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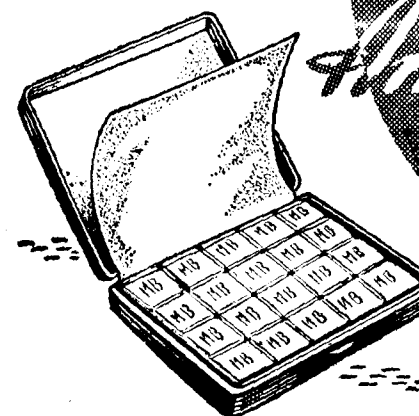
MEDICO-SURGICAL SUGGESTIONS

Vol. XV.

SEPTEMBER 1946.

No. 9.

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MEDICO-SURGICAL SUGGESTIONS

(Established 1932.)

VOL. XV

SEPTEMBER 1946

NO. 9

INVESTIGATION OF THE SO-CALLED PRIMARY ABDOMINAL TUBERCULOSIS

A PRELIMINARY REPORT

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*Reader in Medicine, K. G. Medical College, and Physician,
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For many years, one has had the feeling that the diagnosis of primary abdominal tuberculosis is being made much too frequently and without a critical appraisal of the various other possibilities, possibly because on emphatic and certain rebuttal of such a diagnosis is almost impossible by the various diagnostic aids at our disposal; the contract from pulmonary tuberculosis, where careful and repeated skiagraphy and sputum examination can make the diagnosis certain, is marked. During the last seven years I have had occasion to come in contact with leading physicians all over the country and I have been surprised to find almost all of them holding the same view, i.e., primary abdominal tuberculosis is very common.

SYMPTOMS

The symptom-complex on which this diagnosis is based is somewhat as follows:—

Discomfort or dull pain in the abdomen exacerbated at times after food, sense of fullness in abdomen, irregular bowels or so-called alternate diarrhoea and constipation, anorexia, anæmia, loss of weight, occasionally slight temperature, and not infrequently chronic glossitis. On examination the only positive signs are anæmia and vague tenderness all over the abdomen, specially around the umbilicus or the right iliac fossa. No masses are palpable, neither is the abdomen doughy, except in a few cases. The lungs are perfectly normal and there are no foci of tuberculosis in any part of the body. More females than males show this symptom-complex and the age is usually from 15 to 45. The past history is seldom of importance, except that of attacks of dysentery off and on. Many of these improve with a few injections of calcium and use of cod liver oil, etc., and the absurd claim of having cured abdominal tuberculosis is made. Knowing, as we do, what an inveterate foe tuberculosis in every form is, it is impossible to agree that these were cases of tuberculosis.

CLASSIFICATION

It will be interesting to know what the various authorities say about abdominal tuberculosis. A careful and painstaking survey of available literature is remarkable for its paucity. Most writers divide abdominal tuberculosis into 3 groups:—

(a) Intestinal. (b) Glandular, (c) Peritoneal—and further subdivide these three into primary and secondary.

Intestinal Tuberculosis.—All writers are agreed that the vast majority of cases of intestinal tuberculosis are secondary to frank lung disease. Brown and Sampson (1930) say that about 50 per cent of all cases of pulmonary tuberculosis show intestinal involvement at autopsy. Osler and McCrea (1935) quote the Munich figures at 56 per cent. Maxwell (1936) states it below 30 per cent but adds "Postmortem statistics are such a hazardous guide". Tribedi (1941) and Ukil (1942) give 41 per cent, while Boyd (1944) goes up to 80 per cent. From personal experience one would give a much higher figure—it would seem that almost all cases of advanced pulmonary tuberculosis and the majority of early cases show definite intestinal involvement. So much for secondary intestinal tuberculosis.

As regards primary abdominal tuberculosis, almost all are unanimous that it is very uncommon. Brown and Sampson (1930), Osler and McCrea (1930), Goldberg (1935), Amberson Junior (1936), Shrikhande (1936), Maxwell (1936), Conybeare (1937), Hurst (1944) and Boyd (1944) repeat the same statement. Tribedi (1941), in his valuable autopsy statistics, says that only 5 per cent of all cases of intestinal tuberculosis are primary. Of the two major types of intestinal tuberculosis, the ulcerative and the hyperplastic, the latter is supposed to be almost always primary. In Tribedi's 10 cases of primary tuberculosis (5 per cent of the total), as many as four belong to this type, which, according to Hurst (1944), are not really tuberculous at all but should be included in the group of regional ileitis. This leaves us with only 3 per cent. His reports are obviously from the very poorest strata of society, and it would be not unreasonable to expect much lower figures in actual practice.

The symptomatology of secondary ulcerative type is somewhat similar to the one given above, except that diarrhoea is a constant feature when colon is predominantly involved, while constipation and/or diarrhoea is observed when the small intestine is the chief site of involvement. The stool examination for tuberculosis may be positive, occult blood is frequently present, and the Triboulet test may be positive. A barium meal examination shows hypermotility, irregular filling defects and spasm with tenderness of the intestines. This similarity probably accounts for the frequency with which primary abdominal tuberculosis is diagnosed, because it is forgotten that several other conditions can produce a similar symptom-complex.

Abdominal Glandular Tuberculosis.—The chief groups of glands affected are the mesenteric and the para-aortic ones, but their primary involvement in this region is very much more uncommon except in young children, than the involvement of the cervical and the mediastinal groups. Their involvement secondarily to intestinal tuberculosis is, however, common. In such cases, palpation shows definite irregular adherent masses, which are tender.

Peritoneal-Tuberculosis.—There are three types—ascitic, loculated and fibrocaseous. The ascitis is the acute or subacute type with low fever (which is, sometimes, surprisingly absent) with a tubercle-studded peritoneum, and signs of free fluid and generalised abdominal tenderness; the loculated variety follows the same pattern but usually a fluctuating mass is palpable. In the last variety, we may get a palpable, rolled omentum or adherent and palpable intestinal masses with alternate diarrhoea and constipation or chronic intestinal obstruction and faecal fistula formation, and palpation gives a "doughy" feel while the spleen and liver are often palpable. Here also, the primary variety is very uncommon. In the great majority it is secondary to frank intestinal, glandular or fallopian tube infection. It is in this type that opening of the abdomen or a pneumoperitoneum produces good results.

DIFFERENTIAL DIAGNOSIS

If a critical analysis of the above facts is kept in mind, it becomes clear, that we should hesitate very much before diagnosing primary abdominal tuberculosis. The other conditions to be constantly kept in mind are the following:—

1. *Mucous or catarrhal colitis*—usually an after-effect of badly treated bacillary dysentery—a disease almost universal in this country because of primitive sanitation.
2. *Amoebic colitis*—in these stool examination may show cysts of *Entamoeba histolytica*.
3. *Non-specific enterocolitis*—often following frequent and injudicious use of purgatives at the slightest provocation.
4. *Ulcerative colitis* with passage of almost pure pus with great loss of weight and anaemia, etc.
5. *Spastic colitis*—an unsatisfactory term for cases of colitis in which frequent spasms with colicky attacks are a common feature.
6. *Chronic appendicitis*—a diagnosis much favoured by surgeons.
7. *Malignancy* with alternate diarrhoea and constipation and loss of weight.
8. *Chronic fallopian tube and ovarian infection*—to be looked out for by a careful vaginal examination.
9. *Regional ileitis*—a not very uncommon condition with a palpable mass in the right iliac fossa and suggestive x-ray picture. So-called hyperplastic tuberculosis must be included in this group—Hurst (1944).

10. *Sprue and coeliac disease* associated with fatty diarrhoea, anæmia, loss of weight.
11. *Pellagrinous diarrhoea* should also be kept in mind.
12. *Other causes* of diarrhoea associated with loss of weight and anæmia, e.g., adrenal disease, etc.

The point I wish to stress is that, unless the above classical description of abdominal tuberculosis based on careful pathological work, is grossly incorrect, the great majority of cases that are diagnosed as primary abdominal tuberculosis are being wrongly diagnosed and therefore wrongly treated. Moreover, the psychological trauma on the patients' mind when he is wrongly told that he is suffering from tuberculosis must be great. It is upto us, in the interests of scientific exactitude, to be more careful about our diagnoses.

The alternative diagnosis, to my mind, appears to be a colitis either after an attack or attacks of bacillary dysentery which is so universal in this country and which is as universally badly treated, or chronic amœbic dysentery or a non-specific 'chemical' colitis due to prolonged misuse of purgatives. To prove this, the following investigations have very recently been initiated in the cases under my charge in the K. G. Hospital, Lucknow. In addition to the usual history, the following points are specially asked for:—Past history of dysentery with its clinical manifestations and the treatment adopted, history of prolonged contact with an open case of pulmonary tuberculosis, and the use of purgatives. In the clinical examination, in addition to the usual systematic examination, careful abdominal and rectal examination, and also vaginal examination in the case of women.

The stools are examined for T. B. by the antiformin method and the Triboulet's test is done in addition to the usual microscopic examination. Skiagraphy of the chest and of the gastrointestinal tract with barium meal and barium enema are done. The tuberculin test [Mantox] is also performed. Agglutination test against the dysentery group of organisms is done, total R.B.C., Hb. per cent and total and differential W.B.C. count are done. Fractional test-meal is also done.

TREATMENT

In these cases, I have been following the undermentioned technique of treatment:—

1. Rest in bed, at least in the early stages.
2. Warmth, particularly to the abdomen in the form of a warm binder. A bland ointment locally exerts a certain amount of psychological effect.
3. If a specific cause is found, e.g., cysts of *Ent. histolytica*, it is appropriately treated.

4. If diarrhoea is a prominent feature, sulphaguanidine—4 tablets every 4 hours, along with an acid mixture (as many cases are suspected to have achlorhydria) usually controls it. Injections of calcium gluconate 10 per cent 10 c.c. intravenously daily are helpful. If constipation is a feature, two teaspoonfuls of ispaghula husks may be given twice a day.

5. Diet is simple (most of these patients are very under-weight) but bland, with as little roughage as possible, so that intestinal irritation is avoided. These people do not usually tolerate milk well, because it tends to produce flatulence. Fresh cow-milk curds is extremely valuable, as I can testify from personal experience. Replacement of the morning coffee or tea with fresh curds is particularly insisted upon. It can be taken sweet or salted, according to taste. All spices, pickles, green vegetables, tough meat highly seasoned and greasy dishes are particularly avoided. Fresh fruit juice should always be taken.

6. The existing anæmia is treated in the usual way with suitable anti-anæmic drugs. Purgatives are rigorously avoided. Vitamin in good doses are always given—particularly the vitamin B-complex which plays such an important part in the health of the oro-gastrointestinal mucosa. In cases with chronic glossitis, nicotinic acid 100 mgms. thrice a day are given. Belladonna in some form is given if spasms are present. It is also proposed to try sulphaguanidine in large doses orally to disinfect the intestinal tract.

7. The daily use of isotonic low pressure enemata forms the basis of this treatment. Two drams of sodium chloride and one dram of sodium bicarbonate are dissolved in two pints of warm water (this giving an isotonic solution) and the enema is taken after the morning bowel evacuation (in those accustomed to it). It is best taken while lying in bed and the enema-can is put at a height of never more than 8" above the anus. The fluid takes about 10-15 minutes to go in, this is retained for 30-60 minutes and then evacuated. This 'low pressure' is essential because high pressure gives rise to irritation and active peristalsis of the bowels leading to quick rejection of the fluid, thus defeating the very object of treatment, viz., gentle washing of the inflamed bowel. The sodium bicarbonate helps to dissolve the mucus. In cases with much inflammation as shown by the microscopic examination, I usually add 4-6 tablets of enterovioform which acts as a sedative and antiseptic. This treatment is based on the analogy of treatment of chronic inflammation in any part of the body. The enema can be taken at any time of the day or night, convenient to the patient—as the whole process takes up an hour or more.

8. The psychological factor should be constantly kept in mind. These patients have almost always been told that they have

intestinal tuberculosis. They should be reassured: a brief explanation of the pathological process and of the rationale of the treatment will always bring forth from the intelligent patient an active and willing co-operation. They should be warned against expecting miracles. The possibility of occasional relapses should be told to them, otherwise they are apt to become unduly pessimistic at their appearance.

That one does come across genuine cases of definite primary abdominal tuberculosis is undoubted, but these must be classifiable in the above scheme.

CASE REPORTS

Case 1—S. M. (40 years) had been prone to occasional attacks of intestinal colic. History of severe bacillary dysentery in childhood. These attacks of pain became very frequent and severe in 1926 and were associated with several semi-solid stools daily, loss of weight, slight temperature, anæmia and vague tenderness all over the abdomen but specially round the umbilicus and the right side. As the patient was a student in a Medical College, the various physicians examined him and unanimously pronounced it as a case of abdominal tuberculosis. The chief surgeon said it was chronic appendicitis, and operated upon him. On the operation table, however, there was absolutely no sign of any tuberculosis, the appendix was normal but was removed, and the wound was stitched up. After a couple of months, the old trouble restarted. This was gradually controlled with the above regime and the person has regained good health, and since then he has had only two mild attacks in 1930 and 1943.

