

**THE
MADRAS MEDICAL JOURNAL**

A JOURNAL OF MEDICINE IN ALL ITS BRANCHES.
The Official Journal of the Madras Medical Association.

PUBLISHED QUARTERLY.

155

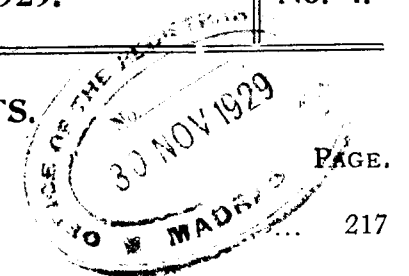
Vol. XI.

October 1929.

No. 4.

CONTENTS.

- | | PAGE. |
|--|-------|
| 1. GASTRO-JEJUNAL ULCERATION
By N. MANGESH RAO, F.R.C.S. | 217 |
| 2. RADIUM THERAPY. NOTES ON THE PHYSICS OF RADIUM
ON THE PREPARATION OF PATIENTS, AND OTHER
OBSERVATIONS OF RADIUM THERAPY
By Capt. T. W. BARNARD, M.S.R., F.R.P.S., and
Dr. M. J. SANTANAKRISHNA PILLAI, L.M.S.,
L.R.C.P. & S., L.R.E.P. & S., D.R. (Edin.). | 230 |
| 3. BACTERIOLOGICAL METHODS IN THE DIAGNOSIS AND
TREATMENT OF DISEASES
By Dr. N. SESHADRINATHAN | 240 |
| 4. (1) TUBERCULOSIS OF THE BREST. (2) RECENT ADVANCES
IN THE TREATMENT OF ACUTE INTESTINAL OBSTRUC-
TION. (3) A CASE OF PERINEPHRIC ABSCESS
By N. R. NARASIMHAN, F.R.C.S., &c. | 254 |



Published by the Secretary,
MADRAS MEDICAL ASSOCIATION, MADRAS.

ANNUAL SUBSCRIPTION.

Indian Rs. 5, Post Free. Foreign Sh. 7/6 or its eqvt. Post Free.

In Cases of

ASTHMA AND SYPHILIS

Try

TRADE "KUSHMOL" MARK

(Calcium-Arseno-Mercurous-Sulphide)

and

You will know what to think

Distinguishing Points:—Therapeutic Potency, Oral Administration, Rapid Action and Permanent Relief.

Sold on an Explicit and Unequivocal Guarantee, must make good or we will

Mention the disease for which required. Price Rs. 2 12.

Dr. Khurshaid Ali Khan,

H/23, Victoria Park, BENARES CITY.

The Quilon Bank, Ltd.

ESTABLISHED 1919.

Head Office:—Quilon, Travancore.

Branches:—Kayamkulam, Trivandrum, Ernakulam, Cochin,

Madras (165 Broadway) and Chirayinkizil.

The Bank receives deposits and advances loans. Rules regarding same may be had on application to the Head Office or branches.

C. P. MATTHEN,

Managing Director.

THE MADRAS MEDICAL JOURNAL.

Vol. XI.

October 1929.

No. 4.

GASTRO-JEJUNAL ULCERATION.

BY N. MANGESH RAO, F.R.C.S.

The frequency of this ulcer depends greatly on the nature of the disease for which the gastro-jejunostomy was performed. It never occurs in cancer cases, and is rare in simple Gastric-ulcers; but is a frequent and dangerous sequel in duodenal-ulcer cases. In duodenal ulcers of long standing and with a dilated stomach gastro-jejunostomy is rarely followed by this ulcer. In fact the frequency of this type of ulcer varies directly as the HCl content of gastric juice. Lewishon gives the incidence as 23-34% in duodenal ulcer cases, if a follow up be done 4-9 years after a gastro-jejunostomy. About 8-10% of all gastro-jejunostomies are liable to this complication, but Hurst places it at 20%. The incidence is greater in duodenal ulcers, especially after Von Eiselberg's operation of Pyloric Exclusion. With the idea of reducing the acidity of gastric juice partial gastrectomies were done and though the incidence of recurrent ulcers was reduced, it could not completely be prevented. It should be remembered that most of the oxyntic cells are situated towards the cardiac side of the body of the stomach. Bergfeld reported 67 cases of recurrent ulcers in 1925 from German literature, of gastro-jejunal ulcers after partial gastrectomies.

