound, character, quality resonant, dull, crackpot, amphoric, myotatic irritability

Auscultation: Character of breath sounds: vesicular, puerile, prolonged and harsh, cavernous, amphoric, jerking, irregular, weak, absent
 Adventitious sounds, bronchial breathing, low pitched, high, medium
 Rales, dry sounds, rhonchi, sibili, sonorous, moist crepitations
 Friction sounds, succussion sounds
 Characters of vocal resonance, bronchophony, whispering pectiloqy, other

SPECIAL INVESTIGATIONS

Examination of the Sputum Quantity / Consistency / Homogeneous or in layers / colour and transparency / mucus / mucopus / serous / purulent / bloody / other

Microscopic / Pus cells / epithelial cells / red blood cells / eosinophils / pathogenic organisms / malignant cells / other

Plain x-ray of the chest

The bony skeleton

The position of the patient

The position of the trachea

The outline of the heart and mediastinum

The diaphragm

The lung fields

Antero-posterior view / Lateral view

(Photographs of radiographs may be affixed here)

Screening

Tomogram / Bronchogram / Other

(Reproduced from the author's private case record for personal use)

In all honest work there is ultimate good, but in medicine the rewards of devotion, of forgetting self in helping the sick and sorrowful, are more immediate, the harvest is gathered on the field. The sense of saving life, of relieving pain, as promptly as by dragging a drowning man out of water, is joyful, little grateful as the saved one may be. It is perhaps no less a satisfaction to feel that at least we smooth the pillows and calm the fears of the suffering.

— *Sir Clifford Allbutt.*

FOAM PLASTIC IN SURGERY

IRINA LYADOVA

At a surgeons' conference held in Kiev last summer a patient was shown whose finger-joint had been made from his own toe-joint. The surgeon had succeeded in lending the new joint flexibility. It was indeed a difficult operation. But in the ancient Russian town of Vladimir, an eminent surgeon, Dr. Mikhail Svirezhev carried out an even more amazing operation. He succeeded in restoring the flexibility of a patient's knee-joint with the aid of a polished foam-plastic tube.

Dr. Svirezhev's achievement aroused great interest and surprise even among experienced surgeons. Synthetic resins and surgery—this was something unusual.

The amazing foam-plastic (polyvinyl-formal) used in the operation was developed by the scientific workers of the Institute of Synthetic Resins in Vladimir who worked in close co-operation with Moscow neurosurgeons. The new material will be used for plastic operations on the cerebral membrane.

It all began in July 1959, when scientists from the Burdenko Institute of Neurosurgery in Moscow came to Vladimir and requested the scientists of the Institute to develop a foam material which could be used for prosthesis of the brain membrane. The research connected with the production of the new materials was entrusted to Yelena Tarakanova, who had recently graduated from the Gorky University.

How was she to begin?

Tarakanova made a careful study of books and articles on chemistry and medicine. In the works of Professor Ushakov she found confirmation of the fact that polyvinyl alcohol was not toxic. "That means that a foam plastic derived from it would also prove to be non-toxic. And that is one of the necessary properties of the required material", thought Tarakanova.

Experiments Begin:

Experiments began. In a month's time already the first laboratory sample of foam-plastic was obtained and given a long and difficult name: foam-polyvinylformal.

Samples were sent to Moscow. There, the neurosurgeons continued the experiments. It seemed that everything was going well. But suddenly a disturbing message was telegraphed to Vladimir: The dogs which had been operated on were restless and their temperature had risen. Dissection revealed that the prosthetic material had adhered to the brain tissue at points where the foam-plastic was porous.

Yelena Tarakanova came to Moscow in order to be present herself at operations, to study the structure of the natural brain membrane, the technique of suturing the prosthetic material to the tissues.

An amazingly simple way out was found: The surface of the foam plastic contiguous to the cerebral membrane had to be polished to make it impermeable, while on the side of the skull the plastic had to remain porous.

The results of these neurosurgical experiments proved to be wholly satisfactory. The test animals behaved normally and their temperature did not rise. The surgeons approved the new material.

