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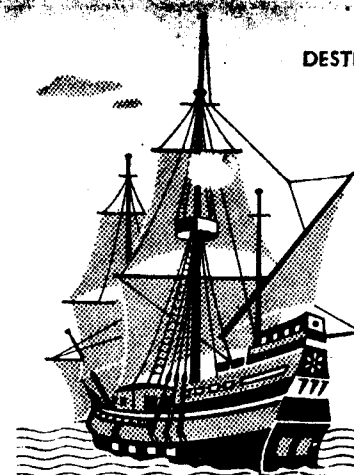
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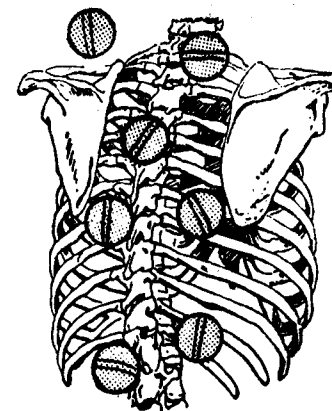
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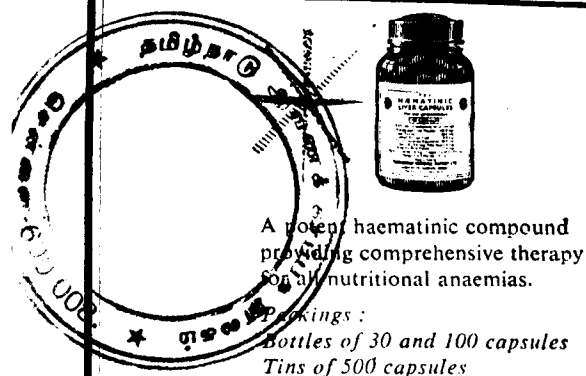
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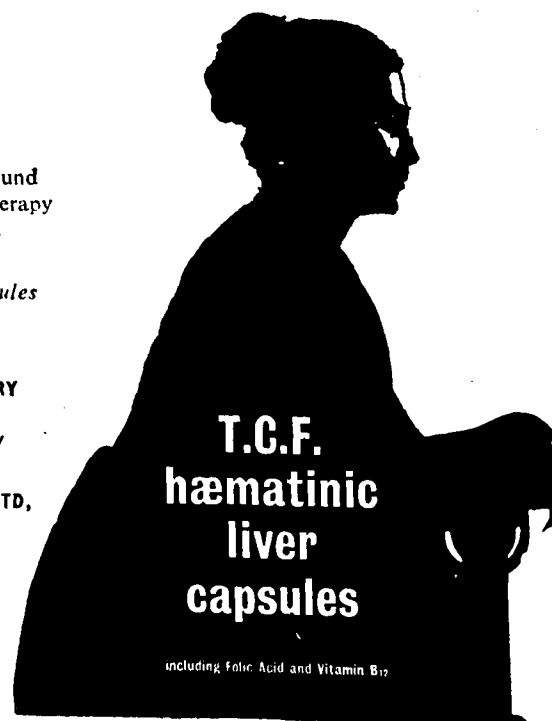
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*Pain in the Precordial Region

By

Dr. D. P. GUPTA, M.D. (Medicine), M.D. (Pharmacology), M.R.C.P (Ed.)
Dist. Hospital, Sitapur

The site of cardiac pain is very variable, it may occur anywhere between the mouth and the umbilicus anteriorly or posteriorly or in either arm. But usually starts centrally in the chest and radiates to the shoulder and down the arm or to the neck or even to the jaw but the reverse can occur. In one of my patients it started from the jaw and radiated to the precordial region, in other two it presented as frozen left shoulder. The character is described as tight, heavy, constricting, pressing, squeezing, bursting or burning or like indigestion, but it is never stabbing or shooting.

The precordial pain represents three clinical conditions namely:—

I. Angina pectoris or Angina of effort
or Heberden's Angina.

II. Acute coronary insufficiency
III. Acute myocardial infraction.

In angina pectoris the pain is of short duration and is related to effort, forcing the patient to stop, or slow down; and disappears in a few minutes. It is due to certain metabolites formed during stress in myocardium when atherosclerotic coronary arteries fail to supply adequate quantity of Blood. This condition is more or less benign and persons live for many years with this condition, average life expectancy being 9 to 10 year's (White, Bland & Miscal, 1943) but 10% live for 20 years, e.g., John Hunter 1773-93, Sir James Machenzie 1907-25, Sir Thomas Lewis 1927-45. Women have better prognosis. The obstinate belief that angina pectoris is a doctors

* Paper read before the I.M.A. Sitapur Branch. (to be continued)

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disease persists and appears to be justified according to reports by Ryle & Russel (1949). Physicians and Surgeons head the list.

The term acute coronary insufficiency has been widely used by Master et. al (1947) for cases who are between angina pectoris and cardiac infraction. Patient suddenly finds himself unable to walk more than a few yards without pain or may have prolonged precordial pain at rest. This condition is a result of coronary thrombosis of small coronary arteries without cardiac infraction which is prevented by adequate blood supply. In this clinical condition there is absence of accompanying signs and symptoms of cardiac infraction. The long-term follow up studies of these cases awaits analysis.

The pain of cardiac infraction continues for hours even for a day or two. It tends to increase in severity, radiates to wide spread area and is crescendo in nature, so a sudden increase in frequency or duration of precordial pain is due to cardiac infraction. Physician's main responsibility is to recognise coronary thrombosis, specially when chest pain is not the presenting symptom.

Following are the other ways of onset:—

- I. Acute cardiac asthma or Pulmonary oedema.
- II. Syncope,
- III. Sudden onset of congestive Heart failure,
- IV. Sudden onset of arrhythmias,
- V. Painless cardiac infraction (Less than 5% cases).

Electrocardiographic evidence of recent myocardial infraction is commonly present but a negative evidence should not be considered to disregard the diagnosis. I have often found E.C.G. normal even in presence of big infracts, resulting in catastrophe. The clinical assessment of the case should be made independently of E.C.G. The investigation is useful only when the result is positive.

The onset of pain is rapid and is independent of any exciting cause, it may occur at any time of the day or wake the patient from sleep and is among the severest of pain experienced. Few patients remain motionless most become restless and adopt various position in an attempt to get relief, but none of these position brings relief from the steady intense pain.

Shock: Is a common feature and is of varying degree from dizziness, or fainting to severe degree of shock with syncope. The skin is pale, cold, moist with patches of cyanosis on the extremities. The blood pressure is low and the pulse pressure may be so diminished that a radial pulse cannot be felt. Shock may persist for hours or even days. *Cardiac Arrhythmias* frequently develop. Brief episodes of Auricular fibrillation of flutter or ventricular tachycardia either proxysmal or persistent or various degree of heart block may be present and are serious requiring prompt treatment. Extra systoles if present are probably harmless.

Mild degree of fever; Leucocytosis of 20,000 or more elevation of E.S.R. are usual accompaniments. Pericardial friction occurs early in 10 to 15% of

cases of anterior infraction and is present only for 24 to 48 hours, it indicates presence of fairly large infraction. Triple rhythm is often audible. It may be presystolic or diastolic gallop rhythm. Heart sounds are often faint. The presence of cardiac asthma or engorged neck veins should be looked for indicating cardiac failure. Repeated E.C.G. should be taken whenever the opportunity is available as their findings are of more value. Anterior infracts are more common being 72% while posterior infracts are only 28% (Wartman & Hellerstein 1948)

There is no constant condition which precipitate infraction, physical exertion, exceptional emotion do not appear to be important, but it occurs sixteen times more frequently during unaccustomed physical effort. The peak of incidence is in December. Sudden change of temperature is more important. Hypertension and Diabetes are frequently associated.

MANAGEMENT OF ACUTE ATTACK

The object of immediate treatment are:—

- I. To allay anxiety,
- II. To relieve pain,
- III. To treat the shock and heart failure,
- IV. To control arrhythmias.

Physician should not be anxious as it is worth remembering that recovery is the rule, if the patient is still alive when he arrives. He should allay anxiety. Patient should be moved to bed as soon as possible. I have used Pethidine

injection for the relief of pain. In severe pain, 50 mgm, mixed with Aminophylline given intravenously slowly followed by same amount intramuscularly. This is followed by oral administration of this drug. The traditional use of large doses of Morphia induce vomiting and later on troublesome constipation and lack of appetite, so it is better avoided. The aim is not to relieve pain completely but to make it tolerable which will cease on natural remission of disease.

Shock is to be treated actively. Blood transfusion was tried (Epstein & Relman 1949) but abandoned and intra-arterial infusion proved no better (Berman et. al 1952). The best plan is to keep the patient reasonably warm and if there is severe hypotension (80mm. Hg) it is life-saving to raise the B.P. to 100-110 mm. Hg. Noradrenaline or L-Noradrenaline drip 1;10,000 is advocated (10 mg. in 5% glucose solution at the rate of 20 drop per minute). The infusion may be continued as long as necessary even upto 72 hours controlled by B.P. reading every 15 minutes and altering drip rate accordingly. Mephentermine (Wyamine) 1. M. 30 to 40 mgm. in repeated doses has been used by Hellerstein, Brofman & Caskey, 1952) Aramine. .01 to 0.1 mgm./kgm. body weight improve cardiac function and coronary blood flow and maintains B.P. it may be given orally intramuscularly or by drip infusion. I have used Ephedrine injections intramuscularly satisfactorily, repeated according to necessity aiming to raise the B.P. to 100-110 m.m.Hg. Cotrisone or Prednisolone or Bi-Decortisyl are given with

good response in over-coming this crisis of cardiogenic shock. Almost all cases responded to this combination of Ephedrine and Cortisone. Use of cortisone is justified based on the experimental observation of Johnson et.al...1953.

I have treated acute Left ventricular failure with cardiac asthma or Pulmonary oedema by slow intravenous injection of aminophylline 0.25 Gm. with 25-50 ML of 50% glucose solution.

Occasional premature beats are better left untreated benign serious disturbances of rhythm call for their standard treatment. Ventricular tachycardia is important as it leads to ventricular fibrillation procaine amide is the drug of choice. It may be given in urgent cases intravenously (200 mgm. in 50% glucose solution slowly) followed by oral administration. Auricular flutter and fibrillation are controlled by quinidine. Heart block with ephedrine.

Anticoagulant therapy. The controlled series published throughout the world show that the mortality rate from 32.4 in controlled cases has been reduced to 16.6 with anticoagulants. Even in good risk cases i.e. who have recent infraction with no intractable pain or severe shock or cardiac enlargement or heart failure or arrhythmia, the mortality rate has been reduced from 3% to 1%. This justifies the use of anticoagulants in almost all cases of cardiac infraction. The drugs prevent the Thromboembolic complications, and prevent the extension of coronary thrombosis. Moreover both Heparin and dicoumarol also appear to

be coronary vasodilators (Gilberts & Nalefski 1949) and as such improve the total coronary blood flow. The risk of haemorrhages during the treatment with anticoagulants specially with Dindevan is negligible, and also when good laboratory facilities are available. The usual treatment with anticoagulants is as follows:—

(1) Heparin is given 15000 units intravenously followed by 15000 units intramuscularly 8 hourly for first 2 days. Dindevan is started one tablet 3 times a day (150 mgm.) on the first day 100 mgm. on the second day and 50 mgm. on the morning of 3rd day. Subsequent doses are given keeping in view the prothrombin time, which has to be $2\frac{1}{2}$ times the prothrombin time in a normal individual i.e. at a ratio of 2:5. This treatment should be started at home as there is no necessity of estimation of prothrombin time until the third day. I have followed treatment in my cases as given below:—

1. Heparin in doses mentioned above.
2. Dindevan one tablet (50 mgm.) t.d.s. on 1st day, twice daily on the 2nd and 3rd day and half tablet morning and evening for 4 to 6 weeks.