is produced much more easily, secondary ulceration is less frequent than in the duodenal ulcer cases. In duodenal ulcers the acidity curve is only slightly lowered after the operation as proved by Conybeare, the alkaline juices being insufficient to neutralise all the free HCl. Any obstruction at the stoma as too small an opening, twisting of afferent limb of jejunum or its kinking will prevent a free flow of the alkaline juices into the stomach. In addition to other septic foci the presence of an original ulcer in the stomach or duodenum in such close proximity to the new stoma is liable to help in this recurrence. This is one of the reasons why Continental Surgeons now invariably do partial gastrectomy, the other being to reduce the total acidity by reducing the number of oxyntic glands. If there is any acute gastritis accompanying the primary ulcer at the time of operation it is very likely to predispose the stoma to ulceration as the inflamed gastric mucosa will not unite quickly with the jejunal mucosa, hence the necessity for preliminary medical treatment, before operation is undertaken.

Pathology.—The ulcer may be acute, sub-acute, or chronic depending on its duration. Jejunal ulcer resembles ulcer on the anterior wall of duodenum and is liable to acute perforations. The anastamotic ulcer resembles a gastric ulcer. The jejunal ulcer is either round or oval (and triangular when opposite the stoma) and rarely becomes large or very callous and there is very little cicatricial stenosis as compared to a stomal ulcer. Anastamotic ulcers are larger and more irregular and give rise to marked fibrosis, which may narrow the new stoma, or give rise to a cicatricial deformity. The mesocolon is often much thickened and contracted dragging the colon towards the anastomosis. Later the ulcer may penetrate into the colon, resulting in

a gastro-colic fistula. According to Bolton and Trotter this occurs in about 10% of the cases. Hurst is of opinion that it is the jejunal ulcer that most commonly perforates into the colon and then heals. The anastamotic ulcer also resembles a posterior ulcer of stomach or duodenum as it is liable to penetrate into pancreas or the middle colic artery and give rise to fatal hæmetemesis. An anterior gastro-jejunostomy may also be followed by an ulcer which may penetrate into anterior abdominal wall and result in a fistula near the umbilicus. A jejunal ulcer when opposite the stoma may give rise to slight stenosis and lead to dilatation of proximal limb of jejunum.

Symptoms.—The onset may be immediately after the operation, or may be some years later. Patients who are free from symptoms for one year are unlikely to suffer from an ulcer if they continue the dietetic treatment. The symptoms resemble those of a duodenal ulcer, but their onset is earlier and less relief is obtained by food and alkalies. The pain is generally situated to the left of mid-line and just above the umbilicus. The pain may be aggravated by bending and twisting of the body especially when there are adhesions to the anterior abdominal wall. Patient may complain of nausea and flatulence but vomiting is rare. Patient gets emaciated from restriction of diet resorted to by the patient for the relief of symptoms. Hæmatemesis and malæna may occur and the incidence of hæmorrhage is greater than in duodenal ulcers. Severe hæmorrhage is more common with jejunal ulcers. In 84% occult blood in stools may be found. Severe anæmia is fairly common. Local tenderness often with muscular rigidity may be found over the ulcer. Sometimes a swelling or induration may

be felt due to plastic peritonitis especially when adhesions to anterior abdominal wall have formed. In about 30% of these cases hyperchlorhydria is present and in 40% a high normal is present in spite of a gastro-jejunostomy. In most of the cases free acid is always present if gastric contents are examined after a large meal (Porges). Bile is present in either every fraction (45%) or in some fraction of the meal (38%) but in 17% it may be completely absent (Hurst).

X-ray appearances.—Palpation under a screen after a barium meal would show the localisation of tenderness either to stoma or to some point in the first 4 inches of efferent limb of jejunum. In some cases there may be delay in emptying and hyperperistalsis. Dilatation of stomach is present if there is also pyloric or duodenal stenosis. Occasionally some deformity at the stoma may be noticeable but usually the stomach empties fairly rapidly and no ulcer may be demonstrable radiographically. Sometimes a deposit of barium on the ulcer may be seen after the stomach has emptied. It should be found out if the pylorus is patent or not by placing the patient on the right side. A normal gastro-jejunostomy according to Carman (Mayo Clinic) should satisfy the following conditions.