Soon, many medical institutions began to take an interest in the foam-plastic. It was found that foam-plastic could be used to make artificial oesophagi, blood-vessels, lung-tissue, etc. In the Kiev Tuberculosis Institute some 30 plastic operations have already been performed with the use of the new material. Blood vessels

were replaced in 12 experimental operations, the trachea and bronchi in six operations.

Operations in the lungs are of great practical interest. The surgeon removes a part of an affected lung and fills the cavity thus formed with foam-plastic which is rapidly permeated with connective tissue, which accretes firmly, and does not permit the heart or other adjacent organs to be displaced.

The Yerevan Polyvinylacetate Plant is soon to commence large-scale production of the foam-plastic developed at the Vladimir Institute.

— *Courtesy - U. S. S. R. Embassy in India.*

A good physician makes an accurate diagnosis and administers the best remedies. But this is not all. A good physician, according to classical Greek concepts, is like a God, because a good physician not only treats his patient but also understands him, counsels him and what is most important, **has compassion for him.**

— *Andrew Banyai.*

* * * *

There are men and classes of men that stand above the common herd: the soldier, the sailor and the shepherd not infrequently; the artist rarely, rarer still the clergyman; the physician almost as a rule. He is the flower of our civilization; and when that stage of men is done with and only to be marvelled at in history, he will be taught to have shared as little as any in the defeats of the period and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion tested by a hundred secrets; tact, tried in a thousand embarrassments and what are more important, cheerfulness and courage, so that he brings air and cheer into the sick-room and often enough, though not so often as he wishes, brings healing.

— *R. L. Stevenson.*

ABSTRACTS AND EXCERPTS

WORLD HEALTH NEWS

Annual Report for 1960

The most significant progress in 1960 was in the field of malaria eradication, according to the annual report for 1960, which is to be submitted to the Fourteenth World Health Assembly in New Delhi later this month. Sixty-one countries or territories are fully engaged on malaria eradication work, and another 19 health authorities are on the point of adopting their final plans. Satisfactory progress was maintained in the national campaigns for the eradication of yaws, and it is estimated that over the last ten years half of the 200 million people living in yaws endemic areas have been examined and, where necessary, treated. Increased incidence of syphilis and gonorrhoea is reported in several countries, and attention is drawn to the fact that attack-rates are higher in the lower age groups thus presenting new social problems.

The rapid progress in the study of live polio vaccines reported in 1959 was accelerated in 1960. By mid-summer it was estimated that more than 70 million persons had received such vaccines. The largest studies were in the U.S.S.R. where a strain developed in the United States of America was administered to 50 million people, with what is described as 'an impressive record of safety and strong indications of efficacy'. A meeting of the WHO expert committee on poliomyelitis decided that all strains of the orally administered vaccine had been shown to be safe for administration to children and thus safe for use where poliomyelitis was predominantly a disease of childhood. In areas where the disease affects a proportion of adults it was recommended that, for the time being at least primary vaccination should be continued with the inactivated vaccine and that the oral vaccine should be reserved for the reinforcing dose.

Considerable progress was made in the large scale programme for the prevention of protein malnutrition in infants and children, which, is described as "still the world's most important nutritional problems". The chief purpose of this programme is the production of cheap and suitable protein-rich foods. In Guatemala, for instance, the Institute of Nutrition of Central America and Panama has developed a mixture of vegetable proteins called 'incaparina' which is well accepted and is being distributed on an increasing scale. In Africa, mixtures of vegetable protein and skimmed milk are becoming popular in Nigeria and Uganda.

The total staff of WHO on September 30, 1960, was 2,041 of 63 nationalities. The head-quarters staff was 639.

Hepatic Cirrhosis in France

Are the high incidence of hepatic cirrhosis of the liver and the high consumption of alcohol in France causal or casual? Of the two facts, there is no doubt. In 1956, the death rate from cirrhosis of the liver in France was the highest in Western Europe: 32.5 per 100,000 inhabitants compared

with 2.6 in England and Wales. The average consumption of wine in France (approximately 0.7 litre per adult per day) is much higher than elsewhere, and statistics from French hospitals agree that 80 to 85 per cent of cases of cirrhosis are alcoholic in origin.