Case 2—J. J. (38 years) gave almost exactly the same history and sequence of events. Laparotomy showed no abnormality and the appendix was removed. A few months later, trouble restarted and was gradually relieved of the trouble when placed on the above regime. Has been all right for over 5 years now.

Case 3—B. K. (20 years) seen five years ago with extreme loss of weight, severe anæmia, vague tenderness all over the abdomen, stools very frequent—15 to 20 times a day with pure pus, a skiagraph after barium enema showed loss of haustration. Diagnosed intestinal tuberculosis outside but here the diagnosis was ulcerative colitis. Bland liquid diet in the form of curds and white bread started, the macrocytic anæmia was treated with acid and iron mixture, with injections of liver and vitamin B-complex. Low pressure enemata were given daily. Slowly the patient started improving and was all right in about 3 months' time. Last seen, a week ago and found perfectly normal.

Case 4—Mrs. T. (25 years). History of gradual onset after childbirth with frequent attacks of abdominal pain, tenderness round the umbilicus and right iliac fossa, irregular stools, loss of

weight and anæmia. P. V. examination negative, stool examination was negative, except for pus cells. Diagnosed and treated for abdominal tuberculosis for over one year with little improvement. Gradually improved with the above regime and was cured in about 4 months. Four years have now passed without any trouble.

Case 5—Mrs. B. (30 years) admitted into hospital on 17-11-45 with low fever, attacks of abdominal pain with tenderness round the umbilicus and loss of weight. Stool examination was completely negative and barium enema showed an unduly dilated pelvic colon which was at times visibly distended with flatus. P. V. showed non-tubercular chronic erosion of the cervix while the tubes and ovaries were normal. Improving with the usual regime.

Case 6—B. C. (38 years). Loose stools with griping pain, marked loss of appetite, severe anæmia, troublesome atrophic glossitis with sore angles of mouth. Diagnosed as abdominal tuberculosis and treated for 2 months without benefit. Stools showed large number of pus cells. Bland diet with acid and iron mixture and nicotinic acid with riboflavin injections produced considerable improvement and the patient seems to be on the way to recovery.

These very imperfect records have been described only to stimulate further study. Regular work on the subject has only just been started and I hope to present a much more comprehensive and methodical report on this subject.

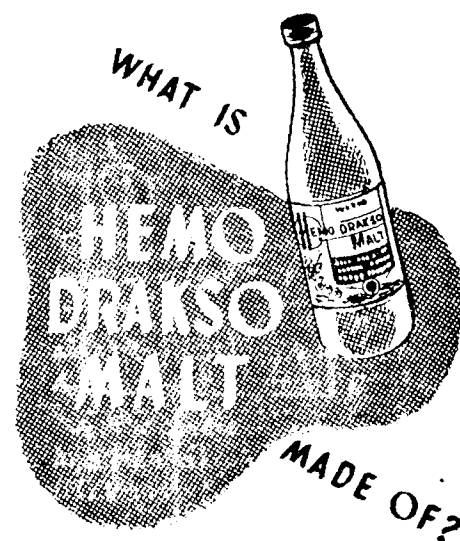
SUMMARY

A symptom-complex, which is almost universally diagnosed as primary abdominal tuberculosis is described. Reasons are given which militate against such a facile but incorrect diagnosis. An alternative diagnosis is suggested, a few cases are described and the suggested treatment is detailed. It is emphasized that this is a preliminary note, submitted to stimulate discussion and suggestions.

ACKNOWLEDGMENTS

My grateful thanks are due to Prof. H. Sahai of the Department of Medicine for valuable criticisms.

(J. I. M. A. July 1946)



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From clinical point of view the outstanding effect is gain of weight after the penicillin therapy. In cases of tabes 15 per cent showed reduction in "Leg pains" 33 per cent showed general improvement. The other clinical manifestations, such as ataxia, crises, incontinence, irritability, nervousness, dysarthria and changed personality were not helped when penicillin was given alone.

TREATMENT.

Cases of neurosyphilis are treated in two ways:—

- (1) Penicillin is given by intramuscular or intravenous injection as well as intrathecally.
- (2) Penicillin is given by intramuscular or intravenous injection along with fever therapy.

Penicillin given by continuous intravenous drip gives somewhat better results but technical difficulties rule out this method. To bring out appreciable concentrations of penicillin in the cerebrospinal fluid by intramuscular injections or intravenous injections alone large doses are required (Several millions a day) so intrathecal use becomes necessary in the treatment of neurosyphilis. This combined therapy brings about rapid and complete serologic reversals.

There was found to be no advantage in combining penicillin with fever therapy. Penicillin dosage varied from 1,200,000—8,000,000 units in a period of 7—10 days.

RESULTS.

Penicillin brings about improvement in 2—3 months while the malarial therapy does so more slowly in 2-3 years. Outstanding feature was gain of weight and slight decrease of pains in the legs. Some patients described the improvement "as feeling better" after the treatment. It was very vague.

No benefit was noted from Penicillin alone in gastric crisis, incontinence or ataxia. Early dementia paralytica and parietic cases also did not improve clinically with Penicillin alone: clinical

improvement did not correspond with the improvement in cerebrospinal fluid. Cases of meningeal syphilis responded better both clinically and serologically than cases of parenchymatous syphilis.

(P. A. O'leary *et al.* Abstracted from J. A. M. A. March 16, 1946 pages 698—700)

SULFADIAZINE IN TREATMENT OF PNEUMO-COCCIC PNEUMONIA

M. F. COLLEN AND PHILLIPS; *Arch. Int. Med.*; 76: 22; 1945.

In a 20-month period, nearly 1,500 patients with pneumococcic pneumonia were treated at the Permanente Foundation Hospital in Oakland, California. In the first half of this period, 618 consecutive patients were treated with usual doses of sulfadiazine, namely, 5 Gm. initially and 2 Gm. every 6 hours thereafter, maintaining an average blood level of 8 to 10 mg. per 100 c.c. In the second half of this period, 748 consecutive patients with pneumococcic pneumonia were treated with double doses of sulfadiazine. The majority of patients in the group receiving the double dose received 5 Gm. of sodium sulfadiazine in 500 c.c. of sixth-molar sodium lactate solution (pH 7.0 to 7.2) intravenously and 5 Gm. of sulfadiazine orally (total, 10 Gm.) initially, followed by 4 Gm. of sulfadiazine orally every 6 hours thereafter, maintaining average blood concentrations of sulfadiazine from 12 to 20 mg.

A comparative analysis of the various important factors influencing the mortality rate in pneumococcic pneumonia was made, with special reference to age, specific pneumococcic types, incidence of bacteremia, leukopenia, severity of associated diseases, extent of pneumococcic involvement, number of days of illness prior to hospitalization and incidence of patients admitted who died soon after. It was found that these two groups of patients had pneumococcic pneumonia of comparable severity. Adjuvant therapy, including the use of specific pneumococcus serum, was similar in both groups. The only significant difference in these two groups of patients was that one group was treated with approximately twice the usual dose of sulfadiazine. The treatment of patients with pneumococcic pneumonia with double doses of sulfadiazine resulted in (1) a decrease in the gross mortality from 10.7 to 6.2 per cent (corrected for patients dying within 6 hours after their hospitalization, the mortality rate decreased from 10.2 to 5.5 per cent), (2) a decrease in the incidence of sterile pleural effusions from 5.2 to 2.7 per cent and (3) a decrease in the average number of days in the hospital required for recovery (66 per cent required less than 7 days, as compared to 45 per cent). There was no greater incidence of drug toxicity in patients treated with double doses of sulfadiazine than in those treated with usual doses.

It was concluded that the use of higher doses of sulfadiazine results in a great decrease in mortality rate, and a decrease in length of stay in the hospital, without any notable change in incidence of drugs toxicity. For severely ill adult patients with pneumococcic pneumonia, sufficiently large doses of sulfadiazine should be administered to maintain blood concentrations of at least 15 mg. with the optimum blood levels maintained preferably at about 90 mg. of sulfadiazine per 100 c.c.

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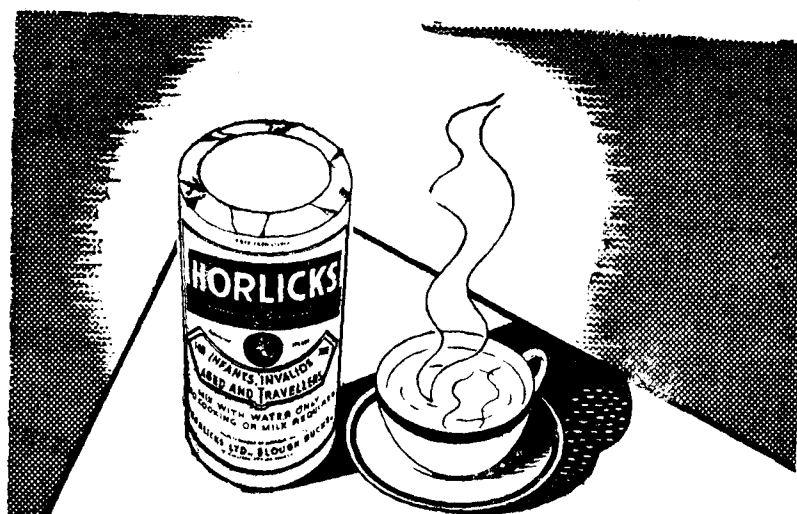
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Medical News & Notes.

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The writers are free to select the work they wish to present, the purpose of the prize being to encourage study, research and the art of writing on Medical Subjects.

2. The competition is open to all Registered Medical Practitioners in India.

3. The articles to be published in each of the issues should reach the Editor before the end of the previous month of issue.

4. Each article must be in English, typewritten with double spacing on one side of the paper.

5. Two or three articles will be published in each issue depending on the size of the article and on the paper supply position.

6. The articles should be original, specially contributed for this competition and when published will be the sole property of the Journal.

7. The copyright of the prize essays shall remain with the Journal.

8. The contributors of the published articles will get a few reprints depending on the size of the articles and on the paper supply position.

9. The articles will be judged by a small Committee of experts and their decision regarding division of the prize money amongst four or more competitors shall be final and no correspondence will be entered into on the subject.

10. The results of the competition will be announced in the January 1948 issue of the "Digest."

Indian Journal of Venereal Diseases and Dermatology Prize Scheme 1947.

1. The "Indian Journal of Venereal Diseases and Dermatology" will award a prize of the value of Rs. 250 for the best original essay to be published in the Journal during 1947 (in the four issues—March, June, September and December 1947). The writers are free to select the work they wish to present, the purpose of the prize being to encourage study and research on any aspect of Venereal Diseases, and the art of writing on these subjects.

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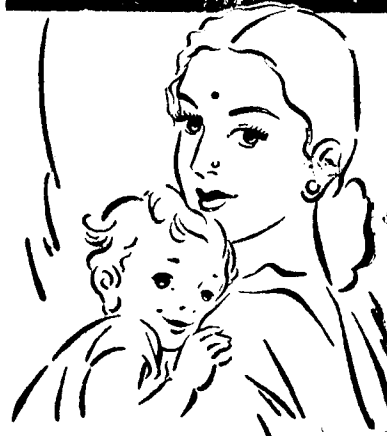
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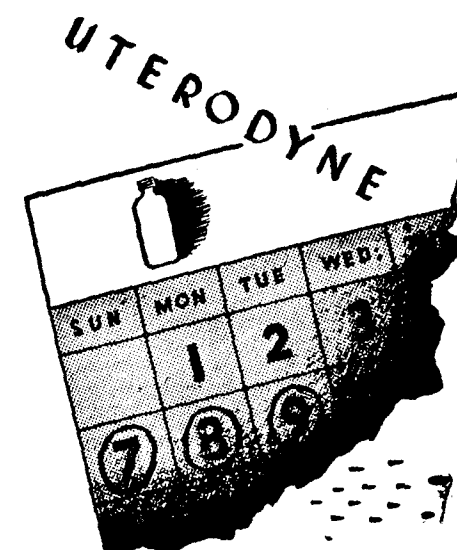
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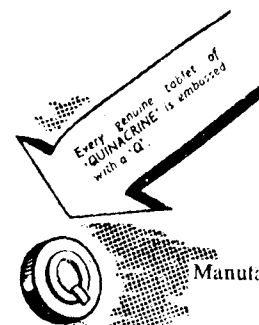
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MEDICO-SURGICAL SUGGESTIONS

(Established 1932.)

VOL. XV

OCTOBER 1946

NO. 10

SURGICAL EXPERIENCES IN P.O.W. HOSPITALS IN GERMANY

F. R. R. MARTIN, R.S.O.
Leeds General Infirmary.

It fell to my lot from September 1941 to December 1944 to be sent to work as a surgeon in various P.O.W. hospitals in Thuringia, Central Germany. Experiences during this time form the basis of this paper. Patients were of many nationalities, mostly French and Serbs with a few British and Americans. The surgical work described in the following paragraphs was confined to no single branch of surgery, for one had to deal with any condition and, on looking through my records, I find that besides doing the type of work which normally falls to the lot of a general surgeon, I operated on six patients with mastoid disease, and treated a great variety of orthopaedic ailments. The total number of patients operated on during this period was 1,800.