1. The meal should pass freely through the stoma and no gastric residue should be left.
2. The stomach should be smaller than it was before the operation.
3. Gastric paristalsis should not be overactive, stomach should not be deformed, nor show any tendency towards spasticity or hour-glass formation. Stomach should be moderately mobile.

4. The contour in the vicinity of stoma should not be deformed.

5. The duodenum and afferent limb of jejunum should not be dilated.

6. The efferent limb of jejunum should not be narrowed or markedly irregular.

The direct signs of an ulcer are an ulcer niche or crater deformity about the stoma, or complete occlusion of stoma, irregularity of jejunum or presence of gastro-colic fistula.

The indirect signs are gastric retention, hyperperistalsis, dilatation of stomach, spasticity of stomach, dilation of duodenum or spasticity of jejunum.

Fluoroscopic examination after one or two mouthfuls of barium meal :—the barium would fill the niche of the ulcer, or stand out as a shadow of increased density in the stoma, or as a projection 1 cm. in diameter from the contour of the jejunum usually in efferent limb rarely beyond 5 cms.

Diagnosis.—If the symptoms persist after the gastro-jejunostomy the following conditions should be excluded (1) persistence of the original ulcer, (2) too large a stoma giving rise to a "dumping stomach." The former condition is due either to too narrow stoma or one that does not drain well, being too high above the greater curvature. This allows food to pass through the pylorus and does not give rest to the ulcer. Dumping stomach gives rise to discomfort from rapid filling of jejunum. It is relieved by resting a little after meals and taking some time over each meal. When there has been an interval between the

operation and the reappearance of symptoms the following conditions should be excluded—breaking down of the original ulcer, a recurrent ulcer either a duodenal or gastric, cholecystitis, chronic appendicitis which might have been overlooked at the time of operation or developed later on, or the possibility of cancer developing on the original gastric ulcer (but this condition is not common).

If all the gastric contents leave by the new stoma and nothing passes by the pylorus, both recurrent and persistent ulcers may be excluded. Recurrent or persistent gastric and duodenal ulcers give rise to the same sequence of symptoms as before the operation, the time of occurrence of pain and its location being unaltered. The pain in gastro-jejunal ulcers is felt just above and to the left of umbilicus, it is also capricious and intractable. Fullness and discomfort felt to the left of umbilicus immediately after meals and often associated with diarrhoea is not uncommon after a gastro-jejunostomy and is due to a large stoma.

X-ray examination will show definite signs in the majority of cases of some duration. Under fluoroscopic examination tenderness over the new stoma or some point in the first few inches of efferent loop of jejunum is conclusive. Other X-ray signs have been already mentioned.

COMPLICATIONS OF GASTRO-JEJUNAL ULCERS.

Perforation.—Is the most serious and the most frequent complication of this type of ulcer. It is jejunal ulcer that perforates most often. It may perforate into the general peritoneal cavity, into the transverse colon after the colon has become adherent to the base of ulcer. After an anterior gastro-jejunostomy it is more likely to

become adherent to anterior abdominal wall and rarely give rise to a fistula. The intraperitoneal perforations may occur without any previous signs, but some generally have symptoms after the gastro-jejunostomy.

Fistulae.—Jejuno-colic, gastro-colic, and gastro-jejuno-colic fistula. As a rule the fistula is a jejuno-colic fistula to start with although its termination is close to the anastomotic line. Occasionally it is a gastro-colic or a gastro-jejuno-colic (when there is free and direct communication between all the three viscerae). Rarely there may be two fistulae. In others the openings may be narrow and valvelike giving rise to intermittent symptoms. In the jejuno-colic fistula the floor of the jejunal ulcer is in contact with the colon from the outset. In the others the mesocolon becomes thickened, infiltrated and contracted. The colon is sufficiently approximated to the anastomosis for a fistulous tract to form. In anterior gastro-jejunostomy the stomal-ulcer may from adhesions to anterior abdominal wall and may result in the formation of a parietal abscess and this may subsequently give rise to fistula near the umbilicus.

Symptoms of fistulae.—The interval between the gastro-jejunostomy and the appearance of symptoms of fistula may vary from a few months to several years. Usually the symptoms are preceded by symptoms of a recurrent ulcer at the anastomosis or in the jejunum.