None of the cases showed any haemorrhagic episode and the results have been excellent. The repeated prothrombin time estimation could not be done in these cases due to lack of facilities.

Permanent anticoagulant treatment to prevent further attacks of coronary thrombosis is under trial. Encouraging report comes from Suzman, Ruskin and Goldberg (1955). They have treated

cases ranging from 3 months to 6 years. According to them the mortality was reduced from 33% to 7.3% and the frequency of recurrences from 24% to 7%. In severe cases mortality was only 9% as compared to 46.7% in control cases.

CORONARY VASODILATORS:

Except Aminophylline the other drugs are of no use.

Oxygen: It is of great help in severe cases and relieves pain.

GENERAL MANAGEMENT:

1. **Re-assurance:** Once a patient gets coronary thrombosis it cannot be concealed from him. He becomes anxious about his heart and fears that he may lose his life or may become crippled permanently, finally he fears recurrences. The physician's duty is to reassure him. Majority of persons do survive and return to a normal life. The recurrence may occur after very many years and the patient may again make a good recovery. The physician has to infuse confidence in his patient assuring him that after a period complete healing of his heart may occur and he will resume a normal life. He should see that the patient should recover with patience and determination without uncertainty and fear. Visitors should be limited during first three weeks. Light, small meals with little salt content are desirable. Tobacco should be prohibited during the first two weeks and later on few cigarettes may be allowed. There is no contraindication to moderate use of alcohol.

2. **Rest:** 4 to 6 weeks rest is desirable but the rest in a flat bed with rigid immobility is undesirable and harmful. The use of bed pan is very uncomfortable to the patient. It is useful to nurse the patient in easy chair or with head end raised, allowing him the use of commode as early as possible. In more severe cases patient should be kept at rest in bed for first week then the gradual relaxation is allowed each week depending upon the progress of the patient. In the last 4th or 6th week breathing and leg exercises help in restoring the flabby muscles. Generally after the initial stage of shock and general malaise is over within few days patient feels so well that he wants to be more active, but it is to be impressed on him that comparative rest for a sufficient period is essential to ensure sound healing.

3. **Drugs:** After the initial pain is over patient should be given sedative drugs in the day and a sleeping dose in the night. Aminophylline is useful. Low salt, semi-starvation diet is given and patient is watched for any signs of congestive failure which is treated with diuretics and digitalis. The complicating pneumonias treated radically with antibiotics.

MORTALITY RATE:

With conservative treatment the mortality rate during first month of acute cardiac infraction is 25%. Four fifth of all deaths occur in the first 24 hours, 50% within the first fifteen minutes. With prompt skilled medical and nursing attention, early intravenous heparin, proper control of shock within 3 hours

of onset, low sodium containing semi-starvation diet. Dindevan therapy for four to six weeks and efficient treatment of cardiac failure, immediate antibiotic therapy for complicating pneumonia; good control of Diabetes mellitus and arrhythmias the natural mortality of 25% in all cases that survive the first fifteen minutes of attack is reduced to about 10%.

CONVALESCENCE:

The pace at which convalescence proceeds is modified by the total heart damage and the temperament of the patient. It is better to allow a gradual increasing activity at home for one month followed by a quiet holiday of 3 to 4 weeks. About 1/3 make complete recovery and return to their usual job except in those cases where there is heaviest manual work and in jobs involving responsibility for lives of others, for example Bus-driver, Engine-driver and Air-Craft Pilots. He should plan his work more efficiently and allow plenty of time for anything he does from catching a train to eating a meal. 50% have Angina pectoris and limited cardiac reserve but they are able to lead useful life. 20% of the cases are seriously incapacitated with severe Angina or heart failure (Master & Jaffe 1951; Cole, Singian & Katz, 1954) 90% of the patients with good functional recovery survives 5 years and 70%, 10 years. Of the cases with mild or moderate Angina 3/4 survive 5 years and 1/2, 10 years. In severe group majority of them die within 5 years.

TREATMENT OF ANGINA PECTORIS:

The treatment of uncomplicated or simple Angina pectoris should be carried on conservative lines. A diet containing low fat content is useful. Smoking should be avoided. Trinitrin (1/100 to 1/120Gr.) is still the drug of choice. It is sucked under the tongue. These tablets lose their potency with age. Such preparations, as angised (B.W.) and Nitrocline (M.C.) overcome this defect. Long acting nitrites and nitrates like pentaerythritol tetranitrate (nitro-pent) or mycardol (Bayers) and peritrate (Warner) have lasting effect for about 4 hours. They are taken orally as tablets (10 to 30 mgm. tabs.) Khellin is an effective coronary vasodilator with prolonged action. The dose is 100 mgm. by mouth thrice daily. It relieves in 74% of cases (Anrep et. al. 1946) but this drug is badly tolerated by patients. Aminophylline has proved very useful in doses of 0.1 to 0.2 Gm. three times daily. Dyspepsia with this drug is avoided by the use of Aluminium Hydroxide, Etophylate in doses of .25 to .5 Gm. causes no abdominal upset. Oestrogens have not proved useful, and the side effects i. e., mammary development in men are undesirable. Testosterone Propionate has no place in the treatment. Artificial Myxoedema has been advocated by Blumgart, Levine and Berlin 1933, in intractable cases. Marcazole 20 to 30 mgm, three times daily, reduced to about 10 mgm. 3 times daily is the drug of choice as it is relatively free from complications as seen with Thiouracil. A low fat diet is given

during this treatment to check the increase of Cholesterol. Radioactive Iodine (I_{131}) has been advocated by Blumgart et. al. 1955 in resistant cases of angina pectoris with 75% good

result. *Surgical Methods* to relieve angina has been evolved in recent years to increase the blood supply of the heart but none have been popular so far.

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Prophylaxis in Tuberculosis with Isoniazid

By

Dr. J. R. SHAH, M.D., M.R.C.P.

*Hon. Asst. Physician to G. T. Hospital Bombay,
Hon. Asst. Physician to Bombay Hospital, Bombay*

PART I

The history of mankind's protracted struggle against tuberculosis menace is as old as time, yet it was only during last few years, that effective chemotherapeutic agents were introduced in its curative treatment. The advances in the field of treatment are dramatic and are borne out by remarkably reduced mortality rate due to tuberculosis in almost all countries of the world. This, however, has not been paralleled by fall in the incidence of newly infected case finding (the notification rates), and cannot be accounted by improved diagnostic facilities. Whatever be the explanation, no responsible person can be complacent till the notification rate falls as dramatically as the death rate in tuberculosis.¹ It is only natural therefore, that the efforts are made to devise and assess the means of preventing this infection including prophylactic treatment with effective chemotherapeutic agents.

The rare advantage of low toxicity and high tuberculocidal activity, has tempted many clinicians in recent years to use Isoniazid for chemoprophylaxis in tuberculosis. A large series of animal experiments and clinical trials in man which are being carried in various countries, with high dosage of Isoniazid,

Appalingly high rate of tuberculosis infection and consequent serious complications, has created a great need for prophylactic treatment of this infection. Recently, interesting studies have been made in the field of prophylaxis in tuberculosis with chemotherapeutic agents, which may prove to be of far reaching consequence in the conquest of the disease. This article is an attempt to review the present status of prophylactic treatment of tuberculosis with Isoniazid, a tuberculocidal drug when administered in high dosage.

make a very interesting study and the results may prove to be of far reaching importance in the control and the management of tuberculosis. Before reviewing these results it would be worth while to retrace some properties of Isoniazid, a few aspects of pathogenesis of tuberculosis infection, statistical data on mortality and notification rate, and available methods of prevention.

FACTS ABOUT ISONIAZID

Isoniazid is both a tuberculostatic and, in large doses a tuberculocidal drug. Approximately ten times more effective than Streptomycin, Isoniazid given orally is rapidly and completely absorbed from gastro-intestinal tract. It is very slowly excreted through the kidneys, so that

the plasma level, far in excess of those necessary for tuberculostatic effect, remains for over 24 hours after a single therapeutic doses.² Isoniazid is the only anti-tuberculous agent which is found in C.S.F. in highly effective concentration. It penetrates macrophages and destroys the tubercle bacilli multiplying inside mononuclear cells as also in caseous matter.³ Without any exaggeration it can be stated that Isoniazid holds the pride of the place amongst anti-tuberculous chemotherapeutic agents.

Isoniazid has a wide margin of safety and toxic side reactions are singularly uncommon. A distinguishing advantage is that when tubercle bacilli become resistant to Isoniazid, which does not happen readily, the resistant bacilli lose catalase and thereby lose their virulence, with the result that these attenuated organisms do not produce pathogenic lesions of any consequence.⁴

In experimental animals, compared to Streptomycin, Isoniazid produces more effective and lasting healing of tuberculous lesions, with greater anatomic and functional recovery of the affected organ.⁵ In man, caseation is inhibited, fibrosis is minimised, and lesions heal by non-specific vascular type of mature granular tissue.⁶

It should be noted that Isoniazid in large doses acts as tuberculocidal drug, and that there is a wide margin of safety. In last few years Isoniazid is being increasingly used in large doses, especially in paediatric practice,⁷ where serious complications like tuberculous

meningitis and miliary tuberculosis demand prompt and effective treatment. Very large doses of 20-30 mg. kg. have been found to be well tolerated by children and not associated with any toxic side effects even when continued regularly for prolonged periods. This has been well brought out in the following clinical trials.

L. Praloran et al.⁸ treated 20 females suffering from glandular and pulmonary tuberculosis with high dosage of 20 mg/kg. body weight for over 150 days.

O. Zorini⁹ used doses of 20 mg/kg body weight per day in 600 children of 4-11 years' age group for over six months.

Excellent tolerance was found in both the series without any side effects.

FACTS ABOUT TUBERCULOSIS INFECTION

Infection by tubercle bacilli produces two distinct types of responses in an individual depending upon whether it is the primary infection or reinfection. When a susceptible individual is infected for the first time with virulent tubercle bacilli the resulting pathological lesions is called primary complex, following which his reaction to tuberculin test becomes positive. Most of the population become primarily infected at very young age but only a relatively few develop clinically evident disease at the time of first infection or in later years. Very often primary infection passes unrecognised, but the illness resulting from it is sometimes serious and occasionally fatal, especially so in infants and in adolescents at or after puberty.¹⁰

In large majority primary lesions and associated glandular component heal and calcify. Occasionally the primary infection, instead of healing or becoming quiescent, becomes locally progressive (Progressive primary complex.) In a few, healing—particularly of glandular lesions—is incomplete and surviving tubercle bacilli, under circumstances of lowered general health and altered balance between allergy and immunity are discharged into the blood stream (haematogenous spread), producing lesions elsewhere in the body.