In a recent issue of WHO Chronicle (1960, 14, 471), G. Pequignot gives details of a carefully controlled investigation carried out in French hospitals, in which 116 patients with cirrhosis were compared with 116 comparable controls. This investigation showed that the alcohol intake of the cirrhotics was approximately 2.5 times greater than that of non-cirrhotics. Before they fell ill, the patients with cirrhosis had been just as well nourished as the controls, which is taken to mean that the cirrhosis could not be attributed to dietary deficiencies. Detailed analysis of the results shows that only one of the patients with cirrhosis drank less than one litre of wine a day, whilst 64 drank more than two litres. The comparable figures for the controls were 59 and 7. The conclusion is reached that 'excessive consumption of alcohol is liable to cause cirrhosis' and that, therefore, there can be little doubt that the high incidence in France of cirrhosis of the liver is associated with the high consumption of alcohol.

Child and Nurse

'Nurse, mother and school teacher form the feminine trinity whose influence may be decisive for the child's physical and mental well being during his formative years', according to a European Seminar on Nursing Education for Child Care, which was held recently in Vienna under the aegis of the Regional Office for Europe of WHO. At this ten-day meeting, 50 participants from 21 countries, including besides nurses, paediatricians, psychologists and educators, new trends in the medical aspects of child care were discussed. It was noted that, nowadays, the nurse is as much concerned with the healthy child as she is with the child who is physically or mentally ill. For healthy children there are child health centres, school health services, holiday camps, playgrounds, day and residential institutions, nurseries and creches, where the nurse must not only assist with protective measures against illness and accident, but actively promote health in the widest sense of the term. For the child this means growth and development on the mental and emotional plane as well as the physical.

One of the most interesting papers read was that by Dr. Myriam David of Paris, who gave details of a psychological study of the care of infants up to three months of age in a model residential nursery. This brought out three disturbing trends: the variety and frequency of change of nurses looking after one child, the comparative isolation of the infant, and the poor level of individual human contact. For instance, the children were left alone for practically three quarters of their waking time. Further, the average number of persons dealing with a child during a stay of 2½ to 3 months was 25, whilst on any one day a given child was handled by as many as 16 people. These discoveries, it is reported, came as a great surprise to the staff, and the resulting reorganization to provide for more individual nursing care led to excellent results in the physical and mental development of the infants.

“PEPTIC” ULCER

Imprecision in naming diseases has two dangers; first, it may lead to the application of incorrect treatment; and secondly, it may render difficult or impossible comparison of findings reported by the different workers. Such imprecision is nowhere more apparent than in the naming of gastric and duodenal disorders. Even today ulcers either in the stomach or in the duodenum are sometimes loosely referred to as “peptic ulcers”. Yet gastric and duodenal ulcers differ in hereditary characteristics, and occur in patients of differing ages and occupations; the symptoms are different, and the secretion of acid is greater in duodenal than in gastric ulcer. Moreover, not uncommonly, gastric ulcers, unlike duodenal ulcers, turn out to be cancerous or become cancerous.

Every effort should be made to decide whether an ulcer is proximal or distal to the pylorus; and thus juxtapyloric or pyloric ulcer and pyloric stenosis should be avoided as diagnostic terms. Gastric ulcers may be named according to their site. Ulcers in the body of the stomach are corpus ulcers, whereas those in the antrum of the stomach (with some 6 cm - 2½ in - of the pylorus) are prepyloric ulcers. This distinction is useful because prepyloric ulcer resembles duodenal ulcer rather than other gastric ulcers. Anastomatic ulcers may be named after the anastomosis - gastroduodenal or gastrojejunal - and the terms secondary, marginal, or anastomatic ulcers avoided.