In gastro-colic and gastro-jejuno-colic fistulae there is severe diarrhoea, presence of undigested food, in stools, faecal vomiting, with belching of foul smelling gas, and rapid emaciation are often met. In jejuno-colic fistulae diarrhoea may be more or less severe and often intermittent. Vomiting is intermittent and sometimes faecal

coming on, only when the diarrhoea is severe, as the watery condition allows its passage more easily through a narrow fistulous track. Patient feels much better when he is constipated.

X-ray with barium meal will show the presence of barium in the fistula and the colon. The meal should be made thin. A barium enema will show the fistula and its presence in the stomach or jejunum.

Gastric lavage may show faecal material in the stomach.

Prognosis—patient may live some time but ultimately dies of exhaustion from the pain and anaemia and want of food, or repeated hæmorrhages, or a perforation resulting in peritonitis. The incidence of anastamotic ulcers in this presidency is increasing with the increasing number of gastro-jejunostomies for duodenal ulcers.

Treatment.—Preventive treatment.

1. Not to perform a gastro-jejunostomy unless a peptic ulcer is clearly demonstrated.

2. All faecal sepsis—as from teeth, tonsils, nasal sinuses, etc., should be eradicated before the operation. At the operation all associated disease as of gall-bladder, appendix, etc., should be removed.

3. Instructions to patients with juxta-pyloric ulcers about light food well masticated, taken at short intervals, moderation in smoking, avoidance of alcohol, condiments and taking of olive oil and alkalies to keep down the acidity.

4. To excise the primary ulcer in addition to the gastro-jejunostomy thereby removing a source of sepsis in cases of duodenal ulcers and to perform a partial

gastrectomy in cases of gastric ulcer, and hyperchlorhydria should be first treated medically unless there is a distinct indication for surgical treatment.

5. During operation the stoma should be large enough, avoid use of unabsorbable material, any twisting of jejunum, avoid bruising of the stomach or jejunum by clamps, the stoma being in the proximal part of pyloric canal and encroaching on the greater curvature.

6. Patient should be instructed that he has to take great care never to go empty stomach and advised to use alkalies to keep down the acidity of gastric juice.

Medical treatment is the same as mentioned under gastric and duodenal ulcers.

Surgical treatment.—This will depend on the conditions of original ulcer, whether stenosis of pylorus or duodenum is present and general condition of patient to stand the operation.

1. Where patient is very weak and exhausted and unlikely to stand a prolonged operation the best thing to do is to perform a Jejunostomy and feed him through this and give him alkalies by mouth to neutralise the gastric juice. When his condition has improved further surgical treatment is done.

2. Where pylorus and duodenum are patent and original ulcer healed, excise the anastamotic ulcer, close the stomach and jejunum separately, *i.e.*, revert to condition before the operation.

3. Where pylorus or duodenum is stenosed one may do a gastro-duodenostomy or a Finney's operation after closing the stomach and jejunum, or a new gastro-jejunostomy after excising the recurrent ulcer.

4. If patient can stand it a partial gastrectomy including original and the recurrent ulcer followed by a Polya-Balfour or Polya-Mayo is the best. Mortality in these is 25% in Eiselberg Clinic. There is still a chance of recurrent ulcer in these cases of hyperchlohydria. Finsterer says that three-quarter of the stomach should be removed to produce achlorhydria. Partial gastrectomy is the best if the patient can stand the operation. Great care has to be taken to prevent any damage to the middle colic artery.

5. Where the mesocolon is infiltrated and firmly bound to the anastomosis it may be impossible to do a partial gastrectomy without damage to the blood supply of transverse colon. In such cases an exclusion operation as a Devine's is done proximal to the anastomosis, the jejunum below the old anastomosis being brought over the colon for anastomosis, the loop being sufficiently long as to cause no pressure against a distended colon.

6. In gastro-jejuno-colic fistulæ it will be necessary to undertake an extensive operation. Partial gastrectomy with an anticolc end to side gastro-jejunostomy is indicated. In a few cases resection of a small part of colon may be necessary.

These cases of anastamotic ulcers are very weak and may suffer from anæmia, and it is essential to get them into a fit condition for operation by medical treatment, blood transfusion, and in some a preliminary jejunostomy may be necessary. Mortality varies from 9% (Finsterer) to 25% (Eiselberg Clinic). In cases of gastro-jejuno colic fistulæ it may be 30%.