Even when the primary infection has healed completely the patient is still vulnerable to develop subsequent infection from contact with open cases of pulmonary tuberculosis, resulting in the appearance of lesions of such destructive nature that they can be arrested or

entirely healed only with the greatest difficulty. It is this reinfection type of the disease, with its recognised signs and symptoms, which is commonly designated 'Tuberculosis'.¹¹ The degree of immunity conferred by primary infection, varies greatly in different individuals and affords no certain protection against reinfection—particularly the massive reinfection which results from close contact with an open case of tuberculosis.

VITAL STATISTICS

Having considered few facts about tuberculosis infections, it will be appropriate to obtain specific data from figures of the mortality and infection rate in various countries.

*Incidence of mortality.*¹² (Crude death rates per 100,000 population from all forms of tuberculosis).

1953: (Very low—under 50%).

Australia	—11	Finland	—45	Spain	—40	Asian Countries:*
Belgium	—28	France	—37	Sweden	—15	Burma 193-300 (1946)
Canada	—12	Germany	—21	Switzerland	—23	China 250-500 (1948)
Denmark	—10	Netherlands	—9	U.S.A.	—12	Indochina 237- (1946)
Eire	—40	New Zealand	—12			Pakistan 250-350 (1948)
England & Wales	—20	Norway	—16			

*Note: Even though the mortality rate has dropped since then, the rates are likely to be much higher than those in European countries.

comparative incidence of tuberculinization in different age groups in India and in England is given below:¹³

INDIA		ENGLAND	
Age groups	%	Age groups	%
0—6	19.2	5—9	25.9
7—14	38.8	10—14	33.8
15—24	64.8	15—24	59.3
25	83.7		

A detailed analysis of 438417 individuals tested (with Mantoux P.P.D. 10 units) has shown that in the industrial cities of Bombay, Ahmedabad, Kanpur, and Madras, about 75% population have become tuberculosis positive at 15 years' of age¹⁴ Dr. Deshmukh in a study of 381 children from the low income group families has found 100% tuberculinization in the age group of 9—10.¹⁵

It should be pointed that tuberculosis is widely prevalent among infants and children in our country though they may go undetected, and that children brought up in contact with open cases of tuberculosis develop tuberculinization at much earlier age than non-contacts. Resistance to tuberculosis is not developed during infancy and therefore infancy shows, relative to infection, highest death rates. Again the death rate and rate of infection are very high after puberty for both sexes, slightly more for females, and lastly they are high after the age of 65.¹⁶

Serious complications too are highly frequent during infancy and adolescents. Tuberculous meningitis alone is responsible for about 40% of deaths, during the first two years of life.¹⁶

AVAILABLE METHODS OF PREVENTION

(a) *General Methods*: Prevention of infection through milk by eradication of tuberculosis from animals, supply of pasturised milk, or milk from herds free from tuberculosis.

Prevention of infection from sputum is a complex and an impossible problem,

particularly in this country, because it isolating all diagnosed cases of tuberculosis and making them non-infectious. It also means discovering all cases coughing out tubercle bacilli from the community by radiographic survey implying the need of money, equipment, necessary staff, and full co-operation of people.

Raising the host resistance and minimising chances of infections by housing, sanitation, nutrition, predisposing factors such as certain occupations, and proper treatment of, congenital and other diseases.

(b) *B. C. G. Vaccination*: It has been proved that when a person contracts the primary tuberculosis infection and recovers from it, he is less likely to develop active tuberculosis of adult type, and if he does develop, it is not likely to be fatal type, compared to a person who has not previously been infected. The use of B.C.G. vaccine (living attenuated bovine bacilli) is based on this observation. From an enormous amount of literature published, perhaps Topley & Wilson summarise the present status of BCG vaccine in best manner.¹⁷ "On the whole the evidence is undoubtedly favourable to B.C.G. vaccination. To decide however what part it is likely to play in the prevention of tuberculosis is not easy. Every country must be judged separately. It would be unjustifiable, to expect the same beneficial results in England, where the level of genetic immunity is high, as in Scandinavia where it seems to be low. Probably all that BCG vaccination can be expected to do is to protect against the clinical

manifestations of primary infection. Once virulent tubercle bacilli have gained access to the body it is difficult to believe that the attenuated vaccinal organisms can play any further part. No protection therefore can be expected against the so-called post-primary or adult type of tuberculosis.

Whether BCG vaccination will have any significant effect on the total mortality from tuberculosis is doubtful. Will BCG vaccination in childhood or early adult life reduce this rate, or will it merely shift the mortality from the younger to the older ages? This time

alone will show. The difficulty of arguing from the mortality statistics is illustrated by a comparison between Denmark, where BCG vaccination has been extensively used and Iceland where it has not been used. In Denmark the death rate declined from 174 per 100,000 in 1918 to 16 in 1950. In Iceland it fell from 189 in 1918 to 20 in 1950. A similar drop occurred in USA during the same period in the absence of vaccination. To whatever extent vaccination is used it should not be allowed to interfere with the other measures taken to combat tuberculosis."

(To be Continued)

ETIOLOGY OF HYPOCHROMIAS IN ADULTS. (A study on 150 cases). by J. Mallarme, R. Fauvert, G. Hervier and S. Nicollo. La Presse Medicale Vol. 66, No. 41 May 24, 1958. Via La Medecine Ed France

Even though often overlooked, hypochromic anemias are frequent in adults. Sideropenic hypochromia is the commonest of all and is more often encountered in men than in women, after 40 years of age in 80% of the cases.

Sideropenic hypochromia is secondary to iron deprivation due to: hemorrhages (83%), general causes (10%), genital causes (20%), digestive causes (70%). The latter are numerous, the three main ones of them are: *diaphragmatic hernia, carcinoma of the digestive tract* especially of the stomach, *hemorrhoids*.

Secondary non-hemorrhagic sideropenic anemias are rarely seen: they are due to *nutritional or endocrine* disturbances, or to *pregnancy*.

Constitutional primary sideropenic anemia (Knud Faber's disease) is exceptionally encountered in France, most of the cases are in fact latent diaphragmatic hernias.

Adolescence chlorosis is also very rare.

Beside sideropenic hypochromias, an important place is held by *metabolic hypochromias* without sideropenia, as mainly represented by major or minor *thalassemia* with anemia or polyglobulism.

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Biological Controls in Radiation Treatment of Squamous Cell Carcinomas of the Uterine Cervix

By

Dr. S. KRISHNAMURTHI, M.S.,
Scientific Director, Cancer Institute, Madras

The most striking characteristic of a cancerous process, in my opinion, is that it follows no law and no set rules of behavior. No two cancers look or behave alike. And what is more, we are under these circumstances, unable to predict its vagaries and are not even sure of what treatment may achieve. The one thing of which we can be entirely sure is our helplessness.

Being what it is, it is impossible, therefore, to thwart cancer by a rigid arrangement of forces or a static plan of attack. Treatment has to be versatile, adaptable and wary. We will have to watch every move of the enemy and vary our alignments accordingly. But how shall we watch him and detect his subtle changes at their very inception, for if you allow him one inch he will take a mile. Clinical reviews, though essential, are but crude evaluations and moreover are not always dependable. The histological and cytological controls are the most sensitive thus far known and we have, therefore, turned to it for help.

The drawback in treating Squamous Cell Carcinomas by radiation is that they are only moderately radio-sensitive as a species. While a few respond even dramatically, many yield only an indifferent response and some don't respond at all. Persistence with radiation in a

non-responsive type is not just a waste of valuable time alone; the radiation so alters healthy tissues in the neighbourhood that the chances as well as the outcome of the surgical alternative are badly prejudiced.

We have, therefore, directed our studies towards three objectives:— (a) To detect the non-responsive type even pre-radiationally (b) Failing the first, to detect the non-responsive tumour early enough in the radiation course to enable us to launch on more effective alternatives. (c) to elucidate the most sensitive criterion or criteria of cytological radiation response.

With regard to (a) we have come to the conclusion that the small spindle Cell or Spheroidal Cell type of meta-typical spinous cell carcinomas are non-responsive to radiation or even if they respond initially they recur quickly. Even in the presence of gross regression they are histologically positive after full irradiational therapy. These spindle cell carcinomas may sometimes be mistaken for granulomas.

With regard to (b) we have at the Cancer Institute, Madras, routinely performed staged biopsies at various levels of radiation from a number of representative sites in the tumour and tumour bed. I may add here that contrary to

the views of Dr. Kottmeier of Stockholm, these repeated biopsies taken under a radiation barrage have not affected healing adversely or disseminated disease.

Most tumours at the 1,000—2,000 rads level show a stimulus of growth. A few show degenerative changes. At the 2,000—3,000 rad level there is in most cases a definite arrest of mitoses and incipient degenerative change. At the 4,000 rad level the degenerative changes are marked and in some cases there is an attempt at increased differentiation. Some tumours are histologically sterile even at this level. A few more are sterile at 6,000 rads. If sterility is not achieved at the 9,000 rad level we may take it that the tumour is non-radiation responsive. We have, therefore enunciated the "sterility dose" for a squamous cell carcinoma. Physical measurements of dose, despite the fact that the Roentgen has been replaced by the rad are only crude criteria i.e., they are only measures of a dose delivered or a dose absorbed but not of the dose necessary. The sterility dose, "SD" varies from case to case and has to be judged individually. When SD = 8,000 rads or less for a tumour we may take it, that provided the entire tumour bearing tissue has been raised to this level that radiation by itself will destroy the tumour. When SD exceeds 9,000 rads it will be a wise man who turns to the surgical alternative.

With regard to (c) we are still in a very poor way. Our histological criteria of sterility levels are still a great deal crude. A tissue is declared sterile only when all the tumour cells in it have been

totally eliminated. This, obviously, cannot be a very sensitive criterion, for between the death of a cell and its total disappearance there must physiologically be a lag period of at least some days. The cytoplasm also reacts only to gross changes in dose and cannot be, therefore considered a suitable criterion. The nuclear changes are the most immediate and the most striking. We have, therefore, concentrated on studying changes in nuclear structure. Within the nucleus we have been able to detect that the first visible element to react to radiation is the chromatin. But the chromatin reaction is so varying and so indecisive that we are not able to correlate any definite change with undoubted cell death.

Before I close I would like to make just one remark—that the cell count method of Glucksman and Spear cannot be regarded as reliable in determining radiation sensitivity. The cell count method takes account of a very minute area of the visible microscopic field and there can be such diversity in a single slide! It is the overall picture of a number of slides prepared from tissue biopsied from several representative sites alone that should be considered. Dr. Spears himself told me, while in Madras, that further studies of their own have led them to the same conclusion.

All that I intend to make out in this paper is that carcinoma anywhere cannot be treated by rigid rules and rigid methods. Every case has to be studied individually by the surgeon, therapist and biologist. And the type of treatment adopted must be guided by the tumour's biological behaviour rather than by individual prejudices.

Treatment of Cardiovascular Emergencies*

By

ALDO A. LUISADA, M.D.

Director, Division of Cardiology and Associate Professor of Medicine, The Chicago Medical School, U.S.A.

Cardiovascular emergencies are extremely important to the physician because there is no time to go home and read before performing the therapy; something has to be done fast and it had better be right.

There are five main groups of emergencies: disturbances of the cardiac rate and rhythm; attacks of respiratory embarrassment; coronary episodes; vascular episodes; and cerebrovascular accidents. In addition, you should keep in mind that one does not exclude the other; in particular, a coronary attack may be followed by respiratory embarrassment, vascular collapse, or disturbances of the rhythm.