Gastric cancer should be called gastric cancer, and any name such as malignant ulcer and linitis plastica should not be used. A crater in the gastric wall which proves to be cancerous is as malignant as any other gastric cancer: without operation it leads to death, and there is no reason to suppose that the postoperative prognosis is any better than for gastric cancer manifesting itself as a mass.

— ‘The Lancet’ No. 7179 - Vol. 1, for 1961, 1st April, 1961, p. 707.

* * * * *

SHIGELLOSIS AND SULPHONAMIDES:

Hardy reported the ready development of sulphonamide-resistance by *Sh. sonnei* strains in New York State in 1943. Since then, similar reports, involving shigellae of all types, have come from many parts of the world. It seems that the time is approaching when sulphonamides will cease to be effective against shigellosis. Yet, clearly this time must be delayed as long as possible, especially as many recent reports also refer to the emergence of antibiotic-resistant shigella strains. Both Marberg *et al* from Israel, and Olarte and De La Torre from Mexico, provide evidence of disturbingly rapid adaptation of shigella populations to changes in prevailing therapy. Marberg *et al* comment: “Bacillary dysentery, after having been almost deleted as a problem with important clinical implications, may revert to its former clinical severity, thus demanding again new means of therapy”.

How can we make the best use of our available means? Possibly by adopting the following lines of policy:

1. Many mild cases do not need specific antibacterial therapy, and, by withholding it until it is plain that spontaneous cure is not taking place, the time may be deferred when severe cases due to untreatable organisms make their appearance.

2. While spontaneous cure is awaited, the sensitivity pattern of the infecting organisms should be determined, so that, if antibacterial therapy is used, it may be well directed and adequate.

3. When such cases are treated, it is probably preferable to use sulphonamides against strains that are still sensitive to them, e. g., the Jamaican *Sh. flexneri* strains. This suggestion is subject to the qualification that combination-therapy may be shown to prevent the emergence of resistant strains. Even if this is so, it will presumably necessitate the use of two agents to which the infecting organism is known to be sensitive, rather than predetermined mixtures.

4. Treatment of severe cases must, of course, precede isolation of the organism, and must, therefore, at first be guided by general knowledge of the strains prevailing in the area at the time.

5. The importance of public-health measures and personal hygiene is self-evident.

— *The "Lancet"*, August 27, 1960 p. 460.

[Sulphonamide resistance of dysentery bacilli is an important field in bacteriological research. Recently at least one strain of *Sh. flexneri*, isolated from an epidemic in Kallakurichi, and one strain of *Sh. sonnei* have been found to be insensitive to soluble and insoluble sulphonamides but sensitive to Streptomycin and Furoxone (furazolidone). These findings are of great practical importance in treatment.]

* * * * *

SMOKING AND CHEST DISEASE

The Joint Tuberculosis Council is an independent body composed of representatives from various medical societies with an interest in tuberculosis and other diseases of the chest. It set up a special committee to review the relationship between smoking and various chest diseases and this report contains the considered opinion of the committee and the conclusions of the council. It is concluded that smoking, particularly of cigarettes, is a major factor accounting for the increased incidence of cancer of the lung, that it impairs ventilation of the lungs in healthy persons, that it is closely related to the development of chronic bronchitis and that it may be one of the causes of the breakdown of quiescent (respiratory tuberculosis. It is recognised that other factors are also important in the production of these diseases, particularly atmospheric pollution.

The council recommends a more active policy designed to reduce the amount of cigarette smoking. Special efforts should be made to discourage young people from taking up smoking and members of the medical profession should, by example and persuasion, assist their patients and others to reduce, or abandon, cigarette smoking.

— *Report of the Joint Tuberculosis Council of Great Britain Bulletin of Hygiene* 36, 210 (1961).