The after treatment should be prolonged. The patient should be made to understand that he is an abnormal person and can only lead a semi-invalid life.

In conclusion I would suggest that all cases of Dyspepsias should be carefully investigated for the presence of peptic ulceration. Once it is confirmed, it is essential to explain and instruct the patient on his condition and obtain an intelligent co-operation for the treatment of the same. To resort to immediate surgical treatment is not warranted by our present experience, especially in early cases where high gastric acidity or delayed gastric secretion is liable to persist. We do not know the actual cause of the disease and any surgical operation that may be undertaken can only relieve and not cure the condition. By too precipitate an operation we may land the patient into further trouble in some of the cases and ultimately he may become a physical wreck. Peptic ulceration is not an uncommon disease in this presidency and there is a fear that gastro-jejunal ulceration is actually becoming a problem for the surgeons. I have seen a fairly good number being admitted this year and it is likely to increase in future.

In all these peptic ulcer cases especially the early once medical treatment with eradication of septic foci should be insisted on and carried out for 6-12 months. Surgical treatment is to be undertaken if the former fails or there is a clear indication for the same as mentioned in my previous articles. The after treatment should be a careful one. The patient should be impressed with the idea that he is liable to recurrence unless he restricts himself to a certain regime of life and diet.

RADIUM THERAPY.

NOTES ON THE PHYSICS OF RADIUM, ON THE
PREPARATION OF PATIENTS, AND OTHER
OBSERVATIONS ON RADIUM THERAPY.

BY CAPTAIN T. W. BARNARD, M.S.R., F.R.P.S.,

AND

DR. M. J. SANTANAKRISHNA PILLAI, L.M.S.

L.R.C.P. & S., L.R.F.P. & S., D.R. (EDIN.)

In the Medical College Magazine for March 1928 the authors published a paper on "Radium and a Hospital Radium Service." This gave a brief account of the discovery of Radium, discussed the physics of this wonderful element and referred to the chemical processes necessary to recover the mineral from the compound materials with which it is always associated. It also gave details of the organisation of a Hospital Radium Service and a summary of the pathological conditions which have responded to Radium Therapy.

As a knowledge of the physics of Radium is essential to the understanding of the methods of its medical application, a few extracts from the article under reference are quoted and augmented

Radium is a metal of the alkaline earths similar to Calcium, Magnesium, Barium and Strontium and its existence as an element has been exactly ascertained by spectroscopic analysis. Its symbol is Ra and its atomic weight, obtained by Madame Curie, is 226.45. Its melting point is 700° C.

Radiations from Radium are composed of three types, these having been designated by the terms Alpha, Beta and Gamma, by Sir Ernest Rutherford who made the first analysis of these complex rays. They are emitted simultaneously, differ in character and penetrating power and have different effects medically.

Alpha Rays are atoms with a positive electrical charge. They are the least penetrating of the three types, having a velocity of a tenth to a twentieth of that of light. They are deflected by strong electric or magnetic fields, can be collected on wires negatively charged and the radiations tested on a screen of zinc sulphide. As Alpha rays are absorbed by about three inches of air, thin sheets of paper, rubber or metal they are practically useless for the external treatment of patients.

Beta Ray, are similar to the Cathode Rays generated in an X-Ray tube but are more penetrating. They are negative electrons and consist of bundles of rays with velocities varying between 60,000 and 180,000 miles per second, being termed soft, medium and hard Beta rays. By adopting filters of different densities the desired rays can be utilised for therapeutic purposes. It is usual to term the rays which are absorbed by 0.2 mm. aluminium as "soft", those that cannot pass 0.2 mm. silver as "medium", and the radiations that can pass through this thickness of silver as "hard." The "hardest" of these rays do not penetrate more than about three-eighths of an inch of human tissue; a filter of 4 millimeters of aluminium or 1 mm. of lead will absorb practically all Beta rays.

Gamma Rays are similar to X-rays, although the hardest Gamma rays are more penetrating. They are

ether vibrations of extremely short wave length, having the same velocity as light. It takes about six inches of lead to absorb these radiations, which are the most valuable from the medical point of view.

All three types give off secondary radiation when they pass through or collide with any substance. The intensity of the rays varies inversely as the square of the distance from the Radium.

Radium for medical purposes is nearly always prepared as Radium bromide, $Ra Br_2 \cdot 2H_2O$ or Radium Sulphate, $Ra SO_4$. The latter is generally used for direct work as it has a high element content and, being insoluble, the chances of loss are minimised.