DISTURBANCES OF CARDIAC RATE AND RHYTHM

The disturbances of the cardiac rate and rhythm may be summarized as: supraventricular tachycardia, ventricular tachycardia, atrial flutter and fibrillation, and Stokes-Adams attacks.

In cases of *supraventricular tachycardia*, the most important emergency treatment is to stimulate the vagus nerve. Reflex vagal stimulation can be done by massaging the carotid sinus area, one side at a time, or by compressing the eyeballs. I must say that I always found the last

maneuver more effective. There are many other maneuvers which the patient usually tries himself before going to the doctor, like swallowing a big bolus of bread or sticking his fingers in the throat.

If these maneuvers have been tried and failed, the physician has to try drug therapy, best being *intravenous digitalization*. In these cases, one does not use regular digitalization. It has to be a large dose and a rapidly-acting drug, which is why cedilanid or digoxin should be preferred. Usually 4 cc. of cedilanid i.v. are tried and often the patient experiences the end of the attack within a half-hour. In cases where digitalization is ineffective, one can try to repeat the reflex stimulation half an hour after the intravenous injection. Sometimes, even when the drug fails to act, subsequent stimulation of the vagus is effective.

Another drug which can be tried is *prostigmine bromide*, in doses of 15 to 45 mg., several times a day by mouth. Injections of prostigmine can be given, but they are more delicate to handle.

In a case of *ventricular tachycardia* different drugs should be used. Reflex stimulation is not useful and might even be dangerous. In ventricular tachy-

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cardia, one has to find out if there is any toxic element involved, like excessive digitalization. In such case, the drug should be withdrawn.

Two drugs can be used, quinidine and pronestyl. Pronestyl seems to be slightly more effective than quinidine. The dosage for *quinidine* is 0.2 to 0.6 gm. every three hours, starting with 0.2 and then increasing later on in subsequent stages until the attack is arrested. The dose of *pronestyl* (procaine amide) is about 0.8 gm., again every three to four hours.

The effect of these drugs disappears within 2 to 4 hours; therefore, they should be given at frequent intervals, day and night.

In a case of *atrial flutter*, the conventional therapy is that of trying to transform the episode into one of fibrillation, because, in atrial flutter, the ventricles may start beating so fast as to lead to heart failure, while in fibrillation this does not happen. Transformation of flutter to fibrillation is done by means of a toxic dose of *digitalis*. One can start with an i.v. injection of 4 to 6 cc. of cedilanid, and, at the same time, start oral administration of the same drug, so that, within 24 hours, the patient has received a large amount of *digitalis*. This may cause vomiting, but, in these cases, I would not mind that.

After onset of fibrillation, one can do one of two things: If the patient has any evidence of failure, one should continue the digitalization with a maintenance dose; if the patient has no

failure, the best is to use *quinidine* and to discontinue *digitalis*.

If flutter does not change into fibrillation or sinus rhythm with *digitalis*, one can try *quinidine*. If this is also ineffective, then the only thing to do is to keep the patient at rest. In certain cases, normal rhythm can return spontaneously, without any further therapy.

In the case of *paroxysmal atrial (auricular) fibrillation*, I have found that the most useful therapy is to give an injection of *morphine plus atropine*. If there was a coronary episode, *oxygen* should also be administered.

If the patient is receiving *digitalis*, then you have to consider whether *digitalis* is absolutely necessary, because *digitalis*, by stimulating the vagus, may somewhat favour the auricular fibrillation.

The *Stockes-Adams attacks* are usually caused by a-v block. One drug which seems very useful is i.v. *isuprel*. In a case of slow ventricular rate or cardiac arrest, *isuprel* is given in a dose of 0.02 mg. It is a minimal dose but one which is effective in stimulating the excitability of the ventricles and the conduction of the a-v bundle, and therefore may re-establish a normal beat.

A few patients benefit from an intravenous injection of *aminophyllin*. These are cases with severe coronary heart disease, where impairment of the coronary circulation is responsible for the a-v block.

I would like to mention a very important device, the *electric pacemaker*, which is now becoming more and more

in use and which should be present in every hospital.

The "pacemaker" records automatically the heartbeat of the patient through an electrocardiogram, and does not act as long as the heart of the patient beats. If the heart stops or slows down beyond a certain limit (like 10 or 5 per minute), the electric pacemaker automatically takes over and sends impulses through the chest wall to the heart, and keeps the heart beating at the rate set by the physician.

In a case of *ventricular fibrillation, flutter, or standstill*, therapy is different. In the cases of ventricular fibrillation, this disturbance is revealed by the electrocardiograph, and you can hear a faint buzzing sound through the chest wall indicating that the heart is still contracting. The first thing to do is to inject *procaine* intracardially, then to use an electric defibrillator, which sends an electric shock to the heart and arrests the fibrillatory contractions.

After this, the heart beat should be re-established. This can be done in two ways: One is by means of drugs—namely by injecting either a mixture of *epinephrine* and *procaine*, or *isuprel* in dose of 0.02 to 0.04 mg. directly into the left ventricle.

The other is to use the "electric pacemaker" sending adequate electric impulses through the chest wall to the heart and keeping the heart beating. In other words, with ventricular fibrillation, you have the first phase, in which you stop the fibrillation and arrest the heart; and the second phase, in which

you stimulate the heart and start its beat again.

The electric pacemaker has a double purpose and can be used for defibrillation as well as for stimulation.

ATTACKS OF RESPIRATORY EMBARRASSMENT

The *attacks of respiratory embarrassment* can be listed as follows: *paroxysmal nocturnal dyspnea*, *paroxysmal pulmonary edema*, *bronchial asthma*, *Cheyne-Stokes respiration* and *pulmonary embolism*.

Pulmonary edema differs from *paroxysmal dyspnea* because, in the former, there are a lot of rales in the chest and fluid pours from the capillaries into the alveoli and the bronchi while, in the latter, the patient's lungs and bronchi are dry. In *paroxysmal dyspnea*, there may be dry, wheezing noises, but there is no fluid, and the patient's condition somewhat resembles that of *bronchial asthma*.

In *paroxysmal dyspnea*, an injection of 10 to 15 mg. of *morphine* is usually adequate: the drug can be given subcutaneously because there is no extreme urgency. One should remember that *morphine* is dangerous in *bronchial asthma*; on the other hand, *epinephrine*, which is useful in *bronchial asthma*, is detrimental in *paroxysmal dyspnea* of cardiac origin. This is why, in the few cases where diagnosis is difficult, one can avoid both *morphine* and *epinephrine* and use i.v. *aminophyllin* until the diagnosis becomes clear.

In *pulmonary edema*, there are two main groups of cases: those with high blood pressure and those with normal

or low blood pressure. Patients of the second group should be treated in a different way from those of the first.

In the first group, the one with the high blood pressure, all the classic accepted therapies can be used: venesection, application of tourniquets, morphine, i.v. mercurial diuretics, i.v. digitalis. All these procedures or drugs have one effect: they decrease the venous return to the heart. This is why these procedures, which are good in hypertensive patients with pulmonary edema, may be detrimental in those with low blood pressure or where the blood pressure has a downward course.

The same applies to other, more recently described, drugs and procedures. Among the drugs, *arfonad*, which is a sympatholytic drug, has been used with great success; it causes complete sympathetic paralysis, dilatation of the peripheral vessels, and improvement of pulmonary edema; but again, it would be dangerous in patients with a tendency toward shock. The other is *pressure respiration*. Pressure respiration with the mask and the expiratory valve increases intrathoracic pressure and, by so doing, compresses the venae cavae and decreases venous return. Therefore it is useful in the first group, detrimental in the second.

That is why, whenever a patient has a tendency towards shock, or a blood pressure which is below 100 (whether it is a coronary or a mitral patient) one should be very careful in the selection of drugs or procedures. One might still give a small dose of morphine (5 to 10

mg). One should give oxygen without pressure valve or mask. One should use that procedure which was described by our group four years ago; namely *alcohol vapor inhalation with oxygen*. This is a purely symptomatic method of treatment but may interrupt a vicious circle. It acts in a physico-chemical way on the foam, it reduces the volume of the latter to a small amount of fluid which can be easily expectorated, and permits the oxygen to penetrate to the alveoli and improve respiration.

The *Cheyne-Stokes respiration* requires a symptomatic treatment.

First, i.v. *aminophyllin* can be given. This dilates the vessels of the spinal cord and the medulla and at the same time stimulates the respiratory center. Then venesection can be resorted to if the patient has either high blood pressure or heart failure and high venous pressure. A glucose infusion by the drip method is also sometimes advisable.

Bronchial asthma is not a cardiac emergency. However, one should remember that, when an attack of bronchial asthma occurs in a coronary patient or in a patient with evidence of right ventricular embarrassment, it might lead to frank heart failure. In these cases, like in those with *cor pulmonale*, morphine, is contraindicated.

If the patient needs sedation, this can be administered, but at the same time, the patient should be placed under the action of an *artificial respiration*. When the chest is rhythmically ventilated and oxygen can be given without the bad effect of depressing the respiratory cen-

ter, then one can use any drug and the oxygen itself will be extremely useful. Oxygen or sedatives, without the respirator, would slow down the respiration, increase the effect of the disturbance, and even lead to more serious cardiac and respiratory failure even causing death.

In a case of *pulmonary embolism*, we are still groping in the dark, because the few accepted methods of treatment are not always successful.

As you know, *morphine and atropine* or *demerol*, which also has an atropine-like effect, are useful in these cases. Oxygen is given as a matter of fact and helps. Digitalization may be used in some cases in which there is serious dilatation of the right heart. The problem of *papaverine* has been raised. *Papaverine* is a vasodilator and can be given unless the blood pressure is going down rapidly. If the blood pressure is still high or normal, then *papaverine* may be useful by dilating the branches of the pulmonary vessels and possibly allowing the embolus to move further into a smaller branch.

On the other hand, if the pressure is low, *papaverine* would further decrease it and might cause coronary insufficiency and a myocardial infarct. Therefore, *papaverine* would be contraindicated in those cases. As a matter of fact, if the blood pressure drops too rapidly or too low, *levofed* might be given by the intravenous drip method in order to sustain it, thus allowing for a better supply of blood to the coronary vessels.

CORONARY EPISODES

The *coronary episodes* may be summarized as episodes of *angina pectoris*

(or cardiac pain,) and the frank coronary occlusion causing a myocardial infarct.

In *angina pectoris*, symptomatic therapy is based on the old accepted method of giving a tablet of *nitroglycerin* under the tongue. I would like to mention that too large doses at one time may be detrimental. This applies also to amyl nitrite, which I frankly do not advocate.

We have proven in our laboratory that an ampule of amyl nitrite may be followed by the ECC evidence of serious coronary insufficiency. This is because the severe drop in blood pressure decreases the amount of blood going through the coronaries. Clinical studies have shown that large doses of *nitroglycerin* can have the same detrimental effect.

In the case of a *coronary occlusion*, I can only list bedrest, oxygen, morphine and atropine, and the use of phenobarbital. I would like to remind you that drugs like morphine and phenobarbital should be used not only against severe pain and for a brief time, but for several days and in all cases of occlusion. The reason is, that in these cases, detrimental reflexes contribute to the vascular collapse and favor many other dangerous phenomena, including arrhythmias. By blocking the central nervous system, you can obtain a better level of blood pressure and avoid those reflexes which might be responsible for arrhythmias or paroxysmal tachycardia, and indirectly lead to heart failure.