GENERAL WORKING CONDITIONS.

In all but one of the hospitals where I worked the number of beds was 300 or less. The buildings were, in the main, old schools, factories, or parts of mental institutions and had few of the usual amenities one expects in modern hospitals. Overcrowding was the rule: 80 per cent of the patients had to be "nursed" on double decker beds, which were wooden and unsprung, with hard straw mattresses. Patients on entering hospital had, as a rule, to give up their military uniform and, after they had been inspected for lice, were provided with hospital clothes consisting of a striped linen jacket and trousers and a shirt. These uniforms became more and more threadbare as the years went by and replacements were impossible to obtain. A change of sheets was provided monthly and two thin blankets were allotted to each patient. Personal hygiene was often difficult as washing facilities were minimal. In one hospital there were only four wash basins with running water to 200 patients. During summer time supplies of water were usually turned off for many hours during the day, not only interfering with the hygiene of the building but also with medical work. During the rush of urgent work after the Dieppe raid, I can well remember having to draw water out of the neighbouring river for putting on plaster of Paris.

As is well known, the value of German rations at the best was 1,700 calories daily, and much of this food was unsuitable for sick people. For special cases, such as peptic ulcers, a small amount of milk and occasionally eggs were available. Otherwise, no milk was provided though white bread, instead of rye bread, could usually be obtained for sick people. It is no exaggeration to say that Red Cross supplies saved us from gradual starvation. These arrived with fair regularity from 1941 onwards and all nationalities had some extra supply of food, either from home or the Red Cross, except the Russians and later the Italians. For a considerable period the Russians were deliberately starved and we had to treat many suffering from hunger oedema. This we could do only by using invalid food parcels sent out by the Red cross in addition to the normal food parcel. We had little to do with Italians but it was obvious that they were in a very poor state of health.

SURGICAL EQUIPMENT.

During this period I worked in four different hospitals, and operating theatres varied from place to place. In two of them, relatively up-to-date theatres were installed which were equipped with washable walls and a cement composition floor, a scialytic lamp and simple adjustable table. At a third place, we had to do all our aseptic cases in the civilian hospital, whereas at a fourth we were expected to tackle all manner of cases in a room equipped with little more than the proverbial kitchen table. In order to minimise the risk of cross infection we usually tried to organise a separate room for septic operations, often in the face of considerable opposition from the German authorities, even when they were presented with irrefutable evidence that serious infection of clean cases was taking place.

Generally speaking we had a reasonable supply of essential instruments though, during a list, we would have to wait for them to be reboiled between cases. Amongst these instruments were a few for bone operations though bone grafting was out of the question. This equipment was later supplemented by a generous consignment from the British Red Cross Organisation, which would send out goods by airmail if they were needed urgently. To my surprise, my general impression of German instruments was that they were much inferior in quality to ours: none were made of stainless steel and their design was somewhat clumsier. Catgut of three grades in strength was supplied, either dry in sterilised paper wrappings, or in reels immersed in preservative solution, from which lengths could be cut as desired. We had little trouble attributable to its use. Rubber gloves were of poor quality, much shorter than ours in the sleeve, and being made of *ersatz* material, became sticky when wet. They were strictly rationed, and we often had to do whole lists using the same pair of gloves. In spite of this it is

interesting to note that the rate of sepsis in "clean" cases was less than 5 per cent. Caps and gowns were provided, though as a rule we had to make our own masks out of gauze of Red Cross origin. Operating sheets were scarce and of poor quality, being usually made of fibre material.

In spite of Red Cross supplies, shortage of dressings was a constant source of worry. Often we had to arrange for the washing of all dressings and their re-use. What the position would have been without the great quantity of goods taken from occupied countries and issued to us, often very grudgingly, by the German officer in charge of the dispensary, I hesitate to say. Gauze and wool of German origin were usually *ersatz*, and totally lacking in absorbent qualities. We were given for ordinary dressings, paper crepe bandages, which were fairly adequate. Cotton bandages, as we know them in England, were unobtainable from German sources. This shortage of cotton was very obvious, too, in the quality of German plaster of Paris bandages.

ANAESTHETICS.

The art of anaesthesia in France and Germany is twenty years behind the standard prevalent in England. When one told a German doctor that in England doctors specialised in anaesthesia he was amazed that a medical man should devote his time to such a subject. This outlook finds confirmation in German text books where intricate apparatus for local anaesthesia, such as Kirschner's, is stressed. Gas and oxygen were not provided and I heard no mention of intratracheal work. Before starting an operation it would appear to be the rule to tie the patient down on to the table. Even the mask for open ether was of an unusual type, being shaped like the framework of a bowler hat. Fine bore spinal anaesthetic needles are unobtainable in Germany. We had to depend on open ether, evipan, "local" (2 per cent novocain which could be diluted), "spinal" (pantocain), and occasionally chloroform for obtaining the anaesthesia we required. I personally used a lot of spinal anaesthetics for lower abdominal work. Apart from "post-spinal" headaches in some 10 per cent of cases, I encountered no serious complications in well over 150 operations. The only criticism I would raise, as regards this method of anaesthesia, is that it is difficult to know whether the anaesthetic is going to rise high enough in the spinal theca.

Drums were, as a rule, sterilised on the premises, though in one hospital we had to send them 15 miles to Weimar. This arrangement was obviously unsatisfactory and I well remember having to wait for the drums to be fetched before we could operate on a case of acute intestinal obstruction.

TRANSFUSIONS.

Any public transfusion services which the Germans had were not available to us. We had to find blood donors either amongst the hospital staff or convalescent patients. Donors received an extra allowance of food from the Germans. Drip transfusion apparatus was not provided by the Germans and we had to rig up the best we could from odd pieces of tubing until proper supplies reached us from home. After cross grouping, blood was drawn by means of a French's needle into an open receiver containing sterile 4 per cent sodium citrate. This solution had to be made by sterilising four one gramme citrate tablets in a 100 cc. bottle and adding sterile water from ampoules when the solution was needed. Sometimes, we had to send donors considerable distances, as for instance, when a brain operation was to be done at a special hospital 150 miles away, or when an R.A.F. plane was brought down some 50 miles away, and no blood from German sources was available locally. I never saw or heard of dried serum or plasma being given by Germans, and our sole source of such material was from England, via the Red Cross. Fluid balance was maintained when necessary by means of intravenous saline drip, and at times, when local supplies of saline failed, we had to make this ourselves.

X-RAYS.

In some of the hospitals x-ray apparatus was installed and one of the P.O.W. medical officers would be put in charge of it. I found it was part of my work, at one time, to act as radiologist; I had an Italian orderly, who spoke a little French, to help me. Fortunately, the apparatus was of the simplest type. At other places, the work was done in German hospitals. We used to arrange x-ray lists and take the patients over once or twice a week. It would then be necessary for us to explain, in the best German we could muster, what we wanted doing. I may add that it took us some little time to get even these arrangements working, and during the first year or so, we often had to wait several weeks before urgent x-rays were taken. Undoubtedly, many of the difficulties with which we were confronted were due to the attitude of the German doctor in charge of the hospital, who might either be too callous or too timid to avail himself of the facilities at his disposal. P.O.W. working in the x-ray department were given a rest from their work for six weeks every year.

STAFF.

In hospitals for mixed nationalities, where I was working, we had to deal with medical orderlies of British, French, Serb and Russian origin, who might not necessarily be looking after men of their own nationality. Language difficulties were therefore often

considerable, though it was remarkable how little real trouble we had. It must be realised that the personnel, most of whom were captured in 1940, and who were protected under the Geneva Convention, included many men who had had absolutely no medical training at all e.g., ambulance drivers in the R.A.S.C. The Germans, when they sent men to work in hospitals, did not distinguish between varying degrees of nursing proficiency. We had, therefore, to pick out those who seemed best suited for any particular job. Our theatre orderlies had to be trained in the details of theatre technique, which in peace time usually fall to the lot of a fully trained theatre sister. As a rule, we tried to have one orderly scrubbed up during operations, helping with the instruments and catgut, etc., while another was doing the duties of theatre runner. The standard of efficiency attained compares favourably with that appertaining to more normal conditions. Amongst a group of orderlies, one could usually find a few who seemed to have a natural flair for medical work and who quickly picked up the routine of sick nursing. Such men were given the more serious cases to nurse, and, though we often regretted the absence of trained nursing staff, sick patients as a rule received devoted attention from those whose duty it was to nurse them. We did most of the larger dressings ourselves though the orderlies, after some training and supervision, became quite proficient. It often taxed our linguistic abilities to the full to explain to men of other nationalities details in nursing treatment and to make sure that sick patients had proper after-care following operation.

The German staff consisted, as a rule, of a doctor and some eight or ten orderlies. Their work was solely administrative and we preferred a minimum of interference from them. The more inquisitive types could be a great nuisance. Most of the admissions were arranged by the German medical authorities and the German doctor would do a round of the hospital once or twice a week. During his round, patients ready for discharge were examined and not infrequently we would have considerable difficulty in obtaining permission for patients to stay in hospital for what we thought was the correct length of time. On these occasions too, official sanction was sought for the transfer of patients requiring treatment in special hospitals.

SUMMARY OF WORK DONE.

On looking through my notes, I find that I have records of some 1,800 operative procedures, 1,200 being my share of the total, the remainder being under the care of Major L.W. Lauste, R.A.M.C. The surgery involved is of a very general nature, including both civilian and war work. Half of the cases dealt with fall into the category of minor surgery, and, of the rest, hernia and appendix operations form the main bulk. Major abdominal operations had to

be done from time to time, either because of emergency, or because we soon learnt that, though a seriously ill patient might be passed by the German authorities for repatriation, six months usually elapsed before he was sent home if he were a Frenchman, whereas a Serb stood a very good chance of never being repatriated. So it happened that we had to be prepared to do nephrectomies, gastro-enterostomies, resections of the rectum and cholecystectomies, when occasion arose. One learnt a lot both from following the course of the ordinary type of case and from dealing with the more seldom major operation, which, in fact, added just that extra interest to our work, relieving it of its monotony.

During this time we dealt with some 330 hernia operations. The success of hernia operations is judged by the rate of recurrence following radical cure. Working under P.O.W. conditions, it is difficult to estimate the recurrences in this series with any degree of accuracy, though it is hard to imagine conditions more likely to cause early recurrence of hernia than those to which a P.O.W. was subjected on leaving hospital, since most of them had to return to heavy manual work. We always tried to keep hernia operation patients in bed for three weeks after operation and see that they were not discharged before six weeks had elapsed. We then requested that they should have six weeks' light work, but whether this request was always complied with, it is hard to say. I feel that, had our recurrence rate been high, we should not have had so many people volunteering to have their hernia operated on, and we would have had more patients returned to us for treatment, since ours was the only hospital in the area for French and Serb surgical sick. Actually, we operated on ten recurrent hernia in this series, including five which we ourselves had previously treated. Whatever success we may have had is probably due, I think, to the fact that we stressed careful and complete excision of indirect sacs, and that we tried to provide some more permanent support of the posterior wall of the inguinal canal and internal ring than is given by the usual catgut Bassini type of repair. This was done in all direct and indirect hernia, either by putting in a fascial graft from the fascia-lata, or by inserting a silk lattice stitch after the method of Sampson Handley.

In reviewing the appendix cases in the series, one is struck by the relative infrequency of acute cases (58 out of 190). This is partially because many P.O.W. especially the Serbs, found that they could get five or six weeks' holiday if they had their appendices removed. They became very adept at feigning the symptom complex of appendicitis, and thus were able to convince the German doctor, who arranged their admission to hospital, that they were really suffering. Though we realised that this was the case, we felt that we were helping to put a spoke in the wheel of the German

war effort by performing the operation of appendicectomy for such patients. Another factor resulting in the low proportion of acute cases may be P.O.W. diet. Meat values were low: cellulose-containing foods and carbohydrates made up the bulk of our diet. According to the work of Wilkie, as quoted in Illingworth and Dick, such a diet should result in the diminution of virulence of the intestinal flora. Certainly, we had no fatal case of acute appendicitis, and all the appendix abscesses with which we dealt resolved on conservative treatment.

Of the forty-five major abdominal operations carried out, there is not much space for detailed consideration. They included nine cholecystectomies, nine nephrectomies, nine cases of acute intestinal obstruction, four gastro-enterostomies, two abdomino-perineal resections of the rectum, one splenectomy for acholuric jaundice, and three cases of aneurysm of the great vessels. We were thus provided with many problems regarding diagnosis and correct treatment. We were fortunate to encounter some of the rarer ailments, such as a pseudo-pancreatic cyst, a case of sarcoma of the small intestine, acute intestinal obstruction caused by intussusception of the small intestine by a polyp and another due to volvulus of the caecum. Unilateral tuberculosis of the kidney was demonstrated preoperatively in four cases by x-ray and cystoscopy. One had the impression too, that tuberculosis of the epididymis was more frequently encountered than in peace time. Orchidectomy was performed ten times for this complaint during the period in question. There are two operative deaths in this group, one following enterectomy in a case of multiple recent bullet wounds of the intestine and stomach and the other following a laparotomy for inoperable carcinoma of the stomach.