The containers may be composed of many materials, the most satisfactory being Platinum for needles and tubes, the walls of these being 0.5 mm. thick—this thickness being sufficient to cut off all the Alpha rays and practically all the primary Beta radiations. There are also flat applicators of various sizes and shapes; a good substance for these is monel metal, an alloy of nickel, copper and other metals. The whole applicator is made of this metal, the $Ra SO_4$ being placed in a chamber, whose walls and back are about 1 mm. thick, the Radium being sealed within by a cover of the same metal 0.1 mm. thick—this cover permitting about 50% of the primary Beta rays to pass through. Such an applicator would be used for superficial lesions, in which Beta Radiations are of great value, but the latter can be absorbed by enclosing the container in a thicker metal chamber, which is done when it is used for depth doses. The contents of applicators vary from 0.5 milligramme to many milligrammes, a full strength applicator being

one containing 5 milligrammes of the element to one square centimeter.

Methods of Application.—Several methods are used in Radium treatment; they are,

- (1) Surface application, where the Radium containers are placed in close proximity to the skin or inserted in the natural passages.
- (2) Tele-Radiotherapy, where a large quantity of Radium is enclosed in a "bomb" and the depth dose is given from a distance of 6 to 10 cm. from the skin.
- (3) Interstitial, where needles and tubes containing Radium are imbedded in the tissues.

In all these methods filters of various substances are used to absorb radiation not required for the treatment of the lesion.

Preparation of patients and other observations.—

1. The causal factors concerned in the lesion should first be removed. Any focal sepsis and other conditions retarding the progress under treatment should be attended to if satisfactory results are to be achieved.

2. The patient's general health is to be improved and brought into as fit a condition as possible before subjecting to irradiation, as the power to combat the resulting reaction chiefly depends on the efficiency of the excretory organs.

Skin conditions such as Scabies, weeping Eczema, etc., should be attended to as a healthy skin can stand a stronger dosage than an unhealthy one.

3. The blood should be examined for total and differential counts of the leucocytes, the number of R.B.C. the percentage of hæmoglobin and the resulting colour-index being noted.

During the course of treatment and after, several blood examinations should be made as the condition found will decide the course of the further treatment, the nature of blood pressure being another important factor to be considered.

4. An R. B. C count of below 1 million per cc. is a contra-indication for irradiation and the treatment should be delayed till the count is brought up somewhere to about 2 millions.

5. In Leukæmia the reduction of W. B. C. to about 10,000 per c. mm. of blood should determine the discontinuance of treatment as the fall out-lasts the treatment

6. In lesions affecting the liver and the kidneys, efficiency tests should be carried out for of purposes comparison later. Advanced lesions of the liver, kidneys and the heart, etc., are contra-indications for massive doses of Radium or X-Rays.

7. The bladder (urinary) should be kept empty before treatment to avoid intractable cystitis which sometimes follows in certain susceptible individuals. In cases accompanied by gastro-intestinal disturbances, the patients should be warned that the condition may be made temporarily worse, though there is no reason for unnecessary alarm.

8. No water or soap to be used over the irradiated part for 10 days and the exposed skin area should be

protected against the Sun's rays. For the mild irritation of the skin sometime caused, Lanoline may be gently rubbed into the exposed area of skin.

9. In irradiating abdominal wall the linea-alba should be avoided in order that any subsequent operation may be carried out by opening through the central line without fear of the delayed or non-union of the skin or other such complications which may follow if this precaution is not observed.

10. In the treatment of Asthama and allied conditions affecting the lungs and in the administration of massive doses in malignant lesions, the advent of protein shock should be anticipated and combated by intravenous saline injections and alkaline drinks and by administration of Adrenaline Chloride and Glucose accompanied by light liquid nourishing food given in small amounts at frequent intervals—iced, if necessary.

11. Chlorotone in doses of 10 grains to an adult may be administered with advantage to overcome sleeplessness during the first 24 hours.

12. In the treatment of Goitre, when progress is slow, the presence of retro-sternal thyroid should be remembered.

13. The administration of mercury, arsenic and other metallic preparations should be suspended during the radiation treatment.