There are two complications which I have to briefly mention: One is *shock*,

where we have to resort to the accepted methods of therapy. From the various procedures which have been advocated, the only one which seems effective is to start *as early as possible* and give *fluid with levofed intravenously*, and the only precaution I would use is to give it more slowly than in the average patient with shock. The reason is that, if you give it too rapidly, the patient may fall into pulmonary edema or present acute dilatation of the right heart. If the patient has both pulmonary edema and shock, the only thing to do is to give fluid even more slowly, under the supervision of the doctor.

In order to prevent worsening of pulmonary edema, the patient should also receive alcohol vapor with oxygen, starting at the same time as the intravenous levofed. The alcohol will prevent the patient from suffocating in his own fluid, while at the same time one tries to raise the blood pressure to a tolerable level.

VASCULAR ATTACKS

In regard to the *vascular conditions*, they can be summarized as two. *Shock* was already mentioned. In a case of shock, keep the patient warm, reassure them, and give morphine, though with care. Oxygen is useful, but remember that an oxygen tent sometimes cools the patient too much. If the patient is chilled, you can give oxygen by nasal catheter or by mask, and warm him with hot water bags and blankets.

In regard to the *vascular collapse*, you have to remember the various possibilities. One is the vasovagal attack; one

is the vascular collapse of an infection; and others are vascular episodes due to psychogenic impulses. Like, for instance, the sight of something repellent or fearful.

In these cases, horizontal, or even better, head-down position is indicated. If you have a couch, put the patient on the couch with the head down. Another useful maneuver is compression of the abdominal aorta, which is very successful. Just push with all your strength at the level of the umbilicus. If the patient is too fat, raise the legs of the patient at a square angle and let the blood from the lower extremities flow toward the heart. This is also successful. Another possibility is that of slapping as violently as possible your patient. It is a very good way of reawakening your patient. If the patient is in a twilight condition, he will get mad by your slugging and this will cause secretion of epinephrine, which is useful. If the collapse continues you can give atropine and epinephrine. Atropine will block the vagus nerve and prevent slowing of the heart; epinephrine will give vaso-constriction of the periphery and increase blood pressure.

If you don't want to use these drugs, you can give *metrazol* which stimulates both the vasomotor and the respiratory centers; it can be given either subcutaneously or intramuscularly.

CEREBROVASCULAR ACCIDENTS

The *cerebrovascular episodes or accidents* are classically three: hemorrhage, thrombosis, and embolism. And classically there are three kinds of therapy. Serious doubts have been raised as to

the difference between cerebrovascular hemorrhage and cerebrovascular thrombosis. It has been stated that the former leads to passing of red cells through the capillary walls into the area of infarction, so that at postmortem they might find a big clot of blood there and therefore diagnose a hemorrhage. And if there is a hemorrhage, that might even compress the surrounding vessels and lead to effects similar to those of thrombosis. At the present time, and considering the frequent difficulty in diagnosing correctly whether it is a thrombosis or a hemorrhage, it would be better to have a single type of therapy for both.

Embolism is usually well recognized because frequently one can find a cause for it. Usually a bacterial endocarditis or a mitral stenosis with fibrillation, or a myocardial infarct.

If the patient's blood pressure is high (at least above 150) you can proceed to a venesection, with the bloodletting of not more than 300 to 500 cc. If the patient's pressure is normal or lower, such a maneuver should be avoided. Infiltration of first cervical ganglion has been advocated, especially for thrombosis, but the results are controversial. If done at all, it should be done within the first 12 hours.

Lumber puncture is frequently useful by decreasing the increased pressure of

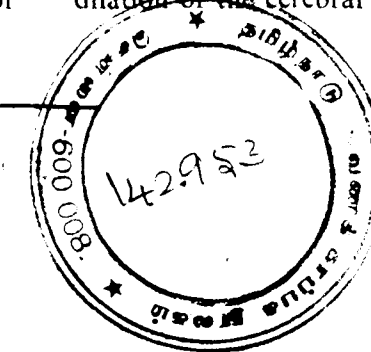
the spinal fluid. Injections of either 100 cc. of 33% hypertonic glucose or 20 cc. of 10% magnesium sulfate can be done. The purpose of these hypertonic solutions is to attract fluid from the brain tissues into the blood stream and thereby decrease edema of the brain.

This edema frequently spreads to a much larger area than that of occlusion and therefore makes more serious the effects of the attack. If the patient has convulsive motion, you can give sedatives, phenobarbital or chloral hydrate. If there are no convulsions, sedatives should be avoided. If the patient has an attack of pulmonary edema, then again the best way is to use alcohol vapor with oxygen.

The use of anticoagulants, especially heparin, has been advocated both in cases of embolism and in cases of thrombosis. In these cases, the use of these drugs is still controversial.

In regard to vasodilators, like papaverine and aminophyllin, these are to be used only in hypertensive patients, and in those cases where you can practically exclude a cerebral hemorrhage; otherwise they might be detrimental.

One procedure which seems useful is 20-30 minutes of oxygen inhalation with 3% carbon dioxide. This leads to vasodilation of the cerebral vessels.



Iatrogenic Heatstroke

By

JOHN CHAPMAN, M.D.

and

WILLIAM B. BEAN, M.D., Iowa City

*From the Department of Medicine and the University Hospitals of the College of Medicine,
State University of Iowa*

Hyperpyrexia or heatstroke has been recognized for many years as a risk of workers exposed to high environmental heat loads, particularly when they fail to use available protective measures. Although heatstroke has been studied in detail along epidemiological¹ as well as physiological lines,² it has not been considered much of a problem in ill patients during a period of sustained heat where there are no provisions for air conditioning. When troops move suddenly into hot, dry deserts; warm moist Jungles; or tropical conditions, particularly after the confined inactivity of a sea voyage, heat exhaustion is the usual form of heat disability. Heat exhaustion commonly is nothing more than unrecognized dehydration. Intake of water promptly corrects it. Hyperpyrexia from heat occurs when the sweat glands are worn out or overwhelmed acutely. Both problems have been studied in the natural environment as well as under experimental conditions of the laboratory.³ In the classic study of Ferris and his colleagues in Cincinnati,² sustained elevation of night temperature was a more important causal factor than the height of temperature during the day. Subse-

quent exhaustion of the heat-regulating mechanism eventuated in the sometimes abrupt, sometimes gradual, cessation of sweating that gave rise to hyperpyrexia. This excessive elevation of body temperature presumably developed very rapidly after sweating stopped, though naturally there are no observations on the time relationship. Congestive heart failure, a traditionally invoked antecedent, was not important. The main prerequisites of heatstroke were excessively high night temperature during a protracted heat spell in which the daytime temperature was also excessively high, a breakdown of the heat-regulating mechanism characterized by cessation of sweating, and subsequent hyperpyrexia. Without prompt cooling, death usually came very quickly. Acute but not chronic alcoholism constituted an added risk.

The observation of several patients at the University Hospitals who had temperatures of 105-106 F (40.5-41.1 C) during a heat spell in 1955 illustrated some of the problems seen in industry or in movement of troops from a cool to a hot climate. In this situation, with the patients under observation, some of the prodromes and some of the unusual

inciting or precipitating causes may come under more detailed analysis and observation, even if only in retrospect. The purpose of this report is to describe observations of a patient who developed hyperpyrexia after the cessation of sweating, aggravated or precipitated by the employment of atropine in preparation for a bronchoscopic examination. No doubt drapes used on such patients in the operating room impeded cooling. Restriction of fluids and the heat produced by struggling during the procedure probably represent added handicaps. Additional cases of heatstroke have occurred under similar circumstances, though in no single case has it been possible to exclude other possible precipitating agents or causes. In other cases, recognized early, patients were relieved by prompt sponging and fanning.

REPORT OF A CASE

A 64-year-old night watchman was admitted to the medical service of the State University of Iowa Hospitals on July 12, 1955. During the preceding three months he had noticed progressive shortness of breath and pain in his legs; both conditions appeared after he walked about three blocks. Both were relieved by rest. He had been taking 0.1 mg. of digitoxin daily and was receiving 2 ml. of meralluride (Mercuryhydrin) weekly from his family physician for congestive heart failure. Various vasodilators had been ineffective in relieving the pain in the legs. In 1947 the patient had received radiation for carcinoma of the right vocal cord. He had been observed periodically here in the otola-

ryngology clinic from 1947 to 1953 with no evidence found of recurrent carcinoma. He also had been evaluated in the medical outpatient clinic, where hypertensive cardiovascular disease with congestive failure was discovered. The patient's wife later informed the examiners that her husband was "one-quarter Cherokee Indian." There were no other significant data except that one son with cirrhosis of the liver had bled from esophageal varices.

Review of systems disclosed that the patient had been in other hospitals four times since November, 1954, because of "pneumonia." During the six weeks prior to his admission here, he had several attacks of unexplained chills and fever. For several weeks he had raised much white sputum every morning without hemoptysis. He habitually smoked one package of cigarettes and drank 10 cans of beer daily. There were no gastrointestinal, genitourinary, or neurological complaints.

Physical examination showed a squat, cooperative, grayhaired man with a very protuberant abdomen. Blood pressure was 140/90 mm. Hg, pulse rate 80, and respirations 24. His voice had been hoarse since the radiation of the larynx. The skin was grayish-brown, and there was acne on the abdomen and back. Findings on examination of the head, eyes, ears, nose and throat were not remarkable. An ill-defined mass 1 cm. in diameter was palpable in the right supraclavicular area. The chest was "barrel-shaped" and somewhat emphysematous. Expiratory wheezes and fine rales were heard over both lungs. The

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heart was slightly enlarged to the left. A grade I apical systolic murmur was heard. A small amount of ascites was present. A firm, elevated erythematous mass half a centimeter in diameter was discovered in the foreskin. The ankles had slight pitting edema.

Specific gravity of the urine was 1.011; neither albumin nor sugar was found, but several hyaline casts were seen microscopically. The hemoglobin level was 10.5 gm. per 100 cc., and the white blood cell count was 10,900 per cubic millimeter, with 3 bands, 82 granulocytes, 1 eosinophil, 7 lymphocytes, and 7 monocytes. Findings of the Kolmer serologic test were reported "positive 1:1," while results of the Venereal Disease Research Laboratory test were "doubtful." Results were "doubtful" when both tests were repeated. The cerebrospinal fluid was negative. Because of the apparent increased pigmentation, the urine was examined for presence of arsenic, mercury, and lead, but these were not found. The result of the test for coproporphyrin was 2+ and that for uroporphyrin was negative. Frei and tuberculin skin tests were negative. Electrocardiographic findings were normal. Total vital capacity was 1.8 liters. No L.E. cells were found. Blood cultures failed to grow *Brucella* or other organisms. Findings of tests indicating status of the liver were sulfobromophthalein, 9% retention; albumin, 4.3 mg.; and globulin, 3.4 mg. per 100 cc.; thy-mol turbidity, 4.9 units per 100 cc.; alkaline phosphatase, 3.4 Bodansky units per 100 cc.; and total cholesterol, 207 mg., and esters, 170 mg. per 100 cc.