FRACTURES.

Without going into the questions very fully, the following remarks will provide an outline of the problems with which we were confronted. In general, the facilities for treatment of fractures were poor. Even in the main hospital for British in the area, where, from 1941 onwards, there was an ever increasing number of wounded airmen sent for treatment, very little special apparatus was available. Without an orthopaedic table, the application of a plaster of Paris spica was done only with considerable improvisation. We had no portable x-ray nor any splint for leg cases other than one of the Braun variety. The Germans seemed to have an especial aversion to the use of a Thomas splint, though ultimately we had a good supply of these sent out from England.

Lack of appreciation by the Germans of modern principles in treatment of fractures, and later, lack of staff, resulted frequently in neglect of such cases. Closed plaster technique seemed unknown

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to German doctors. Wounded airmen usually arrived at our hospitals four to six weeks after injury. In almost all cases of compound fracture, the wound was infected, reduction of fractures was extremely poor, specially in femur cases, and their immobilisation was often entirely inadequate. Another type of injury for which the Germans did very little was fracture dislocation of the os innominatum. This injury is not frequent in civilian life, but we found it to be relatively common in airmen who made emergency parachute landings. The pelvis appears to be split at the symphysis pubis, and one os innominatum rotates outwards hingeing on the sacro-iliac joint, sometimes being displaced cranially as well. Patients with such a lesion usually arrived at our hospital six to eight weeks after injury, with the displacement completely unreduced, no attempt having been made at reduction. So long after injury, we found it impossible to improve the displacement. Again, men would arrive with untreated fractures of the spine, too frequently for us to avoid concluding that there had been gross neglect. One man turned up with an amputation of the leg, and it appeared from his notes that he had an unreduced dislocation of the knee for eight days before gangrene supervened and the leg had to be amputated.

Though exact figures for a large number of cases are not available, my impression was that delay in union was almost always due to faulty immobilisation or reduction. We had very few cases of non-union and those were attributable to a large fragment of bone being destroyed, thus leaving an unbridgeable gap. Distraction rarely occurred. Rate of union in fractures of the tibia and fibula was slow. The figures for some thirty cases show that in simple fractures union was not firm until seven months had elapsed, whereas in compound fractures the average time was in the region of nine months. Fractures of the femur seemed to unite more quickly, taking four to five months. These figures may rather exaggerate the length of time taken for union to occur, because, owing to absence at the time of walking calipers, we left the fractures immobilised in plaster until we were absolutely certain that firm union had taken place.

On removing the plaster, we were able to arrange rehabilitation for all cases who needed it. A team of three P.T. officers organised this most important work, which they did with great success.

HEALING OF WOUNDS.

Under the conditions described above, it might be asked whether there was any noticeable change in the normal healing of wounds. We tried to arrange dressings of ordinary "clean stitch" wounds as infrequently as possible. As a rule, no tension sutures were used, a continuous catgut stitch being inserted in the subcutaneous tissues. A simple adhesive dressing was applied at the time of operation, and was not interfered with until the clips were removed

on the sixth day after operation. The sepsis rate was not very different from that encountered in civilian practice, being in the region of five per cent. Though accommodation was overcrowded and the danger of cross infection must have been considerable, this problem was serious only at the one hospital in the area where there was a large number of discharging war wounds being operated on in the same theatre and nursed in the same wards as the clean cases. At the other hospitals we could usually arrange for the clean cases to be treated in a separate small room for the first week after operation, and the number of septic cases was relatively low. I had the impression that hæmatoma formation was more frequent than in peacetime. Whether lack of fresh food and especially of vitamin C was related to this finding, is difficult to say.

The occurrence of chronic ulceration of the leg was high, particularly amongst the underfed Russians. When they first arrived in the early winter of 1941, besides suffering from starvation, many had developed enormous ulcers of the thigh or leg. The underlying cause of these is uncertain but one might assume that, in individuals of such poor general condition, a small septic lesion might easily develop into a gangrene of the skin. Even when we had succeeded in improving the state of nutrition of these patients, the ulcers healed very slowly, and I am not convinced that the administration of vitamins hastened the healing process.

MORTALITY.

Out of a total of thirty-four deaths during this time, only eleven occurred in surgical cases. Of these, six took place in the immediate postoperative period. Besides the two deaths already mentioned there were two after operations on patients with pyæmia, one following a septic gunshot wound of the thigh, and the other following chronic osteomyelitis of the os innominatum. The fifth death occurred in a patient suffering from ulcerative colitis for which a colostomy had been performed, and the sixth in a patient with mastoiditis complicated by an extra-dural abscess and meningitis. It is interesting to note that of the remaining causes of death, tuberculosis, as might be expected under these conditions, was by far the most common, according for ten out of the total.

(University of Leeds Medical Magazine, Vol. 16, No. 2.)

Extracts.

ESTROGEN-PROGESTERONE THERAPY: A NEW APPROACH IN THE TREATMENT OF HABITUAL ABORTION.

Vaux and Rakoff report in the American Journal of Obstetrics and Gynaecology the results of their study of a group of 24 patients with habitual abortion who were treated with estrogen and progesterone. These patients had gone through a total of 80 previous pregnancies from which there had resulted only 7 living babies (9 per cent). There had been 52 abortions, 18 miscarriages, 2 still births, and 1 premature live birth in which the infant did not survive.

Progesterone 10 mg., and alpha-esteadiol benzoate, 10000 rat units, were given together 2 or 3 times weekly to all patients during the present pregnancy and treatment continued to the period of viability or later. There was fetal salvage of 16 babies (67 per cent). There were 15 full-term live births with 1 neo-natal death due to congenital abnormalities, 3 premature lived births of which 2 survived 2 miscarriages, and 4 abortions. In only 1 patient was the basal metabolic rate diminished. Two patients had incompatibilities (Rh-negative wife and Rh-positive husband). Good secretory function was noted in 6 cases, impaired secretory function in 2, and an interval endometrium in 2. Urine hormone assays were made in 15 cases prior to the onset of pregnancy. Urine gonadotropin assays made at the mid-cycle were normal in 87 per cent. Urine estrogens made at the mid-cycle and during the 3rd week of the cycle were diminished in 67 per cent, while low or absent pregnandiol values were obtained in 53 per cent. Hormone assays consisting urine pregnandiol determinations, serum estrogens, and serum gonadotropins were made early in pregnancy in 19 cases. In almost all of the cases one or more additional assays were made and in 3 cases the monthly assays were done. On the initial assay 95 per cent of the cases showed normal serum gonadotropins, Seventy-nine per cent had diminished serum estrogens and 83 per cent had diminished pregnandiol titers. In 13 of the 19 cases studied both estrogen and pregnandiol were diminished. These findings indicate a deficiency of the corpus luteum during the early weeks of gestation and an inadequacy of the placenta to take over its function. Many of these patients had been successfully treated in previous pregnancies with progesterone, thyroid and vitamin E.

These studies show that functional insufficiency of the corpus luteum of pregnancy is a cause of abortion. Treatment by a combination of progesterone and an estrogen is rational and, has been encouraging. This therapy should be begun before the 10th week of gestation. In 6 of the cases injections were given as early as the 4th week. Treatment was continued to term in 8 cases. In 6 of these, patients fell into labor while they were still under treatment. One patient had treatment for 3 weeks only at which time

she aborted. Treatment was continued at least to the 12th week of gestation wherever possible. The duration of treatment was adjusted as a rule to run beyond the time when the patient generally aborted or miscarried. Patients who had late miscarriages in previous pregnancies were generally given injection 3 times weeks as they approached the usual time of miscarriage.

Digest of Treatment (1946) March, 641.

FACTORS INFLUENCING LACTATION.

The whole of Medical profession is agreed that breast feeding is the best for babies. The real factors are: Breast fed babies show a lower mortality rate than those fed on the bottle. Breast-fed babies are stronger and have a greater natural immunity to childhood diseases. Breast-fed babies are less susceptible to gastric and intestinal disorders. Bruogher found that 4 per cent more mothers were nursing their babies at the end of four to six weeks when given B. complex capsules than in a control group. The B complex capsules contain a specially selected and cultured brewer's yeast, fortified with crystalline thiamine hydrochloride riboflavin, nicotinic acid amide, pyridoxine hydrochloride, calcium pantothenate and ascorbic acid. It was also found that a much higher percentage nursed their babies in hospital when given B. complex than in a similar group not given the B. factors. Factors that may influence lactation are numerous, and the B. complex given during the antenatal period may contribute to lactation by improvement in the general nutritional state.

Medical Press & Circular (1944) Nov. 29 p. 341.

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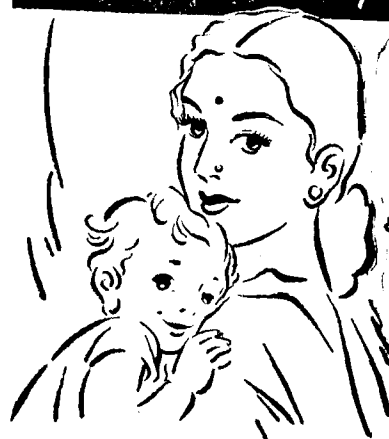
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No. II.



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DIAGNOSIS AND TREATMENT OF HEART FAILURE

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Speaking of heart failure, let us remember first of all what is called heart failure and yet has very little to do with the heart. When a case of pneumonia or meningitis, or typhoid or peritonitis dies, we are all too ready to deface the hospital ticket or the death certificate with the utterly wrong statement that the end was due to heart failure. Paper and statistics are patient and not much harm is done by this entry, provided it does not express the attitude of the medical attendant at the time when such a patient was still alive. Because the ultimate cause of the fatal end in all these acute infections as well as in surgical shock is a failing of the 'peripheral' circulation and not of the heart. The circulating toxins paralyse the vasomotor ending in the walls of arterioles and precapillaries with the effect that these small and smallest vessels lose their tone, and the blood stagnates in the vast lake of their innumerable branches and in the capillaries themselves. It stagnates instead of returning through the viens to the right heart and thus fails to maintain the action of the central motor. The consequences of such an inadequate venous return are: (1) That the motor beats empty; with nothing to feed it, it cannot keep up the supply: both, pulmonary and systemic circulation run dry; a mere trickle remains of the two streams which normally have their sources in the two ventricles; (2) the reduced blood volume passing through the lung capillaries is unable to bring down the required charge of oxygen to the left heart: the reduced stroke volume produced by it cannot make up for the oxygen deficit, the tissues begin to suffer from anoxæmia, from oxygen hunger, which leads to the production of toxic metabolites and thus to establishing a most dangerous vicious circle—but not due to a failing heart. The treatment of this condition is quite different from that of heart failure. Coramine, Caffeine, Strychnine, Cardiazole and the Adrenaline group might prove life savers when the peripheral circulation fails, whereas digitalis has no place in treating this emergency; its vagus stimulating and vessel dilating effects are definitely contra-indicated when tachycardia is a compensatory measure to maintain the

minute-volume and all our attempts are directed towards re-establishing the lost vascular tone.

In dealing with our subject proper, our task is rendered easier by differentiating between left and right heart failure. Although the treatment of both these conditions is almost the same, the signs and symptoms show such great differences that it seems we have to deal with separate clinical entities.

An example of the first group is the well-fed man, nearing fifty, who complains of a curious disturbance of his night rest. He who always was proud of his good sleep, of late several times every night suddenly wakes up with a jerk or with some dry cough and a kind of anxiety or oppression, reminding of a night-mare. If you make such a patient lie down, close his eyes and try to sleep, it might happen even in the consulting room that you find the explanation of his trouble: periodic breathing, a mild form of Cheyne-Stokes respiration. Breathing gradually deepens until a particularly deep, sighing inspiration is followed by the pathognomonic apnoeic phase; the respiration ceases completely for a varying length of time, then very superficial breathing starts which gradually deepening, leads again to the characteristic, often noisy, very deep inspiration which precedes the respiratory stop.

These mild forms of Cheyne-Stokes respiration are one of the most common and earliest indications of left heart failure which usually are overlooked as the patient is not aware of them and people, sleeping with him in the same room, notice them only if their attention is drawn to this phenomenon. Therefore, if somebody with an increased blood pressure, an aortic valvular lesion, a chronic coronary insufficiency or any other condition leading to left ventricular failure complains of restlessness, insomnia or cough during the night, it is useless to give him sedatives or cough mixtures. In such a case digitalis is the only effective sleeping drug which also stops the cough, the latter being another indicator of beginning decompensation of the left heart and one of the greatest significance, because the mechanism which causes it, leads straight to cardiac asthma and, finally, pulmonary oedema.