14. In cases of lesions of pelvis situated in its depths, a combined treatment with Radium and deep X-Ray Therapy is productive of more beneficial results as compared with treatment with either alone.

15. The treatment for Menorrhagia should be carried out soon after the period is over, in order to avoid the usual reactionary excess which follows treatment when given immediately before the onset of the menses. Non-observance of this precaution has led to fatal results in patients bordering on life and death.

16. In general, a diagnosis describing the exact pathological condition of the tissue involved, (*e.g.*, Round cell Sarcoma, Squamous cell Epithelioma, Columnar Carcinoma, etc.) will greatly aid the proper application of Radium Therapy.

The nature of the pathological tissue, the organ concerned in the lesion, the object aimed at (as for instance,

- (a) in delayed puberty, stimulative dose to the ovary is indicated,
- (b) in conditions requiring control of fertility, an inhibitory dosage is needed,
- (c) in menopausal conditions, complete sterility,

(d) in tumours 'destructive' dose is called for), the depth of the tissue involved, the condition of the skin, of blood and the efficiency of the excretory organs, etc., should be taken into consideration in fixing the correct dosage to ensure satisfactory results, more particularly so in the 'bomb' method of Radium Treatment.

17. A regular team work consisting of Physician, Surgeon, Pathologist, Serologist, Bio-chemist, Radiologist, Bacteriologist and Physicist in an atmosphere of sympathy and co-operation will greatly advance the cause of science in general and Radium Therapy in particular.

Basic principles involved in Radium Therapy.—The effect of irradiating living cells by Radium, if of sufficient intensity and allowed to act for the required length of time, is to produce certain definite changes which have been classified into three phases:—

- (1) Increased cell activity accompanied by cell proliferation.
- (2) Arrest of cell activity and changes in staining reaction, etc.
- (3) Degeneration and complete destruction of the cell.

The three phases are not necessarily noted in every case, the transition from the stimulative to the destructive stage depending entirely on the intensity of irradiation which when strong enough the stimulative stage, may be altogether absent.

Embryonic tissue, Pathological tissue, especially those with plenty of blood supply, yield readily to Radium Treatment. The cells undergoing karyokinetic changes are more vulnerable than those in the resting stage, are more easily stimulated, their vitality more quickly inhibited and degeneration is more easily induced.

It has been established that some tissues are more easily controlled and destroyed than others; a round celled Sarcoma is much more readily affected than a carcinoma; this response to irradiation is considerably modified by the nature of the resistance of the patient, site and size of the tumour, the condition of the tumour whether ulcerated and infected or otherwise. The size and depth of tumour influence considerably the dosage and technique of irradiation which must be exact to

ensure an even distribution of its action throughout the tissues affected; the site of tumour and the extent of the involvement of tissues concerned also decide the degree of influence of the irradiation. For instance, a rodent ulcer of skin is easily cured with a half strength plaque exposure for a few hours, whereas a rodent ulcer involving cartilage or bone is but rarely influenced. Again cancer of cervix, highly infected and badly ulcerated, rarely responds satisfactorily and if it does so, a necrosis sometimes occurs which opens up the uterine arteries with consequent severe hæmorrhage. It is also noted that the epiblastic, mesoblastic, hypoblastic cells and the tissues derived from them, respond to similar irradiations.

Lazarus Barlow found, in his classical experiment upon the epithelium of the bowel and squamous epithelium of the rat's tail, that less damage was produced in the case of normal columnar epithelium with a short exposure and a large quantity of Radium, than with a long exposure and a small quantity of Radium. The squamous epithelium responded exactly in the opposite direction. Basing his calculation on these data Hayward Pinch has evolved a rough working formula for determining dosage, (*i.e.*) $D = Q \times T$, where D stands for dosage expressed in milligramme hours, Q for amount of radium bromide in milligrammes and T for length or exposure. (1.8 mg. Ra Br₂ 2H₂O=1 mg. Ra SO₄). If the dosage decided is 3,000 milligramme hours, in the case of epiblastic tissues, it should be 50 milligrammes for 60 hours; in the hypoblastic tissue, 150 milligrammes for 20 hours and in the mesoblastic tissue, 100 milligrammes for 30 hours.

The principle of cross-fire treatment universally employed at the present time, with special reference to the

growing edge of the tumour and the proper selection of dosage and screenage, has considerably increased the percentage of success in the treatment of cancer.