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Chest x-ray demonstrated left ventricular hypertrophy and an unsuspected density 4 cm. in diameter in the right lower lobe. This was thought to represent a bronchogenic carcinoma. X-ray films of sinuses revealed pansinusitis.

The patient received 800 mg. of sodium in his diet and 0.15 mg. of digitoxin daily, and on July 14 he was given 2 ml. of meralluride intramuscularly. By July 27 he had lost 13 lb. of edematous fluid. During this period he had several episodes of chills and mild fever for which no cause was found. The palpable node above the right clavicle was removed on July 27. Taging of fluids was restricted from midnight of July 26 until biopsy was completed late the following morning. The operation was well tolerated. Histological examination of the specimen revealed no carcinoma. On the day following the biopsy, the patient was examined by bronchoscopy. The administration of orally given fluids was again restricted after midnight. As premedication he received 50 mg. of pentobarbital sodium at 7:30 a. m. and 50 mg. of meperidine (Demerol) hydrochloride with 0.2 mg. of atropine at 8:30 a. m. At 8 a. m. 400 cc. of 5% glucose in water was given intravenously. Bronchoscopy was difficult, but visualization of the tracheobronchial tree was adequate. The only abnormality seen was evidence of chronic bronchitis. Cells obtained by bronchial washings were reported as "suspicious—several cells exhibiting aberrant activity." A culture grew beta-hemolytic streptococci and *Diplococcus pneumoniae*.

After returning to the ward at 1 p.m.

MEDISCOPE

the patient ate part of his lunch. An hour later he was unusually restless. When examined by the ward resident he was restless, confused, and tachypneic, with an inspiratory stridor. Blood pressure was 160/80 mm. Hg, pulse rate 100, and rectal temperature 101.8 F (38.8 C). The skin was hot and dry. An intravenous infusion of 5% glucose in water was started, and oxygen was given by nasal catheter. During the next hour, he lapsed into coma. The rectal temperature when rechecked was over 109 F (42.8 C). Because of the hyperpyrexia he was sponged with alcohol and ice while a tub of ice was prepared. Rectal temperature after several minutes of vigorous sponging was 108.2 F (42.3 C) with a different thermometer. The patient was put in a tub of ice water and massaged until the temperature dropped to 100 F (37.7 C), at which time the blood pressure was 90/40 mm. Hg. After he was removed from the tub, the temperature continued to drop. It reached a low of 95.8 F (35.4 C). Lumbar puncture later yielded clear fluid with the following levels: protein, 54 mg. per 100 cc.; glucose, 115 mg. per 100 cc. and chloride, 120.5 mEq. per liter. Serum electrolyte values were sodium, 138 mEq.; potassium, 6.2 mEq.; chloride 110.4 mEq.; and carbon dioxide-combining power, 18.9 mEq. per liter.

For the next few hours the patient had all the clinical signs of decerebrate rigidity. At 8:00 p. m. he began to react to painful stimuli. He vomited 200 cc. of coffee ground material. Wangenstein suction produced dark-brown liquid during the following two hours.

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His hemoglobin level was now 10.5 gm. per 100 cc. and the white blood cell count was 10,900 per cubic millimeter. Granular casts and albumin were found in the urine. Whole blood (500 cc.) was given intravenously. At 10:00 p.m. the patient began to respond to questions and by the following day was fully oriented. Wangenstein suction was stopped, and he took food by mouth. On July 29, the day following the hyperpyrexia, value for blood urea nitrogen was 60 mg. per 100 cc.; creatinine, 4 mg. per 100 cc.; sodium, 131 mEq.; potassium, 3.6 mEq.; chloride, 102.6 mEq.; and carbon dioxide-combining power, 20.7 mEq. per liter.

For two days the temperature was liable and occasional alcohol sponges were necessary. Within a week he seemed restored completely to his previous physical condition and had a consistently normal temperature. He complained only of frequent "fantastic" dreams. On Aug. 9, the level of blood urea nitrogen was 15 mg. and that of creatinine 2.1 mg. per 100 cc. Pulmonary function studies done Aug. 12 suggested that the patient might tolerate a lobectomy but probably not a pneumonectomy. A right lower lobectomy was performed on Aug. 16. The mass removed was an epidermoid bronchogenic carcinoma. During operation, a branch of the pulmonary artery was torn, and transfusion of 2,500 cc. of blood was required. The immediate postoperative condition was good.

During the next four days respiratory difficulty, temperatures up to 104 F

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(40 C), and mental confusion developed. Penicillin, streptomycin, and intravenously given fluids were administered. On Aug. 19 there was an episode of acute gastric dilatation. A Levin tube was introduced. Suction thereafter produced dark-red fluid. Serum electrolytes were normal on Aug 18. On Aug. 20 a medical consultant found no evidence of congestive heart failure. Blood pressure was 130/70 mm. Hg, pulse rate 100, and temperature 100.8 F (38.2 C). Respirations were shallow and labored. Subcutaneous emphysema was present over the upper chest and there were twitching movements of the face and arm muscles. The patient was moved to an air-conditioned room, where he improved temporarily. Serum electrolyte values reported later the same day were sodium, 128 mEq.; potassium, 5.1 mEq.; chloride, 76 mEq.; and carbon dioxide-combining power, 33.1 mEq. per liter. Chest x-ray film showed "almost complete expansion of the remaining right lung." There was no evidence of pneumonia. The surgical resident calculated that there were sodium and chloride deficits equivalent to 4 liters of isotonic sodium chloride solution.

At 9:50 p. m. Aug 20. respirations ceased and the patient died. Postmortem examination findings were (1) mural thrombus of main artery and medial lobe of right lung, (2) congestion of right lung and slight bilateral pulmonary edema, (3) slight calcification of aortic valve, (4) myocardial hypertrophy, (5) chronic congestion of the liver, (6) splenomegaly, (7) mild cerebral edema, (8) moderately severe coronary

atherosclerosis, (9) diffuse cortical hyperplasia of both adrenal glands, and (10) small areas of gastric submucosal hemorrhage. A culture of blood from the heart at autopsy yielded no growth.

COMMENT

The genesis of heatstroke is not understood with the precision that would tell us why, toward the end of a heat wave, it seizes on this patient or that rather than every body in the hospital or nobody. The occurrence of heatstroke in a hospital suggests a need for artificial cooling, at least in certain portions of the hospital; but, since this will not soon become widely available, it behooves us to search out what may be disposing factors and antecedents of heatstroke. A number of personal observations reveal that heatstroke has a more than chance tendency to affect (1) those who have undergone surgical operations. (2) those who have undergone procedures such as endoscopic examinations, and (3) those who may have had to go without food or drink over substantial periods of time because of intensive studies during hospitalization. It is very difficult to document such instances. The evidence, circumstantial at best, is not always convincing; such causes of heatstroke remain in the realm of probability.

In our patient we think it likely that the use of atropine favored the cessation of sweating. We are convinced that doing on successive days two procedures that required the patient's going without food or drink for many hours was a contributing cause. Such procedures

are often done on patients who are snugly wrapped in the gown and ceremonial drapes of the operating table, which form an effective windscreen and reduce such cooling as convection and evaporation might bring. Finally, the tendency to shield such people from view with curtains before and after a procedure may present an added hazard. We suggest close observation of patients subjected, during a very warm spell, to such procedures when they are living in quarters that do not provide effective cooling at night or are not air conditioned. We have no evidence that procedures done in an air-conditioned operating room render persons more susceptible to heatstroke when they are removed into a hot environment. To establish these ideas on firmer ground, additional observations must be made. The mere fact that heatstroke occurs

suggests that we are not taking adequate precautions, particularly under the circumstances set forth herein. Old age, congestive heart failure, and alcoholism, though, discounted,² may have been added factors here.

SUMMARY AND CONCLUSIONS

A patient developed heatstroke soon after bronchoscopic examination. It is our opinion that the various preparations for this procedure may have precipitated his trouble. Certainly there were potentially harmful influences. We urge that further observations dealing with this problem be made, so that proper prophylaxis may be instituted if such precursors should prove to be significant in the occurrence of heatstroke in patients in general hospitals.

Newton Road (Dr. Bean).

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GLEANINGS FROM THE MEDICAL PRESS

Asymptomatic Gastric Retention in Diabetics (Gastroparesis Diabeticorum). P. Kassander. *Ann. Int. Med.* 48: 797-812 (April) 1958 (Lancaster, Pa) via JAMA Vol. 167 No. 13: 1673.

Of 27 routinely admitted patients with diabetes mellitus, 9 had mild moderate diabetes and 18 had moderately severe diabetes. Of the 18, 6 men, between the ages of 35 & 47 years, had a patulous pylorus revealed on roentgenologic examination of the stomach. The roentgenograms also showed that the gastric contents could be expressed by hand, and even some peristalsis induced and observed, without changing the retention pattern. At 3 hours there was still 50 to 100% retention of the barium meal in the stomach, with the head of the meal in the ileum. At 6 hours there was 25 to 50% retention of the barium in the stomach, with the head of the meal in the ascending colon. Two of the six patients still had gastric retention of 15 to 30% after 24 hours. No abnormalities of the small intestine were observed. These findings seemed to indicate conclusively that the patients had a disturbance of propulsion—specifically, of expulsion—of stomach contents. The disturbance of motor function was attributed to the vagus nerve, and the roentgenograms were similar to those of gastric hypotonia after vagotomy. It appears then that a patient with diabetes at some point in the progression of his disease may "vagotomize" himself so far as the functional motor effectiveness of his stomach is concerned. The retention of stomach contents in a patient with diabetes mellitus may cause confusion so far as food intake and utilization are concerned. Gastric retention in patients with diabetes mellitus was not known in the preinsulin era. This neuropathy resulting from the abnormal metabolism unregulated patients diabetes appears to occur in whose diabetes was been known for from 3 to 12 years and to coincide with their use of long-acting insulin preparations.

The probability that the metal zinc may be a causative factor presents itself. In the six patients the onset of gastric retention appeared to be insidious, masked, and without any definite symptoms. It occurs in diabetic patients with anorexia and diarrhea with manifest neuropathy, as well as in those who have no symptoms other than their uncontrolled diabetes. The observed gastric hypotonia may adversely influence the satisfactory treatment of diabetes. The author's attempts at treatment were uniformly unsuccessful. Continuous or fractional gastric suction, including lavage, well as the 6 small-meal diet, in combination with administration of crystalline insulin alone, did more to improve diabetic control and alleviate the retention than did the use of drugs, including bethanechol (Urecholine) chloride or methacholine (Mechoyl) bromide. The effectiveness of vitamin supplements, including vitamin B12 remained unclear in connection with the retention. The search for the syndrome of gastroparesis diabeticorum, which is more often overlooked than diagnosed, should be made as such a clinical routine as the search for other manifestations of diabetes mellitus.

CORRELATIONSHIP BETWEEN ASTHMA AND HORMONO-GONADIC SECRETIONS. by J. Turiaf, L. Zizine and Y. Jeanjean. *La Presse Medicale*, Vol. 66, No. 31, April 19, 1958, via, *La Medecine En France*.

The present work is based on the results of a statistical and analytical enquiry on the possible relationship between asthma and disturbances in hormono-gonadic secretions.

1. Of 565 asthmatic female adults, 462 were in the period of genital activity between puberty and menopause with 198 of them becoming pregnant whilst the asthma was beginning or developing; 103 had their asthma starting in the course of or after menopause.