Leaving aside all the complicated theories of the origin of cardiac asthma, it is clear that weakening of the left ventricle with maintenance of the normal working capacity of the right one, leads to a predominance of the latter. If the right ventricle every minute pumps the normal amount of blood in the pulmonary circulation, whereas the left ventricle fails to expel simultaneously the same blood volume into the systemic circulation, a quantity of blood, increasing with every normal systole of the right and every defective systole of the left ventricle, accumulates in the pulmonary vessels. This engorgement, especially of the pulmonary capillaries, interferes with the oxygenization of blood; anoxemia and accumulation of

abnormal acid metabolites develop; periodic breathing or paroxysmal dyspnoea are the results. Why the onset of these events is so sudden and occurs during the night, especially during rest and relaxation, is not clear, but just the paroxysmal character and the onset during rest are constant features: Cheyne-Stokes respiration and cardiac asthma do not occur on exertion.

The clinical picture of cardiac asthma which sometimes after the first attack, mostly after several repetitions and in some cases never, leads to pulmonary oedema is well known. Usually at 2 or 3 a.m., the patient suddenly wakes up with a feeling of suffocation; fighting for breath, bathed in perspiration, he has to sit up or jumps out of bed, runs to the window, desperately pressing in service all the auxiliary muscles of respiration.

There is usually some dry, irritating cough with some rhonchi in the bases, right more than left. Such an attack, if untreated, either subsides after half an hour or so, or the dyspnoea deepens and increasing cough produces the characteristic pinkish foamy sputum of pulmonary oedema, one of the most dangerous emergencies in medical practice.

The treatment of left heart failure is directed towards strengthening the weakened myocardium on the one hand and diminishing the systemic load on the other; one has to realize that the cause of the breakdown usually is twofold. An increased blood pressure or the excessive hydro-dynamic strain, caused by an aortic valvular lesion, continuously wearing down the resistance of the left ventricle, finally succeeds in breaking it when the myocardium itself suffers some damage, either by diffuse atherosclerosis or syphilis or, mostly, by coronary insufficiency. The prognosis of every condition of chronic left heart strain depends, therefore, on the degree of soundness of the myocardium. And here it is where the electro-cardiogram finds one of its most important applications. The effect of every therapeutic measure and the prognosis of the individual case depend on the condition of the myocardium which only the cardiogram discloses fully. Muffled heart sounds might be due to emphysema, obesity of the outer cover, etc., in a normal heart; screening may show normal size and shape of the heart in a badly damaged heart muscle. Only a complete electrocardiogram with chest lead, taken before and after exercise, has very little sources of error and most of them are well known.

For improving the power of a hypertrophic and weakened heart muscle, digitalis is the remedy of choice. The best dosage is still controversial. On the continent the usual single dose is gr. $1\frac{1}{2}$ of the titrated powdered leaf or 15 to 20 drops of the tincture. In the U.S.A., some time ago, doses of Z 1 to 2 of the tincture have been frequently used but now even there moderation is increasingly recommended (WHITE, 1944). In India we found a dosage of xx m

to *xxv m* of the tincture, three to four times a day, sufficient for the great majority of heart failure cases. Occasionally, when faced by complete decompensation, one need not hesitate to give *i* of the tincture, twice with an interval of 6 hours, continuing with *xxx m* 6 hourly for a day or two. It is useless to give digitalis more frequently than every 6 hours, this being the time required for this drug to produce the desired effect. If the speediest possible digitalis action has to be achieved, the intravenous route should be used; Digitoxin, Digilanid, Digalen are reliable preparations available for this purpose. Of the many patent brands for oral medication, Digifortis, P.D. is one of the best; another one, remarkably effective and in reasonable doses free from toxic by-effects, is Digitaline, Nativelle in doses of 1/10 mg., three to four times a day.

Another way of improving the condition of the myocardium is to increase the coronary blood supply. This can be achieved by Theophylline Ethylen-Diamine which has a powerful dilating effect on the coronary arteries. It is marketed as Aminophylline, Cardio-phylin, etc.; 10 c.c. ampoules, containing gr. 5, for intravenous, or 2 c.c. ampoules, containing gr. 7½, for intramuscular injection, may be given daily or in longer intervals as the case requires. Apart from the effect on the coronary vessels, it causes relaxation of the bronchioles, is a powerful stimulant of the respiratory centre which is most useful in Cheyne-Stokes respiration, and a good diuretic. Dilatation of the coronary arteries might be achieved in some cases by full doses of testicular extract and by nicotinic acid (Niacine).

Whatever we achieve in supporting the myocardium would be of short duration if we did not succeed in diminishing the burden which caused its decompensation. An increased blood pressure being the foremost factor among the permanent heart strains, it is customary to reduce it as far as possible. The most effective remedy for this purpose is Serpina, containing various alkaloids of *Rhauwolfia Serpentina*. Pressure reduction should proceed gradually and slowly, a very sudden lowering of the blood pressure in the presence of sclerotic vessels being accompanied by the danger of arterial thrombosis or sudden onset of renal insufficiency; the latter possibility is due to the fact that an increased blood pressure is required to maintain the necessary blood supply to the glomeruli if the afferent and efferent arterioles have lost their elasticity.

The various combinations of diuretin (theobromine sodium-salicylate) have little influence on the blood pressure. In our opinion the only useful one is theogardenal because of its luminal content, sedatives, such as bromides, valerian and barbiturates, having certainly a beneficial effect on the heart labouring under high pressure.

Nobody knows whether iodides are useful in this condition, but we all prescribe them and no harm is done, especially as they are of great value in the presence of cardiovascular syphilis.

Blood letting should be resorted to only if the blood pressure is excessive, going beyond 225/130 mm Hg. The effect of removing a quantity of 8 to 12 ounces blood is sometimes excellent but never of long duration.

One of the most important and frequently overlooked task is to reduce any over-weight which the patient may carry. As strenuous exercise cannot be enforced and thyroid is contra-indicated, restriction of fluids, salt, fat and carbohydrates is imperative. Fluid intake should be limited to about 3 points, salt to one half drachm. Lime juice may be used to improve the taste of unsalted food. Proteins, on the other hand, must be supplied amply, at the rate of 1 gm. per kilogram (2 lb.) of body weight. The total caloric intake should be kept between 1,500 and 1,800 calories.

Weight reduction should be so controlled that one or two pounds are lost every week, too radical slimming procedures cause or increase nervous irritability. And one of the main causes of the sudden breakdown of a precariously balanced compensation is nervous exertion. Excitement of any kind should be avoided; it is an old popular experience that even joy could be fatal to a weak heart. A frank discussion of the patient's sex life is desirable. Tobacco in every form causes angiospasm; as the coronary arteries seem to be particularly sensitive to nicotine, it is better to stop smoking completely, in the interest of maintaining the blood supply to the myocardium on the highest possible level.

It is common knowledge that excessive physical activities have to be curtailed. But frequently the medical adviser is too anxious on this point. The longer the patient is keeping to something approaching a normal way of living, the longer mental happiness, or, at least, contentment could be maintained. The pensioner's quick downhill course is a very real danger to everybody who is prevented by external factors—retirement or doctor's veto—to do what he feels capable of still doing. Apart from this psychological factor, the heart muscle, like every other muscle, atrophies due to enforced activity. Moreover, vast experience of pathologists, especially in the U.S.A., proves that a very high percentage of heart patients who are confined to bed develop venous thrombosis with all the dreaded consequences of pulmonary infraction, pulmonary embolism, and, if a patent foramen ovale is present, cerebral embolism, conditions ranging from agonizing pain to crippling damage or almost certain death. Therefore, it is essential to induce chronic heart patients to have a daily walk, preferably on level ground, to play a limited amount of golf, but to abstain from cycling, tennis, etc. One day a week

complete rest in bed is more effective and less harmful than permanent restriction of activity.

Having dealt to some extent with chronic patients, suffering from a strained left heart, a few points should be emphasised of managing acute left heart failure in the form of cardiac asthma or pulmonary oedema. The only effective drug in this emergency is Morphine hypodermically in full doses of not less than gr. $\frac{1}{4}$ to $\frac{1}{2}$ with Atropine gr. $\frac{1}{200}$: no possible sequelæ such as addiction have to be considered, no half measures such as morphine orally to be tried once the attack is on. When dilaudid becomes available again, it should be substituted for morpheine, the probability of addition to it being remote indeed. Because of the life saving effect of morphine in this condition and the danger arising from its use in bronchial asthma, it is necessary to differentiate between these two forms of dyspnœa. It is rare that a bronchial asthma attack develops for the first time after the age 35 or 40, whereas cardiac asthma more frequently starts at about fifty or later. Wheezing sounds and rhonchi are audible always over both the lungs in the former condition, whereas the auscultatory signs in cardiac asthma usually are confined to a few moist rales in the basal parts, right more than left. In pulmonary oedema numerous fine crepitations are heard over both the lungs while wheezing is absent. Adrenalin, Ephedrine and Pituitrin, which are eminently effective in bronchial asthma, are contra-indicated in the cardiac form.

Turning to right heart failure, we find as a leading feature the absence of paroxysms and emergencies and the predominant influence of exertion. One could say, the left ventricle maintains compensation but fails suddenly and completely without a discernible immediate cause whereas the right heart fails sooner, more gradually and makes the patient feel its weakened condition by his inability to cope with any increased demand of circulating oxygen. This difference resembles that between coronary occlusion on the one hand with its sudden onset during rest and angina pectoris on the other, which is caused by effort due to the discrepancy between required and actually available coronary blood supply.

The common conditions leading to right heart failure are mitral valvular disease, "pulmonary heart" due to chronic bronchitis, emphysema, fibrosis of the lung, thickened pleura, kyphoscoliosis, etc.

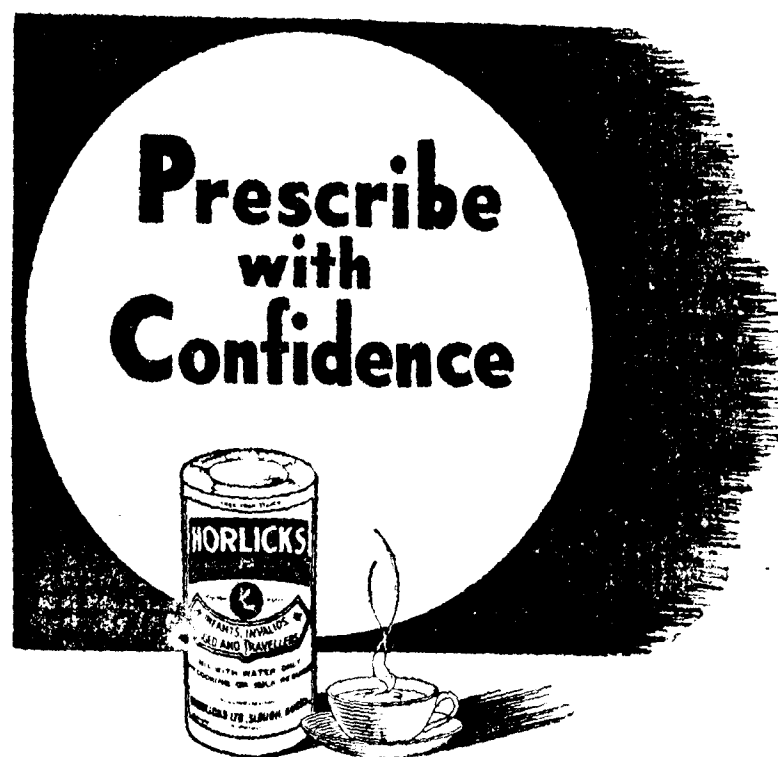
In right heart failure first the right ventricle becomes unequal to the task of pumping all the blood into the lungs which flows in from the right auricle. With every systole the difference between in- and out-flowing blood increases and this growing volume of residual blood in the ventricle increasingly obstructs the venous return. The earliest sign of right heart failure looks innocent

enough; such patients complain of fulness in the epigastrium, heaviness after meals or discomfort in the liver area, the portal circulation being usually the first to feel the back pressure reaching down from the over-filled right auricle. At this stage the liver becomes palpable; whether it is tender on pressure, depends on the speed with which decompensation developed. Sudden failure might be accompanied by an agonizing liver pain due to the inability of the capsule to accommodate itself quickly enough to the enlarged liver. It depends on various factors whether first the portal engorgement leads to ascites formation or the stagnation in the inferior vena cava to the appearance of oedema, localized on the dependent parts and in loose tissues. Later on, hydrothorax develops, usually confined to the right pleural cavity; still later distension of the neck veins and cyanosis complete the picture. Finally, pitting oedema appears on wrist and back of the hands, a sign which the patient rarely survives for more than a few months if it is of cardiac origin. Renal oedema of this localization is much less ominous. Simultaneously with this development, congestion of the kidney leads to oliguria and albuminuria, liver congestion to an increased urobilinogen content in the urine which along with the increased concentration causes the high coloured urine characteristic of heart failure. It is well to keep in mind that the urine in chronic nephritis is of a low specific gravity and light colour, a differentiating feature which becomes important for selecting a proper diuretic.

Foremost among the symptoms of congestive failure is dyspnœa on exertion. This is a telling difference between early left heart failure which is capable of working but unable to sleep and the failing right heart which suffers on physical exertion but is comparatively comfortable when resting.