* * * * *

TREATMENT OF TYPHOID IN CHILDREN

W. Falk and co-workers treated 38 children who had severe typhoid infections with chloramphenicol and corticosteroids. In 26 of these patients *Salmonella typhi* was found in blood cultures, stool culture or both. In one patient *Salmonella paratyphi* A and in another *Salmonella paratyphi* B was isolated. In the rest, the Widal test was positive, and the clinical and laboratory findings, including leukopenia with shift to the left, were compatible with the diagnosis. The combined treatment was generally commenced after a lapse of several days, during which the antibiotic was given without achieving the expected rapid improvement. Children in serious conditions were given steroids at once. Chloramphenicol was given orally in dosages of 50 mg. per kg. of body weight daily. Corticosteroids were given in dosages of 20 mg. per kg. of body weight daily for children below the age of 5 years, and 40 mg. per kg. of body weight daily above this age.

Administration of steroids gave dramatic results frequently within 6 hours. Of the 38 patients, 6 suffered from relapses. This rate is similar to that among patients receiving no specific therapy, or those receiving chloramphenicol alone. There appears to be no correlation between the incidence of relapses and the time of commencement of steroid therapy. In the 3 patients who received prednisone during a relapse, the response was similar to that during the first attack. In most patients steroid therapy was continued for 3 to 7 days. No complications of the disease or of the therapy were seen. In spite of this, however, the combined treatment is recommended in toxic cases only, where chloramphenicol alone is not effective.

— *JAMA* April 8, 1961.

* * * * *

MORTALITY FROM CHLORAMPHENICOL:

In 1952, it became generally recognised that chloramphenicol can cause aplasia of the bone marrow. Since then several reports have appeared on the subject of toxicity of this antibiotic. M. Lamy and his colleagues saw three fatal cases in two years in Paris, and R. G. Shaw and J. A. McLean

described seven cases, six of them fatal, "encountered in Melbourne in the last 12 months". According to Registrar-General's Statistical Review of England and Wales, during 1956-58, there were 856 deaths from aplastic anæmia or agranulocytosis, of which 83 were attributed to drugs or other therapy, chloramphenicol was incriminated in 19 of these.

Recently W. Dameshek of Boston has warned against the indiscriminate use of chloramphenicol. In one month he saw four new patients with aplastic anæmia to all of whom chloramphenicol had been given for minor respiratory infections. In a series of 30 such cases seen in three years, 8 had been treated with chloramphenicol.

C. Wilson has said that (Practitioner, 1956, 176 14) the only indications for chloramphenicol are typhoid fever and *H. Influenza* meningitis. Septicæmia and meningitis due to other chloramphenicol-sensitive gram-negative bacilli would equally be so, but these are rarities. What of the treatment of whooping-cough; is this justified? In what circumstances may chloramphenicol be given for chronic bronchial infections? It would be helpful if an authoritative pronouncement could be made which translates Dameshek's warning into more precise terms.

A different kind of toxic effect from chloramphenicol has recently come to light. Apparently it had become a common practice, particularly in the U. S. A., to administer chloramphenicol to newborn infants in whom there was some reason to fear infection. The drug has been given intramuscularly in large doses, as high as 160 mg. per kg. daily, which is the equivalent of about 10 g. to an adult. The effect of this is sometimes to produce the "grey syndrome", a circulatory collapse usually followed by death in a few hours. J. M. Sutherland describes 3 cases and R. Bretschneider and his colleagues of Vienna, 5 others. A single fatality from the same cause has been reported from Australia by J. Beveridge. C. F. Weiss and colleagues have since shown that in the newborn infant the capacity to conjugate chloramphenicol and to excrete it is incompletely developed; they consider that the dose in the premature and full-term infant should not exceed 25 and 50 mg. per kg. respectively.

— B. M. J., *Editorial*, April 8, 1961—P. 1019.

ASSOCIATION NOTES

BRANCH NOTES

Anamallai Branch:

At the annual meeting held on 6—5—1961, the following office-bearers for the year 1961—'62 were elected:—

President: Dr. Korulla John, M. B., B. S.

Vice-President: Dr. M. D. Dissawalla, M. D.

Representative on State Council: Dr. C. R. Subbarathnam, M. B., B. S.

Honorary Secretary: Dr. M. P. Gundappa, M. B., B. S.