It appears from the results of this enquiry that:

(1) Disturbances in menstruation (49.3%) and premenstrual aggravation of asthma (46%) are more and more encountered in the asthmatic females.

(2) Premenstrual increase of the asthma is shown especially when the menstruation

is disturbed (79%), whereas there is no influence of the asthma on the menstruation when the latter is apparently normal (70%).

(3) In the course of pregnancy, the asthma remains unchanged in 21.2% of cases, disappears in 40.4% of cases begins (19.2%) or becomes aggravated (19.2%) in equivalent proportions for 38.4% of cases.

II. From an etiopathogenetic analysis of those various symptoms which accompany the hormonosecretory disorders of the gonads and are consistent with the evolutive fluctuations of the asthma the following conclusions may be drawn:

(1) The genesis and filiation of those phenomena which result in the revelation and aggravation of the asthma do proceed from various and complex facts. The asthmogenic result is neither necessarily, nor exclusively, the consequence of the sole disturbances in hormono-gonadic secretions:

(2) The pathogenesis may be explained by two concepts which do not oppose or exclude each other.

(a) The first concept supposes that the asthma and disturbances in genital function are the consequences, simultaneous but independent from each other, of a basic neurohormonal derangement:

(b) The other concept holds that the hormono-gonadic disorders constitute an etiologic factor of the asthma. This would be the result of three mechanisms:

(1) Auto-allergy to genital hormones:

(2) Humoro-enzymatic changes with asthmogenic potency, as secondary to hormono-gonadic accidents:

(3) Reactional perturbations (with asthmogenic action) of the major vegetative centres, as provoked by disturbances in the genital function.

Whichever the concept adopted, the indubitable fact is that the "terrain of predisposition" or "asthmogenic aptitude", and other varying etiologic factors (diverse and multivalent endocrine disorders, espe-

cially extra-hormonal allergy) are joined in most cases in order to reinforce the asthmogenic influence of the hormono-gonadic disturbances.

ADRENALECTOMY IN TREATMENT OF ADVANCED CANCER. by M. Dargent, M. Mayer and P. Blondet. *Via La Medecine En France*.

The authors report on 44 patients, 39 women and 5 men, with advanced cancer, who underwent adrenalectomy. Thirty-eight of the 44 patients had cancer of the breast, 4 had cancer of the prostate, 1 had cancer of the testis, and 1 had diffuse cancer of the uterine cervix. Five patients had unilateral adrenalectomies and 39 had bilateral adrenalectomies. Thirty-eight of the 39 bilateral adrenalectomies were performed in 2 stages, and 37 were performed first on the right side. Right sided adrenalectomy was combined with castration in 15 of the 39 patients with bilateral adrenalectomy. Thirty-one of the 44 patients were followed up for more than 6 months to 2½ years post-operatively.

There were 3 post-operative deaths resulting within a few hours to 4 days: they were from acute adrenal insufficiency in 1 patient, from respiratory paralysis in 1 patient with multiple and particularly cerebral metastases of carcinoma of the prostate, and from asphyxia in 1 patient with cancer of the breast associated with diffuse carcinoma of the pleura, asthma, and cardiac failure. Good subjective results consisting of relief of pain recovery of sleep and euphoria were obtained in 16 of the 31 patients, and excellent results were obtained in 6 in whom these improvements were maintained for at least 6 months. The remaining 6 patients did not obtain any subjective improvement. Objective results were much less satisfactory: 12 of the 31 patients did not obtain any objective improvement, 10 obtained good results in as much as the spread of the cancerous process

in the soft tissues of the osteolysis from bone metastasis receded from 2 to 6 months, and 6 obtained excellent results with disappearance of visceral, pulmonary, bone and lymph node lesions for at least 6 months. An increased amount of follicle-stimulating hormone was determined in these 6 patients, 1 of whom had cancer of the prostate and 5 had cancer of the breast. The anatomo-pathological study of the removed adrenal glands revealed metastases in 13 of the 44 patients; all 13 patients had cancer of the breast.

These data show that excellent subjective and objective results, particularly concerning the bone lesions or the soft tissue lesions, may be expected in 1 out of 5 or 6 patients. An increase in the amount of follicle stimulating hormone after the adrenalectomy may generally be considered as a favourable prognostic sign. Adrenalectomy is indicated in patients with advanced cancer of the breast and the prostate, and particularly in patients of the first group in whom ovariectomy should be performed as a first-stage procedure; bilateral adrenalectomy in 1 stage should be taken into consideration after ovariectomy if the latter provides definite relief of pain and of acute peritumoral phenomena in the soft tissues, suggesting an estrogenic dependence of the lesions. Cardio-renal insufficiency and severe respiratory insufficiency are formal contraindications to adrenalectomy. Diffuse bonemetastases, pleuro-pulmonary metastases, without considerable respiratory insufficiency, and choroidal metastases are excellent indications to adrenalectomy.

The major inconvenience associated with bilateral adrenalectomy is that the patients must be subjected permanently to steroid substitution therapy. In an attempt to make this therapy dispensable, the left adrenal was implanted into the spleen after ovariectomy, and right-sided adrenalectomy was performed on 2 women with

advanced cancer of the breast; these patients were followed post-operatively for more than 3 months. Early results seemed to be highly encouraging.

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CORTISONE AND SYPHILIS. RESULTS OF CORTICOTHERAPY PRECEDING PENICILLIN TREATMENT IN 120 CASES OF SYPHILIS. by P. de Graciansky and C. Grupper. *Rev. Franc. Et. Clin. Biol.*, Vol. 2, 579-594. June, 1957. *Via La Medecine En France.*

The authors present a further report of their experiences at the Hospital Saint-Louis, Paris, with preliminary cortisone followed by penicillin in the treatment over a 5-year period of 120 patients with syphilis at various stages. Various schedules and dosages of cortisone were employed, including 100 mg. of cortisone by mouth or intramuscular injection for periods ranging from one to 5 days or longer. Hydrocortisone was also used, and in 2 cases an intravenous infusion of 25mg. of ACTH (corticotrophin) in glucos-saline was given. Local treatment with cortisone was employed in cases of interstitial keratitis and hydrocortisone was instilled into the joints in cases of arthropathy associated with tabes dorsalis. During the last year of the study 30 cases were treated with 30 mg. daily of delta-1-dehydrocortisone ("Decortisyl") for 6 days, a single injection of long-acting penicillin being given on the 4th and 5th day. Throughout this investigation the authors have consistently given either a single injection or a single course of injections of various types of long-acting penicillin. During the last 2 years of the study a single injection of 2,400,000 units of a long-acting preparation was the sole penicillin therapy administered. All the patients were admitted to hospital during the treatment period and the usual examinations and tests carried out.

One of the author's many interesting conclusions is that cortisone prevents or attenuates the Herxheimer reaction either in its clinical form or as a febrile response in all stages of syphilitic infection. It modifies the clinical manifestations of all stages of the disease, this modification being usually towards amelioration and healing of the lesions, but complete healing was not observed with cortisone alone. The findings in respect of primary lesions differed from those of Turner and Hollander (*Bull. Johns Hopl. Hosp.*, 1950; 87, 505) who studied the effect of cortisone on artificially induced syphilis in rabbits. Favourable results were obtained in the treatment of a small number of cases of neuro-syphilis with lightning pains which had proved resistant to other forms of therapy. Further, signs of activity of the syphilitic infection were modified by cortisone therapy, treponemas often disappearing from primary and secondary lesions, and the titre of reagin in the serum in cases of primary and secondary syphilis was reduced or the usual rapid increase in titre in these cases was halted. In cases of tertiary syphilis with clinical evidence of activity there was also some fall in the reagin titre, but in cases of latent syphilis with a low titre no fall was observed after cortisone therapy. In the few cases in which the treponemal immobilization test was performed a fall in the titre of the immobilizing antibody was observed following cortisone. Changes in the cerebrospinal fluid were reversed, the raised cell and protein contents first returning to normal, followed later by the serological and colloidal gold reactions.

Cortisone did not appear to modify the sensitivity of *Treponema pallidum* to penicillin, and it was of particular value in hypersensitive subjects and those with a history of previous penicillin sensitivity. It was also found useful in the treatment of pregnant women and in patients with syphilis of the cardiovascular and central nervous systems.

Treatment of Hypertension in Out-Patients: The Initial Assessment, and the Effect of Reserpine R. Fife J. P. J. Paton and W. G. Whyte. *Scottish M. J.* 3: 165-172 (April) 1958 (Glasgow) via *JAMA* Vol 167, No. 15 August 58, 1891.

The purpose of this investigation was to find out where a blood pressure of normal or near-normal levels could be maintained by oral drug therapy in a group of patients with fairly severe hypertension, who were fit to attend as out-patients and who, if possible, continued their usual occupations. After preliminary assessment, which included at least a period of 4 weeks with purely placebo medication a standard regimen of treatment was followed with reserpine alone for a minimum of six weeks. Thereafter, if necessary, pentolinium was added, and if the response to it was unsatisfactory, it was replaced by mecamylamine. The reserpine was continued concurrently. Studies were made on 71 patients, and this paper reports the results after six weeks of reserpine therapy. A clinically acceptable fall in diastolic pressure occurred in about one-third of the patients, and the systolic pressure responded similarly. Normal levels of pressure were rarely produced by reserpine alone in the severe cases, although commonly in milder cases. The apparently superior results in milder cases were not due to a better percentage fall in pressure but to lower initial pressures. Reserpine is a useful antihypertensive agent, even in severe hypertension. After the preliminary placebo therapy, reserpine was given in a dosage of 0.5 mg. 3 times a day. The authors believe that the dose should, as a rule, be halved after a period of 4 to 6 weeks, even in the absence of side-effects, and this reduced dosage may well turn out to be still too high for prolonged use in an appreciable proportion of patients. The side effects from reserpine were the same as those recorded by other authors. Fluid retention, causing increase in weight and edema, was observed in many of the patients.

Notes & News

Three U. S. Geneticists win 1958 Nobel Prize for Medicine

STOCKHOLM, SWEDEN—The Nobel Prize for Medicine and Physiology will be presented to three United States scientists in December for their work on problems of heredity. The geneticists are Dr. Joshua Lederberg of the University of Wisconsin, Dr. E.L. Tatum of New York's Rockefeller Institute and Dr. George Wells Beadle of the California Institute of Technology.

Dr. Lederberg will receive one-half of the \$41,420 prize money "for his discoveries concerning genetic recombination and the organization of the genetic material in bacteria".

The other half of the prize goes to Drs. Beadle and Tatum "for their discovery that genes act by regulating specific chemical processes".

Dr. Lederberg, 33, graduated from Columbia University when he was 19. He received his doctorate from Yale University



Dr. Joshua Lederberg, Co-winner of the 1958 Nobel Prize for Medicine & Physiology.



Dr. George Wells Beadle, Co-winner of the 1958 Nobel Prize for Medicine & Physiology.

in 1948 and went the same year to Wisconsin. Last year he organised a medical genetics department at the University. Next February he will leave to head a similar department at Stanford University in California.

Dr. Beadle, 55, was appointed head of the division of biology at California Institute of Technology in 1946. At present he is visiting Oxford University in England to lecture on biochemical genetics.