The treatment of this condition is based on digitalis and diuretics. The principle of digitalis dosage is the same as in left heart failure but the response, for instance, in mitral stenosis and in pulmonary heart, is less satisfactory. It is often quite impossible to achieve bradycardia in a decompensated mitral heart until auricular fibrillation sets in, and to relieve dyspnœa in a failing pulmonary heart might prove a formidable task if a far progressed pulmonary emphysema continues to impede breathing. In such cases digitalis has to be given almost continuously unless bradycardia, vomiting or frequent extra systoles force us to stop it.

As soon as overstretching of the auricles leads to auricular fibrillation, digitalis acts much better so that a patient with a fibrillating heart usually feels more comfortable, if properly managed, than one with a regular pulse. Digitalization is achieved when the pulse deficit disappears, i.e., when heart and pulse rate



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are equal at a rate of 76 to 80 per minute, although the irregularity of the pulse usually persists.

The other mainstay of the failing right heart are the organic mercurial diuretics. Already in our first publication introducing Novasurol, the first injectible Mercurial diuretic (SAXL and HEILIG 1920), we pointed out indications and contra-indications of this powerful drug; we emphasized that in congestive heart failure, a term which covers right and whole heart failure, a mercurial diuretic is the remedy of choice, a statement confirmed by the experience of the last 25 years. On the other hand, it should not be forgotten that in fluid retention of renal origin Mercury is strictly contra-indicated. Somewhat later it was found that Ammonium Chloride, given for a few days prior to the Mercurial diuretic, increases the latter's effect considerably. Our routine treatment of congestive heart failure, therefore, consists of a mixture, containing Tr. Digitalis *m xv* to *m xxv* and Ammonium Chloride gr. xv, followed, as soon as the patient's weight remains constant or decreases too slowly, an *intramuscular* injection of Neptal, Mersalyl or Esidron; in no circumstances should any of these compounds be injected intravenously, every single untoward by- or after-effect ascribed to them having followed their intravenous administration. On the other hand, Mercurial diuretics, given by the intramuscular route, are not only safe but in many cases life preserving drugs, if they are withheld shortly after coronary thrombosis, in glomerular lesions, diarrhoea and severe anaemia. American cardiologists point out that, for instance, cardiac pseudo-cirrhosis of the liver is seen now about ten times as frequently as some 15 years ago because the Mercurial diuretics are prolonging so much the life span of congestive heart failure that such patients live long enough to develop these late sequelae, a statistic effect similar to that of Insulin.

Alkaline diuretics too have their place in the treatment of congestive heart failure, but it would be a mistake to give them along with Ammonium Chloride which acts, most probably, due to its acidifying action; alternative courses of alkalizers and acidifiers should be given.

A diuretic which sometimes acts very satisfactorily and permits increasing the intervals between Mercurial injections, is urea; doses of gr. iiss to gr. vi, two or three times a day, are required to get a full effect; it should be given in one to two ounces water or fruit juice to cover the unpleasant taste. Another way to reduce the frequency of Mercurial injections is to use the diuretic properties of Theophylline-ethylen-diamine (Aminophylline, etc.); although injections are incomparably more effective than tablets, some patients feel highly benefited by the latter.

The dietary management is the same as in left heart failure. For psychological reasons it is necessary to relax restrictions from time to time; otherwise the patient may embark on a course of non-co operation which does him more harm than occasional indulging in taking more fluid or salt.

Exercise should be regulated with a view to keeping up skeletal and heart muscle tone as long as possible and supporting the venous return, especially from leg veins and portal branches by walking and reasonable breathing exercises.

Every left heart failure which lives long enough develops right heart failure, not *vice versa*, so that in fact chronic left heart failure is the most common cause of right heart decompensation (WHITE, 1944). This course is unavoidable, because the lung congestion, caused by the inability of the failing left heart to cope with the blood volume pumped into the lesser circulation, acts as a constant and increasing strain on the right heart, leading sooner or later to its decompensation. It is interesting to see how the weakening of the right heart relieves many symptoms of left ventricular failure. We pointed out before that the most alarming manifestations of the latter, cardiac asthma and pulmonary oedema, are caused by the *weaken'd left ventricle's* inability to take out as much blood from the lungs as the *normal right heart* pumps in. Weakening of the right ventricle gradually diminishes its stroke volume to such an extent that the disturbed balance between right and left heart is re-established. As soon as this point is reached, pulmonary congestion decreases, the distressing cardiac cough which forced the patient to spend his night sitting on a chair is considerably relieved, even cyanosis may show some improvement as pulmonary engorgement diminishes. Instead, signs and symptoms of venous stasis, liver and kidney congestion, oedema and ascites, are accentuated, all the blood which does not choke the pulmonary vessels being safely deposited in the portal and systemic venous circulation. If a patient is seen for the first time at this stage, it is difficult to recognize that hypertensive heart failure preceded and caused the present picture of congestive heart failure or, in other words, that it was the failing left ventricle which threw the right one out of gear, the whole clinical appearance of the case being dominated by the failing right heart.

It is a most thankless task to take over treatment at this stage. Digitalization frequently improves the function of the right heart sooner or more than that of the left ventricle which was decompensated much earlier; and so, digitalis restores the discrepancy between stronger right and weaker left heart which already gave so much trouble. The blood which stagnated in liver and kidney and caused comparatively little subjective discomfort, is forced back into circulation, causing again pulmonary engorgement, dyspnoea,

disturbed nights, etc., and the patient feels worse due to our treatment. This, however, uses to be only a transient stage of recompensation. As soon as the left ventricle responds to digitalis and diuretics remove the congestion, a tremendous relief is achieved—for some time anyhow.

The prognosis of heart failure depends on the underlying condition, and on signs and symptoms of the individual case. Under proper treatment, especially continuous digitalis administration and avoiding of pregnancy, a case of moderate hypertension or moderate mitral lesion may carry on for many years. Decompensation of a syphilitic aortitis, aortic regurgitation or heart failure due to coronary insufficiency, especially coronary thrombosis, has a much more serious prognosis. Once cardiac asthma sets in, the probable duration of life is considerably limited; an attack of pulmonary oedema or the appearance of oedema on the *upper* extremities is of grave significance.

Concluding, it should be emphasized that heart failure is seen in a high percentage of our patients here. Rheumatic heart disease is as frequent in India as anywhere in the West and pulmonary heart more common, especially in Rajputana, than any other cause of cardiac decompensation. Hypertension is not at all rare here, although perhaps rarer than among Brahmins in South India. Syphilitic aortitis and aortic regurgitation are less frequently seen than one would expect from the high rate of syphilitic infections in almost every class of the local population. Myocardial damage is so common among our hospital patients that it is difficult to find a normal electrocardiogram; malnutrition, chronic diarrhoea, chronic bronchitis and emphysema, frequent fever attacks surprisingly widespread hookworm infestation among the rural population, drink, syphilis and atherosclerosis are the common aetiological factors. Coronary disease is confined mostly to professions which are working under mental stress, such as doctors, lawyers, speculators, etc. But it is to be expected that with the spreading of industrialization coronary complaints will become as frequent in India as they are in Europe or the U.S.A., where at least one out of every five doctors dies of coronary failure, which is twice as many as of cancer. We may hope, however, that the knowledge of prevention and treatment of this curse of our atomic age will progress apace with the complexity of living conditions.

(The Antiseptic, Vol. 43 No. II.)

Extract.

THE TREATMENT OF EARLY SYPHILIS WITH PENICILLIN.

This is an account of the treatment with penicillin of 96 patients (92 men and 4 women), of whom 29 were white and 67 Negro, varying in age from 18 to 38 years. Lesions of primary or secondary syphilis were present in every case, the diagnosis being established in 89 patients by the presence of *Treponema pallidum* in the lesions, and in the other 7 by repeatedly positive serologic tests for syphilis.

All patients were hospitalized and given 60 intramuscular injections of 20,000 units of penicillin in 1 cc. of saline solution at 3-hour intervals, day and night, for 7½ days, a total of 1,200,000 units. A Herxheimer reaction occurred in 91.6 percent of the patients during the first day of treatment, consisting of fever, chill, headache, and malaise. A number of mild reactions were observed after the first day of treatment, such as nausea, mild urticaria, and pruritis without eruption, but in no case was it necessary to suspend treatment on account of reaction.

Darkfield examinations were repeated at 3-hour intervals after the onset of therapy in 26 patients with suitable lesions, but treponemes could not be demonstrated after periods of 3 to 15 hours, and in a majority of instances after 9 hours. Chancres and mucous patches, unless exceptionally large and deep, healed and disappeared usually by the time treatment was finished.

Eight cases relapsed, 7 of them patients with secondary syphilis, and 1 a patient with seronegative primary syphilis. Six of the eight relapses occurred during the fourth month of observation, 1 during the sixth month, and 1 at about 13 months after treatment. Seventy per cent of the patients were observed for a year or longer. Among 89 patients whose spinal fluid was re-examined after treatment, abnormalities were found in only 3, all of whom had developed serologic or clinical relapse in the fourth month.

The incidence of observed relapse, 1 in 53 patients with seronegative and seropositive primary syphilis, and 7 in 43 patients with secondary syphilis, indicates that the treatment was adequate for primary syphilis, but inadequate for secondary syphilis, for which an optimum treatment schedule must yet be worked out.

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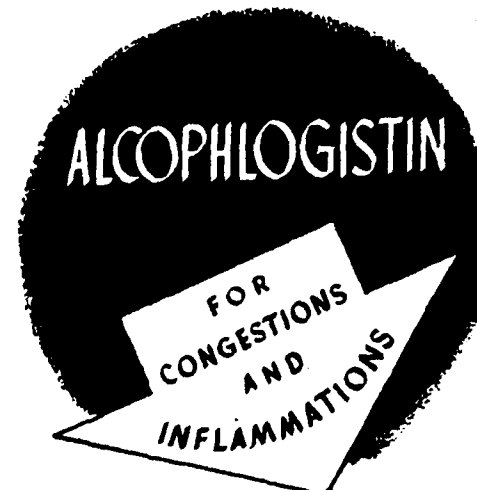
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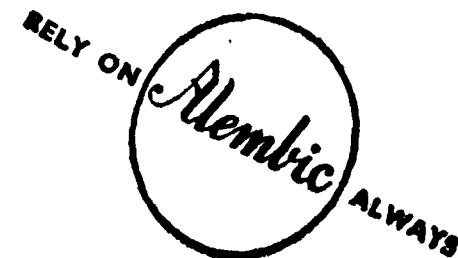
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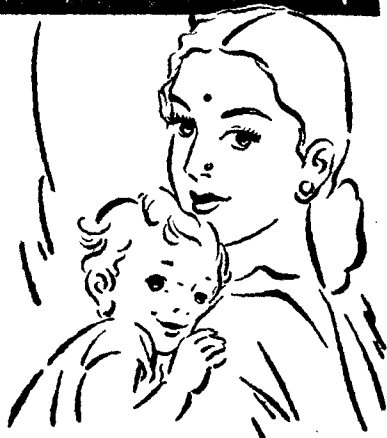


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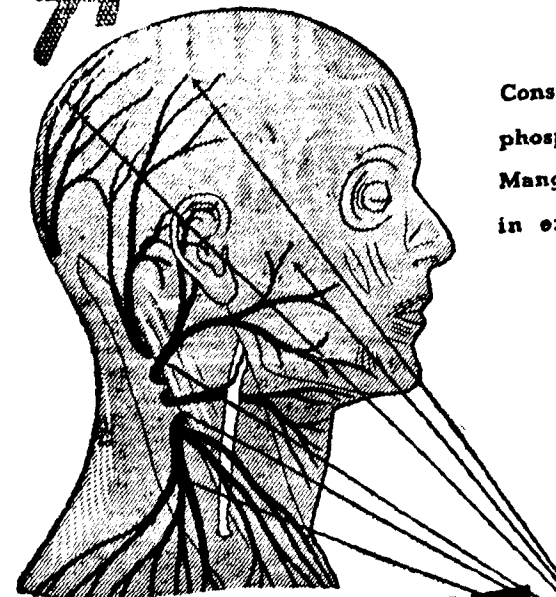
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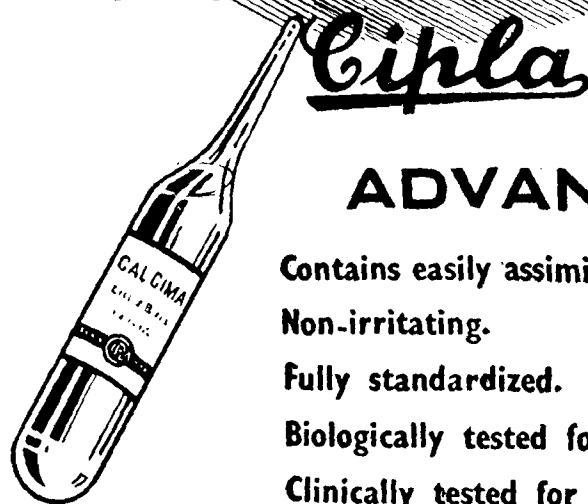
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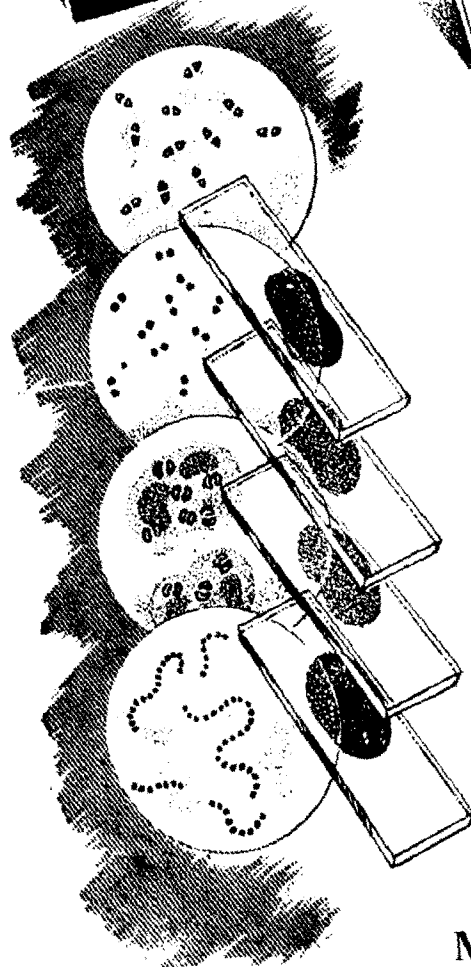
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DECEMBER 1946

NO. 12

THE PLACE OF TEMPORARY DIAPHRAGMATIC PARALYSIS IN THE TREATMENT OF PULMONARY TUBERCULOSIS

CHARLES J. KAUFMAN, M.D.