Honorary Joint-Secretary: Dr. D. K. Janardhan, M. B., B. S.

Representative on Central Council: Dr. M. K. R. Jayachandran,
M. B., B. S., D. T. M. & H.

Coimbatore Branch:

(i) The Thirty-sixth Annual General Body meeting was held on Sunday, the 30th April, 1961 commencing at 3-00 P. M., in the Association premises.

Dr. D. Sundareswaran, the President presiding delivered the inaugural address. He requested the younger section of the members to take up the reins and run the Association in the interests of the profession. He also suggested the idea of family members of the members of the Association meeting periodically and establishing contact among themselves.

Condolence resolution touching the death of Dr. U. A. Menon was passed — all members observing silence for two minutes.

Dr. M. P. Jesudasan, the Honorary Secretary, then read the annual report and the statement of accounts for the year 1960 and they were passed unanimously.

The following office-bearers were elected for the year:

President: Dr. G. T. Gopalakrishna Naidu.

Vice-President: Dr. C. V. Ramaraj.

Honorary Secretary: Dr. V. Sriramulu.

Associate Secretary: Dr. R. Padmanabhan.

Honorary Treasurer: Dr. K. R. Venkatesalu.

Dr. G. T. Gopalakrishna Naidu, in thanking all the members for the unanimous election of the President and other office-bearers, suggested the following ideas to be taken over by the District Medical Association, Coimbatore, so that the Association may give some useful aid to the public in the district.

1. A bacteriological unit on the model of the Pasteur Institute, Coonoor may be started in Coimbatore and members of the Association may serve in the bacteriological unit for giving relief to the suffering poor.

2. A nursing home of an up-to-date model may be opened with all surgical appliances for giving relief for the people in the district.

3. A medical unit on the model of the Erode Medical Supplies may also be opened and medicines stocked for supply to the people at very moderate prices.

The source of revenue may thus be augmented for the Association which is now wanting finance for keeping it going:

The President congratulated the Editor of the "Madras Clinical Journal", Dr. A. G. Leelakrishnan for conducting the journal in a superb way.

He also thanked Dr. T. V. Sivanandam, President, Madras State Branch of the Indian Medical Association for giving life and strength to the Coimbatore District Medical Association.

Dr. G. Victor, M. D., Principal, Madurai Medical College then gave an interesting lecture on "HYPERTENSION". The lecturer was congratulated by the President for the able way in which he served as a teacher, preacher and a doctor for the audience.

The next item was sports. Many members evinced lively interest in tug-of-war, musical chair, sack race, choosing the partner and slow cycle race.

After the sports, Dr. R. Sarat Chandra, M. S., Salem, gave a lecture on "Some Aspects of Rectal Surgery". The President congratulated the lecturer for the lucid way in which he presented the subject to the Association. The lecturer has a bright future, he added.

By the kind courtesy of Messrs. Lederle Laboratories (India) Private Ltd., Bombay there was a film show on "Diagnosis & Therapy of Pelvic Diseases".

The highlight of the day was the fancy dress competition. A record number of members took part in this item which was very entertaining. It revealed the latent histrionic talents of the members of our Association.

(ii) The monthly meeting of the Coimbatore District Medical Association was held on Saturday the 13th of May, 1961 at 6-30 P. M. in the premises of the Association. Dr. D. Lakshmanan, M. S., gave an interesting talk on "Common Surgical Emergencies".

Madras City Branch:

At the Annual General Body meeting of the Madras City Branch held on 23d April 1961 the following office-bearers were elected for the year, 1960 — 1961.

President: Dr. R. G. Krishnan, F. R. C. S.

Vice-Presidents: 1. Dr. D. R. Varman, M. B., B. S.

2. Dr. K. V. Swamy, M. B., B. S.

Honorary Secretaries: 1. Dr. K. Ramarao, L. M. P.

2. Dr. S. Nazeer Mohammad, M. B. B. S.

Honorary Treasurer: Dr. P. Krishnaswamy, L. M. P.

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