Dr. Tatum, 49, has been a member and professor of the Rockefeller Institute, a scientific research center and graduate university, since 1957. A native of Boulder, Colorado, he received his Ph. D. degree in biochemistry from the University of Wisconsin in 1934. He had been head of the biochemistry department at Stanford University before joining the Rockefeller Institute. (58-19648 thru 19650)

SEMINAR ON MALARIA AND FILARIA

A three-day Seminar on Malaria and Filariasis was inaugurated in New Delhi on November 21 by Lt. Col. Jaswant Singh,

Director General of Health Services. In his inaugural speech he said that Malaria Control Programme, in which considerable effort had been put in, had developed in the last few years into the gigantic programme of malaria eradication.

Col. Jaswant Singh added that the eradication programme had become a reality through discussions held in the meetings of Indian Council of Medical Research culminating in the World Health Organization's participation in the programme. Other agencies, like U.S. Technical Co-operation Mission had contributed a major share in its development. The experiences of other countries in switching over to a programme of eradication from one of control had been extremely valuable to India. The necessity for proper co-ordination and training had led Government to establish six regional centres for malaria eradication. The centres would be located at Delhi, Baroda, Hyderabad, Coonor, Cuttack and Shillong, he said.

Dr. C. Mani, Regional Director, W.H.O., South-East Asia office, said that the Indian programme was the largest in the public health sphere in the world, and this had brought to it a special importance. Its results and repercussions would have the greatest effect on other parts of the world. The W.H.O. was supporting the programme on a world-wide basis and a stage was reached three years ago when scientific knowledge had advanced to such a degree that an effort could be made in this respect on a greater scale.

Dr. Charles Alvarado, Director of the Malaria Eradication Division, W.H.O. Geneva, said that the biggest health programme that any country launched covered only 85 million people. In India the programme, which was designed to cover 390 million, was nearly four times compared to any other in the world. Sounding a note of caution, he said that we should not be led away by spectacular results in the beginning and that we should keep a close check on the progress achieved.



Dr. E. L. Tatum, Co-winner of the 1958 Nobel Prize for Medicine & Physiology.

Dr. B. A. Rao, Director, National Malaria Eradication Programme, Ministry of Health said that the additional 50 per cent of the increased cost in transforming this programme would be met by the Union Government.

Regarding spraying equipment, Dr. Rao said that though India was dependent on imports, they were self-sufficient at the moment. Under the eradication programme, India would need an additional 11,000 compression sprays and 20,000 stirrup pumps.

AID TO MEDICAL COLLEGES

The Union Ministry of Health has decided to assist the state Govts in the establishment of fulltime teaching units in non-clinical and clinical departments of medical colleges under their control, it was announced on November 26. The Union Government will pay to the State Government and statutory Universities maintaining medical colleges 100 per cent of the extra recurring cost in implementing the schemes which

will entail revision of salaries to attract talent for post-graduate medical education and research. The State Governments have been asked to send their proposals so that they may get going during the next financial year. The assistance for the present will be limited to the remaining period of the Second Five-year Plan.

This decision has been taken following the recommendation of the Medical Education Conference held in New Delhi early this year. The conference was of the view that one of the reasons for the shortage of teachers especially in non-clinical subjects was the low scale of salaries, and urged that this should be such as would attract suitable persons for a teaching and research career.

The Conference suggested that professors should be paid Rs. 1,000-1,400 with a non-practising allowance of Rs. 250 p.m., additional or associate professors Rs. 800-1,250 with a non-practising allowance of not less than Rs. 250 p.m., readers/assistant professors Rs. 500-30-800 plus a non-practising allowance of Rs. 150 p.m. and junior teachers Rs. 250-600 plus a non-practising allowance of Rs. 150 p.m.

To prevent teachers from migrating from one college to another, the Conference thought that the scales suggested by it might be adopted uniformly in all the States.

The Ministry of Health has accepted the suggestions made by the Conference regarding the pay scales. So far most of the medical colleges in the country were staffed by teachers who were permitted private practice. This condition, it was felt, was an important reason for the low standard of teaching and neglect of medical research. As a remedy, the Medical Council of India had recommended that every department of a medical college should have full-time non-practising unit consisting of a professor and other teachers.

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

A permanent 250-bed hospital has been sanctioned for the All India Institute of Medical Sciences in New Delhi, said Shri D. P. Karmarkar, Minister of Health, in a written reply to a question in the Lok Sabha on November 18.

The Minister added that the plans and estimates had not yet been finalized.

Pending the establishment of this hospital, the setting up of a temporary 100-bed hospital in the Nurses Home building in the campus of the Institute was sanctioned in June, 1958.

This hospital was expected to start functioning by the middle of December, 1958.

Necessary additions and alterations to the Nurses' Home building had been completed. The lower floors of the building would be used as wards and the upper two floors would be utilized for the accommodation of nurses.

The re-cruitment of all categories of staff, doctors, nurses and ancillary personnel was nearing completion, and a number of them had already reported for duty. The entire staff required for the hospital was expected to be in position by the first week of December, 1958.

Of the total requirement of equipment worth Rs. 5,00,000 forty per cent had already been received and the balance was expected to be received by the first week of December, 1958.

TRAINING OF HEALTH VISITORS

In a written reply to a question in the Lok Sabha on November 27, Shri D.P. Karmarkar, Minister of Health, said that the following States had submitted schemes for opening schools for training health visitors: Bombay; Bihar; Jammu and Kashmir; Kerala; Mysore; Madhya Pradesh; Uttar Pradesh; Madras; the Punjab and West Bengal.

The schemes submitted by the Governments of Bombay, Bihar, Jammu & Kash-

mir, Kerala, Mysore Madhya Pradesh and Uttar Pradesh had been approved. Those submitted by the Governments of Madras, the Punjab and West Bengal were under consideration.

Details of the schemes state-wise with location of the school and the number of students to be admitted annually were: Bombay—Rajkot—25; Bihar—Ranchi—30; Jammu & Kashmir—Srinagar—15; Kerala—Trivandrum—37 in the 1st batch and 20 in subsequent batches; Madhya Pradesh—Indore—60; Uttar Pradesh—(i) Allahabad and (ii) Bareilly—60—60; Madras—Madurai—30; Punjab—Patiala—30 and West Bengal—Calcutta—30. The duration of the course was 2½ years. The syllabus would be approved by the Indian Nursing Council. The students during the course of training would be paid a stipend of Rs. 50 per month. Central assistance would be provided on the approved pattern.

TRAINING IN PREVENTIVE & SOCIAL MEDICINES

The Government of India have accorded sanction to the All-India Institute of Hygiene and Public Health, Calcutta, for the institution of a post-graduate course of training for teachers of preventive and social medicine, said Shri D. P. Karmarkar, in a written reply to a question in the Lok Sabha on November 18. The course was scheduled to start during the ensuing academic session beginning from June, 1959.

RESTRICTION ON USE OF PENICILLIN

Replying to a question in the Lok Sabha on November 18, Shri D.P. Karmarkar Minister of Health said, that steps have been taken to amend the Drugs Rules so as to lay down that Penicillin shall be sold only against a prescription from a registered medical practitioner. Steps have also been taken to check the unrestricted use of Penicillin.

JANUARY '59

S.-E. ASIA CONFERENCE ON INDUSTRIAL HEALTH

A conference of Industrial and Occupational Health was held in Calcutta on November 24 under the joint auspices of the I.L.O. and W.H.O. Shri Gulzari Lal Nanda, Union Minister for Labour and Employment inaugurated the Conference.

In the course of his speech, Shri Nanda said that in Asia under the conditions prevailing at present, there was the risk that the rising tempo of industrial development might quickly out-grow the organization facilities and other measures available in the sphere of industrial health and safety. The emerging problems had to be tackled intensively if the people there were to get maximum collaboration from the workers and the maximum results from the process of industrialization.

India, he said, has had cordial and intimate relation with both I.L.O. and the W.H.O. since their inception. It was always to the advantage of every country in the South East Asia region to work on the basis of regional co-ordination in dealing with problems like these facing the conference, he added.

In India, the Minister said, enactments relating to work in factories, mines and docks and the detailed rules framed thereunder were in themselves of adequately high standard and generally modelled on internationally accepted regulations. Measures relating to industrial hygiene, health and safety were all provided for in adequate detail. The law relating to sickness and accident insurance, through a statutory corporation, had been a pioneering venture in South East Asia. The problem in India was mainly one of implementation of whatever laws there already were. The Minister disclosed that due to inadequate inspectorate staff and other similar reasons, implementation had not been satisfactory, and that limitations were not always in regard to finances alone.

AID TO MEDICAL COLLEGES

Replying to a question in the Lok Sabha on December 12, Shri D.P. Karmarkar said that the provision of Rs. 6.5 crores made in the Second Plan for the establishment of new Medical Colleges and for the extension of the existing ones has already been allocated.

Financial assistance, he added, was sanctioned according to the following pattern:

Establishment of new Medical Colleges

Non-recurring Rs. 80 lakhs for 100 admissions, i.e., Rs. 80,000 per admission. Central assistance would not exceed 75% of this ceiling.

Recurring Rs. 8000 per student. Central assistance would not exceed 50% of this amount.

Expansion of existing medical colleges.

Non-recurring Rs. 60,000 per student, Central assistance should not exceed 75% of this amount.

Recurring Rs. 8,000 per student, Central assistance should not exceed 50% of this amount.

The Government of India would not give any financial aid in respect of admissions exceeding 100 in any medical college.

It had been decided to give financial assistance for the establishment of the Medical College, Kurnool, and the Medical College, Bikaner on an *ad hoc* basis as follows:

Medical College, Kurnool:

Rs. 15 lakhs for the purchase of equipment; and a sum not exceeding Rs. 7 lakhs during the plan period from October, 1957 to March, 1961 for meeting 50% of the recurring expenditure on the College.

Medical College, Bikaner:

The Government of India agreed to pay a grant-in-aid of Rs. 4.8 lakhs spread over a period of three years on the basis of 50% of Rs. 8,000/- per student for 40 admissions per annum.

The entire expenditure on the Medical College, Pondicherry, was being borne by the Central Government.

The following grants had been sanctioned to the various State Governments during 1956-57, 1957-58 and 1958-59 in respect of the expansion of medical colleges and establishment of new ones.

The Minister further said that during 1958-59, according to the new procedure, three-fourths of the total amount of Central assistance would be released to the State Governments by the Ministry of Finance in nine equal monthly instalments beginning with May, 1958, as ways and means advances and final sanction for the grants would be issued by the Ministry of Health only in the later half of February, 1959.

A sum of Rs. 140.5 lakhs had been provisionally allocated as Central assistance to State Governments for the expansion of Medical colleges and establishment of new ones during 1958-59.

Payment would be made to the State Governments in accordance with the formula mentioned above during 1959-60 and 1960-61 also, he added.

NEW INSECTICIDE DEVELOPED

Regional Research Laboratory, Hyderabad, has developed a process for making insecticide by chlorinating turpentine, which compares favourably with D.D.T. as regards pesticidal action, said Dr. M.M. Das, Deputy Minister of Scientific Research and Cultural Affairs, in reply to a question in the Rajya Sabha on December 1.

The cost of production of this insecticide, the Minister added, was estimated to be about Re. 1.00 per lb. The present sale price for technical D.D.T. was Rs. 2.25. nP. per lb. The Minister said that arrangements for commercial development of the material were in hand.

In reply to another question he said that the raw material needed for the production of this insecticide was available in India.

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