Denver.

The treatment of fresh exudative pulmonary tuberculosis may well be expected to become, in the near future, a problem of even greater practical importance than it is today. As the practice of case finding is extended, cases with this type of pathology should become available for treatment in increasing numbers. Hence the elaboration of a program of management for such cases is now especially timely and important. Temporary diaphragmatic paralysis supplemented by pneumoperitoneum has, in our experience, been found to be especially useful in pulmonary tuberculosis showing predominantly this type of pathology.

This discussion will include an analysis of thirty-seven patients in residence at the Hospital six months ago, in whom this treatment had been instituted. In this group of thirty-seven, there were thirteen who fell into the following categories: Five had too extensive disease, at the time of the phrenic nerve surgery, to permit expectation of aid from the treatment. Three showed no rise of the diaphragm following the operation. Two were over 55 years of age. In two, the operation was done in individuals who had had thoracoplasty on the same side. One was a silicotic with tuberculosis in whom the previous behaviour of an apical cavity had suggested that some help might be derived from the operation. These thirteen cases were therefore excluded from further consideration in this study.

In the remaining twenty-four cases, the x-ray findings were predominantly of an exudative nature in all but one. This patient had a sharply localized fibroulcerative lesion in the right apex. Some evidence of fibrosis was present in eleven of the remainder. Thin walled or thick walled cavities were present in ten cases. Six were minimal, ten were moderately advanced and eight were far advanced.

One of the patients died. She was a 12-year-old Mexican child who had a toxic febrile course from the time of admission. The operation was not done until two months after admission. A severe

extension of the disease on the same and opposite sides was noted shortly thereafter. She became steadily worse and died five months after the operation.

In eleven of the twenty-four cases, the phrenic paralysis and pneumoperitoneum were used as a primary procedure. In thirteen they were used after pneumothorax had been attempted without establishing any space or after an unsatisfactory space was abandoned.

Twenty of the twenty-four had a positive sputum before the institution of the phrenic paralysis. All but three of the twenty became negative by smear and culture—either of sputum or gastric lavage. The four that were negative before treatment have remained so. The three that remained positive included the one case that died, the one with a chronic fibroulcerative focus and who subsequently had a thoracoplasty and a third that still has an open ulcerative pulmonary lesion.

In this group of twenty-four patients whose pulmonary tuberculosis was treated by temporary diaphragmatic paralysis supplemented with pneumoperitoneum, twenty-one or 84 per cent were benefitted to the extent that the sputum became negative by exhaustive examination, x-ray examination showed the resolution of infiltrative changes and closure of cavities and both laboratory and clinical study indicated a subsidence of active inflammatory disease.

O'Brien in 1930 reported the results obtained by the employment of phrenic nerve evulsion in 418 cases of pulmonary tuberculosis. Cavities were present in 378. Closure of cavities was observed in 50.5 per cent of the 378. In an additional 31.2 per cent, the cavities became smaller. In other words, 82 per cent of cases with cavity were benefitted by the operation. In 102 patients, the operation was performed in preparation for a thoracoplasty. In eight of these, the cavities closed and in 61 they were decreased in size. Of further interest is the observation that in 288 patients the disease was bilateral. In 75 or 26 per cent, "the disease in the contralateral lung healed completely along with the lesion in the operative side." In 52.7 per cent the contralateral lesion improved.

Alexander summarising his own observations and those of many other workers emphasizes the effectiveness of phrenic paralysis in conjunction with bed rest in the treatment of cavities.

The advantages of the combination of diaphragmatic paralysis and pneumoperitoneum have been discussed by Banyai, Kugelmier, Fremmel Trimble, Eaton and Moore. Trimble and Wardrip, Rilance and Warring, and others. The experience of these writers indicates that the value of phrenic nerve interruption is appreciably enhanced by using the additional procedure. The diaphragm rises to a higher level and the elevation lasts for a longer period. It would seem reasonable to assume that a muscle which has been

deprived of its nerve supply sustains a relatively serious injury. Stretching the denervated diaphragmatic muscle seems to retard the recovery of full muscle tone even after nerve regeneration is complete. That something of this nature happens would seem to be borne out by our clinical experience. We find that about five to six months after phrenic nerve interruption by crushing, physiological movement of very small amplitude may be observed with either quiet or somewhat heavy breathing. Sniffing however is accompanied by paradoxical movement of the paralyzed side. This indicates that the muscle is no longer paralyzed but is still partly atrophied. Diaphragmatic elevation of a major degree may continue to be present for as long as two years although during that time the diaphragm may be slowly descending.

One of the disadvantages of this treatment is that its discontinuance is not sufficiently a matter of election. The diaphragm recovers its tone and gradually returns to what is a practically normal position. The pulmonary relaxation is consequently lost. If the disease has been of such a nature as to warrant collapse for a longer period, the reinstitution of diaphragmatic paralysis would require another operation. This is not desirable for two reasons. The frequency with which failure to obtain paralysis follows the attempt to recrush the nerve is rather high. Furthermore, there is the added hazard that when successful paralysis is achieved after a second operation the incidence of permanent paralysis is likewise high. Since the preservation of respiratory reserve is an item of serious consideration to the patient, such a development should be avoided if treatment can be manipulated to that end. Among the many reasons for this is the fact that the preservation of diaphragmatic function provides the patient with a very helpful and sometimes indispensable margin of safety in the event that major surgery should later become indicated.

One of the objections that has been raised to the use of diaphragmatic paralysis is that the patient does not acquire the necessary habit of dependence on the physician for proper supervision of his condition. He therefore more frequently drops out of sight to turn up later with progression of his disease. To some extent this problem is solved by the employment of pneumoperitoneum. The institution of pneumothorax. If this is indicated by the special characteristics of the individual clinical problem, would, of course, provide an additional safeguard against such a development.

There is a hazard in the use of pneumoperitoneum as has recently been emphasized by Rilance and Warring. Trimble, Eaton and Moore who regard pneumoperitoneum as essentially benign have described the postmortem findings in twenty cases. It must not be forgotten that the peritoneum is susceptible to infection by the hematogenous route and by lymphatic or direct.

extension from the organs which it invests or covers. Special emphasis, however, must be placed in this discussion on the possibility of hematogenous tuberculous infection and involvement by extension from a tuberculous ileocolitis, from a tuberculous or non-tuberculous cecitis and appendicitis or from pelvic infection specific or otherwise. These considerations make necessary the discontinuance of a pneumoperitoneum at the earliest moment consistent with the best interests of the patient.

There are therefore a number of reasons for considering seriously the institution and maintenance of a pneumothorax, should this be possible when diaphragmatic muscle tone has been fully regained. This would seem especially necessary when the disease was originally of severe nature, the patient perhaps quite young and the duration of collapse by diaphragmatic paralysis not safely long enough.

Are there unjustifiable hazards in such use of pneumothorax? Clinical experience, both recorded and unrecorded has, I think, very generously established the validity of the following rule: When the pulmonary tuberculosis is benign (minimal extent, no cavity, negative sputum, no endobronchial tuberculosis) the pneumothorax when induced is generally benign. Therefore when a tuberculosis has been effectively stabilized (as indicated by resolution of disease, closure of cavity, and adequately established negative sputum) by phrenic paralysis and pneumoperitoneum, consideration should be given to terminating treatment, when feasible, with pneumothorax maintained for a short period. Under such circumstances the duration of this period should be definitely fixed at the time of induction. (We have adopted arbitrarily a period of nine months). Obviously, the hazard should be appreciably less under such circumstances than in the case of pneumothorax used for a minimal active lesion with positive sputum. The hazard should be very much less than if the pneumothorax had been used initially in the same case. Our very small experience with this method has thus far been favourable.

The principal justification for the use of phrenic paralysis supplemented by pneumoperitoneum lies largely in the need for avoiding the three great hazards incidental to pneumothorax—that of empyema, bronchopleural fistula and inexpandable lung.

It has been estimated that empyema occurs in from 5 to 20 per cent of cases of pneumothorax. The figures of I. L. Cutler are very significant. For mechanically effective pneumothorax in moderately advanced tuberculosis, he found it to occur in 4 per cent of cases. In mechanically effective pneumothorax in far advanced disease he found empyema in 12 per cent. In mechanically ineffective pneumothorax it was 22 per cent and 31 per cent respectively for moderately advanced and far advanced disease.

The figures inevitably lead to some very definite and very important practical conclusions. Pneumothorax cannot be considered a truly satisfactory method of treatment in moderately advanced and far advanced pulmonary tuberculosis, even when mechanically effective. It is clearly dangerous treatment in advanced disease when mechanically ineffective. Furthermore in view of the favourable experience with phrenic paralysis and pneumoperitoneum that is now being accumulated there is need for a reappraisal of the place of this combination of methods in the treatment of pulmonary tuberculosis.

It is clear that as a primary procedure it has certain pronounced advantages over pneumothorax. If further experience should establish that it has an effectiveness and freedom from hazard superior to that of pneumothorax in the treatment of certain types of disease then its use as a primary procedure should ultimately be clearly defined and generally adopted.

It has now become a cardinal principle in phthisiotherapy that an ineffective pneumothorax that cannot promptly be made effective should be abandoned without delay. Our experience indicates that the prompt substitution for such a pneumothorax of phrenic paralysis and pneumoperitoneum may produce very favourable results.

The complications of bronchopleural fistula and inexpandable lung are both intimately related to the problem of empyema. The gas analysis studies of Coryllos seem to have established the validity of his contention that almost all empyemas complicating artificial pneumothorax are caused by the ulceration of the visceral pleura resulting from the extension of peripherally located tubercle. These studies have contributed significantly to the knowledge that has made possible a better evaluation of pneumothorax as a therapeutic measure in Pulmonary Tuberculosis.

Inexpandable lung may be caused by a long standing tuberculosis pleuritis, caseous or otherwise. Its most common cause, however, appears to be endobronchial tuberculosis. When pneumothorax is induced in the presence of the latter condition, atelectasis develops in a large percentage of cases (43 per cent). In most of these re-expansion is impossible. Equally frequent as a complication of pneumothorax in endobronchial disease is empyema. Both atelectasis and empyema are commonly associated. The end results of such developments are highly unsatisfactory.

It is clear therefore that unless used with great care and discrimination artificial pneumothorax is dangerous treatment. It should never be undertaken without a preliminary bronchoscopic examination. This applies as much to pulmonary tuberculosis of minimal extent as it does to moderately advanced and far advanced

disease. Furthermore before instituting pneumothorax, careful consideration must be given to the applicability of other methods.

In presenting the advantages of the employment of temporary diaphragmatic paralysis supplemented by pneumoperitoneum in the treatment of pulmonary tuberculosis, it is of paramount importance to emphasize that unaccompanied by full physical and mental rest, this method would probably be of little value.

It is the opinion of the writer that continuous close supervision over a period of several years is necessary if the benefit obtained from the procedure is not to be lost. When so supervised the timely employment of pneumothorax, thoracoplasty or, perhaps, lobectomy in cases still regarded as probably potentially progressive may serve to insure effective control of the disease with less risk of failure than if the latter procedures had been used initially.

Summary

Temporary diaphragmatic paralysis supplemented by pneumoperitoneum is a very useful method in the treatment of pulmonary tuberculosis with predominantly exudative pathology.

The pneumoperitoneum should be maintained with a sufficient quantity of air and under sufficient pressure to stretch the denervated diaphragmatic muscle.

The patient should be continuously and closely supervised for several years so that control of the disease may be assured or effective application of other surgical measures may be instituted when the disease would seem to be potentially progressive.

Under certain conditions the establishment of a pneumothorax after recovery of full diaphragmatic muscle tone should be considered.

Complete physical and psychological rest is an indispensable part of the treatment until the lesion has been definitely brought under control.

These cases of pulmonary tuberculosis that are brought under control by the primary application of this method are in a measure protected against the hazards and other disadvantages of pneumothorax and thoracoplasty.

—(Rocky Mountain Medical Journal, February 1945).



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Extracts.

EARLY RISING IN THE PUERPERIUM

(G. ROSENBLUM ET AL.)

The practice of early rising of parturient women dates back to ancient times. In ancient times a resting period of 1—6 days was enforced. Various observers demonstrated that the early rising was not harmful.

Rotstein asserted that the early rising of puerperal women necessitated by the London blitz of 1940—1941 did not result in harm to the patient. Black reported on a series of 3,400 cases about one-third were discharged on their fourth day, 30 per cent between the fourth and eighth days and 35 per cent after the eighth day. He reported no complications from this practice.

Armand claimed that, in a group of 200 puerperal women in Haiti, early rising prevents thrombosis and embolism, aids uterine involution helps lochial drainage and fosters quick recovery. He did not observe a single case of inversion, prolapse or retroversion of the uterus. He strongly advocates early rising in the puerperium regardless of the type of delivery.

Vara stated that in the women's clinic at Helsingfors 4,447 women were allowed out of bed very soon after delivery, with resulting improvement in bowel and bladder function and less incidence of thrombosis than in those who were kept in bed for longer periods. Greenhill permitted at least 90 per cent of parturient women out of bed on the first day without harm.

Now-a-days early rising and ambulation of surgical patients is widely advocated and accepted. Following advantages are claimed for this procedure:—

- (1) Asthenia is minimized.
- (2) The morale of the patient is lifted.
- (3) Economy to both patient and hospital through more rapid convalescence and through reduction of nursing personnel and more efficient use of bed space.
- (4) Military surgery may be rendered less hazardous.
- (5) Simplification of post-operative care.
- (6) Pulmonary complications are much reduced.
- (7) Atony of bladder and rectum is reduced and so the use of catheters and laxatives is avoided.
- (8) Wound healing is improved.
- (9) Thrombosis and embolism are reduced.

The authors studied the effect of early rising of puerperal women. A group of 582 obstetric patients was divided into three groups as follows:—

- (1) Early risers: ambulatory on first or second day of puerperium.

- (2) Intermediate risers: ambulatory on 3rd or 4th day of puerperium.
- (3) Late risers: ambulatory after the 4th day of puerperium. "Rising" meant the privilege of going to the bath room (which was always in theory), instead of using bed pans; eating their meals out of bed if desired, leaving the bed to bathe and remaining up while the bed linen was being changed. Rest of the time they were asked to remain on bed.

RESULTS

Bladder function: Approximately 35 per cent of the early risers required catheterizations averaging three per patient, while approximately 40 per cent of the intermediate and 40 per cent of the late risers required catheterizations averaging four per patient.

The contention that early puerperal rising may cause excessive bleeding is disproved by the statistics. Involution of uterus was uniformly good in all groups. The fear that early rising would cause a breakdown of episiotomy or abdominal wound incisions is likewise unfounded. Bowel movements were much better in early risers, 65 per cent amongst the early risers had spontaneous movement of bowels as against 17 per cent and 18 per cent amongst the other groups.

The claim advanced by some obstetricians that early rising may cause later prolapses and retroversions is also disproved. There was a decided reduction in the amount of nursing care required in patients rising early. There was better morale and less discomfort in this group. In cases of cesarean section there was less abdominal distension and discomfort and a much more rapid convalescence amongst the early risers.

—abstracted from J. A. M. A Nov. 24, 1945 (849—853)

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TREATMENT OF DIABETIC ACIDOSIS AND DIABETIC COMA.

(THOMAS P. ALMY M. D. ET AL).

At the New York Hospital the following regimen of treatment is followed for diabetic acidosis and diabetic coma:—

- (1) As soon as the diagnosis is made, give 25 units of regular insulin subcutaneously and repeat this every half hour until the patient is free from all signs of ketosis, judged by clinical and laboratory evidence.
- (2) Fluids, salt and carbohydrate are given by mouth. Every hour give 50—75 gm. of glucose as orange juice or grape juice 800—1200 cc, salty broth 200 cc and enough water to make the total fluid intake 1000—1500 cc.
- (3) If the patient is drowsy or comatose or if fluid by mouth is not retained due to vomiting give intravenous infusion of 5 per cent glucose in normal saline at the rate of 700—1000 cc per hour. This is reduced as soon as dehydration is relieved. Patients over the age of 40 years with arteriosclerosis or heart disease should be given infusion at slower rate.
- (4) Urine specimen is tested every $\frac{1}{2}$ —1 hour for sugar, acetone and diacetic acid (Catheterize if necessary). Above therapy is carried out until the urine is free from acetone and diacetic acid.
- (5) When ketonuria and all chemical signs of acidosis have disappeared, give fruit juice and 25 units of insulin at two hour intervals for at least eight more hours.

Ketonuria is determined by the ferric chloride reaction for diacetic acid and or the nitroprusside test for acetone. One or more clinical signs of acidosis as given below were taken into consideration to diagnose acidosis:—

- (1) Mental state, conscious, semi-conscious or comatose
- (2) Nausea
- (3) Nausea and vomiting
- (4) Kussmaul breath
- (5) Acetone breath
- (6) Soft eyeballs
- (7) Anuria and shock

"Mildness" of diabetes as indicated by the need for little or no insulin is not a guarantee against acidosis. The causes precipitating diabetic acidosis were:—

- (1) Breaking diet, eating more or less
- (2) Failure to take insulin
- (3) Infection
- (4) Injury as fracture

Ninety-nine cases of diabetic acidosis and diabetic coma were treated with the above regime with only 7 deaths, one of which was due to diabetic acidosis. The points to be remembered in the therapy of acidosis are:—

- (1) Large quantities of insulin. Every body agrees on this. The authors believe in small doses 25 units every half an hour as this method is more effective and less risky.
- (2) To combat dehydration normal saline is given by mouth or parenterally provided kidneys are healthy and are able to excrete sodium chloride; otherwise sodium lactate or sodium bicarbonate are used instead of sodium chloride.
- (3) There has been disagreement concerning the use of glucose in the treatment of diabetic acidosis and diabetic coma.

Some writers allege that glucose "neutralizes" insulin. This antagonism of glucose and insulin in diabetic individuals is in relation to the level of blood sugar which is quite unimportant in recovery from diabetic acidosis. Glucose does not oppose the accumulation of glycogen in the liver in the diabetic patient, rather it helps the accumulation and safeguards against hypoglycaemia which may occur on account of insulin therapy. Cases in which glucose is not administered require rigid laboratory control and accurate dosage of insulin. The above method is simpler to use.

Abstracted from J. A. M. A. November 24th, 1945 (863-868.)

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JAMES T. JARROTT, M.D., F.A.C.S.

Hempstead, N. Y.

Penicillin is the drug of choice in the treatment of eye diseases secondary to the gonococcus, streptococcus and staphylococcus and in intra-ocular infection by the pneumococcus. The pneumococcus is more frequently the cause of infection than the staphylococcus in penetrating injuries of the eye.

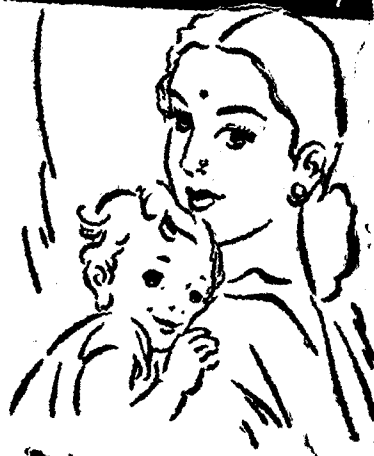
There are several methods of administering penicillin therapy, depending on the site and source of the infection:

1. Infection of the lids. The commonest infection here is ulcerative blepharitis and this condition is best treated with an ointment.
2. Infection of the conjunctive, especially ophthalmia neonatorum and gonococcal conjunctivitis: best treated by the instillation of drops of a strength of 2,500 O. U. per c.c. used every half hour for three hours, then hourly for twenty-four hours and every two hours thereafter.
3. Corneal ulcers and the anterior segment of the eye:
 - (a) By subconjunctival injection of one-half c.c. of a strength of 5,000 O. U. per c.c.
 - (b) Iontophoresis—with a solution of a strength of 3,000 O. U. per c.c. dissolved in a 0.9 per cent. NaCl solution for 5 minutes.
 - (c) Cotton pack in the lower fornix, using one-tenth of a c.c. of a strength of 5,000 O. U. per c.c. and leave in for one to two hours.
 - (d) Application of penicillin crystals directly to the corneal ulcer.
 - (e) Direct injection into the anterior chamber—2/10 c.c. of a strength of 2,500 O. U. per c.c. The best result is obtained if injection is made within 6 hours following infection: after twelve hours the results are not so satisfactory.
 - (f) Intramuscular or intravenous injection is not so satisfactory for intra-ocular infection as the concentration within the eye is not sufficient to combat infection.
 - (g) Posterior segment—Intravitreal injection.
 - (h) Orbital cellulitis—Intramuscular or intravenous injection.
4. For the posterior segment of the eye, intravitreal injection of 0.2 c.c. of penicillin of a strength of 2,500 O. U. per c.c. This injection should be made at least within 12 hours after infection: after 24 hours the results are not satisfactory.
5. For orbital cellulitis—intramuscular or intravenous injection is the most satisfactory.

In using penicillin locally to the eye, there is a possibility of producing an ocular dermatitis, which is evidenced by the lids becoming red and edematous with weeping of the skin, congestion of the conjunctive, and seromucoid secretion.

Medical Times, Sep, 1946.

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Medical News & Notes.

NOTICE.

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A course of Post-Graduate lectures in (a) Medicine, (b) Surgery, (c) Obstetrics and Gynaecology, (d) Ophthalmology, and (e) Oto-Laryngology will be held from January to March. Each of these subject will comprise 20 lectures, more particularly intended those preparing for the Higher Degrees and Diplomas in Medicine.

A short Refresher Course in Modern Methods of Treatment and Diagnosis in (a) Medicine, (b) Surgery, (c) Obstetrics and Gynaecology and (d) Venereal Diseases will also be held during January to March, 1947. The course in each subject will extend over a period of 2 weeks, except in Venereal Diseases which will extend over a period of one week, and will be held in the City Hospitals.

The Post-Graduate and Refresher Courses are open to Registered Medical Practitioners of the Allopathic system. Particulars regarding the courses can be had from the Secretary to the Council of Post-Graduate Medical Education, University Buildings, Chempauk, Madras.

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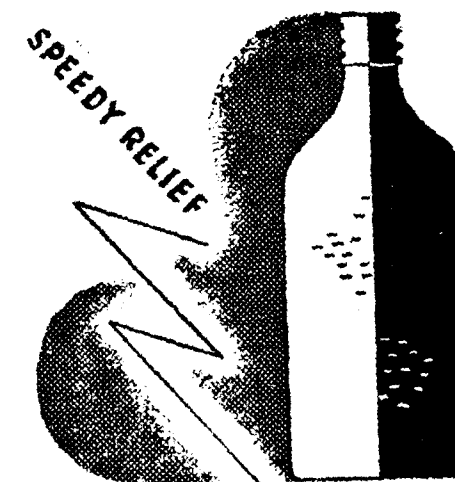
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Anti-Asthma Liquid, prepared according to a special formula, quickly liquefies and expels the phlegm, clears the air passages and ends irritation.

INDICATIONS:
Asthma, Spasmodic Coughs, Chronic Bronchitis and Catarrhal Inflammation of the Lungs.

COMPOSITION: Each fluid drachm represents

Liq. Arsenicalis	1/4 Min.
Tinct. Lobelia	1/4 Min.
Aether	1/4 Min.
Tinct. Belladonna	5/8 Min.
Tinct. Euphorbia	1/4 Min.
Tinct. Ephedra	20 Mins.
Syrup Vasaka	30 Mins.
Liq. Exc. Kuth	8 Mins.
Potash Bromide	1 1/2 Gr.
Potash Iodide	5/8 Gr.
Sodium Nitrite	1/15 Gr.
Borax	1/4 Gr.

**ANTI
ASTHMA
LIQUID**

RELY ON **Alembic** ALWAYS

ALEMBIC CHEMICAL WORKS CO., LTD., BARODA

AL. 399.

When ordering please mention *Medico-Surgical Suggestions.*

Regd. No. M. 2853.

*Calcium
deficiency-*

PRESCRIBE
CALCIMA

Cipla



ADVANTAGES.

Contains easily assimilable organic calcium.

Non-irritating.

Fully standardized.

Biologically tested for sterility.

Clinically tested for absence of reaction.

Effective Calcium Therapy

Rx *Calcima Cipla*

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