Though the general opinion of Surgeons is that when a tumour is operable, operate, yet, the trend of opinion appears inclined in the direction of narrowing the limits for a radical operation and extending the field for Radium Therapy. This move is chiefly noted in America, Spain, France, Denmark and Germany where Radium Therapy has made great headway. In England, experienced Surgeons are inclined to treat even early cases with Radium, especially so in the treatment of cancer of cervix, when indicated, a combined treatment by Radium and X-Rays produces very satisfactory results. The immunity experiments in mouse carcinoma by Russ and his co-workers and the appreciation of their inferential importance of the preliminary toning up the patient to increase his resistance, the improved methods adopted, studied dosage and the perfected technique, and the closer attention to the details enumerated elsewhere in this paper, are all conducive to the better utilisation of this powerful agent at our disposal for the relief of the suffering.

It is beyond the province of this paper to go into further details regarding specific tissue lesions and the treatment; but this will be dealt with in a subsequent article.

BIBLIOGRAPHY.

See References in No. 4, Madras Medical College Magazine for March, 1928.

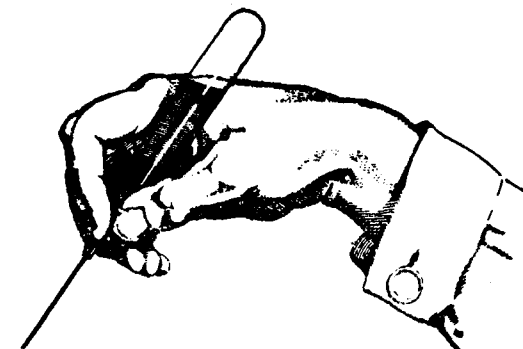
BACTERIOLOGICAL METHODS IN THE DIAGNOSIS AND TREATMENT OF DISEASES

By DR. N. SESHADRINATHAN.

The impression is still extant among many practitioners in our country that laboratory methods are not very essential for the correct diagnosis and treatment of clinical conditions, since malaria could be diagnosed by trial with quinine, the course of typhoid fever cannot be altered by a knowledge of the Widal Reaction of the blood, and since any prolonged fever may provisionally be diagnosed as typhoid fever provided clinical abnormalities are not observed in the lungs, spleen, liver or other organs, there is sufficient reason to neglect the aid of laboratory methods. The experienced clinician's observations warrant him to a considerable extent to be certain of his diagnosis by clinical manifestations alone. Perhaps in most cases he is right, but the self-satisfaction that he can obtain when his diagnosis is confirmed by laboratory findings, by itself should induce him to resort to laboratory aids more frequently, not to speak of the conditions in which certainty of diagnosis is not possible without the help of the laboratory expert.

It is well known that an enlargement of the spleen may be found in various clinical conditions, *viz.*, malaria, kala-azar, primary diseases of the spleen, and in many acute fevers. In early cases of malarial infection the spleen may not have been enlarged or only slightly. Some of these cases may also show a continuity of temperature without the usual malarial remission. It is not uncommon for these cases to be treated as enteric

BEHRING-SERULE



THE AMPOULE-SYRINGE-COMBINATION FOR A STERILE SINGLE INJECTION OF SERA

ABSOLUTE ASEPSIS

Contamination of serum during withdrawal from the ampoule entirely eliminated.

Sterile working even under the most unsatisfactory sanitary conditions. To be used once only, the canula therefore is always of reliable sharpness.

GREATEST ECONOMY

No sterilizing of syringes
Saving of time owing to permanent readiness for injection
Expensive instruments superfluous
Most simple method of use

SERA

"ORIGINAL VON BEHRING" AND "BEHRINGWERKE"

are supplied in SERULES or in ampoules.

DIPHTHERIA-ANTITOXIN	ANTI-GONOCOCCUS-SERUM
TETANUS-ANTITOXIN	ANTI-INFLUENZA-SERUM
ANTI-ANTHRAX-SERUM	ANTI-MENINGOCOCCUS-SERUM
ANTI-CHOLERA-SERUM	ANTI-PNEUMOCOCCUS-SERUM
ANTI-COLI-SERUM	ANTI-SCARLATINA-SERUM
ANTI-DYSENTERY-SERUM	ANTI-STAPHYLOCOCCUS-SERUM
ANTI-ERYSIPELAS-SERUM	ANTI-STREPTOCOCCUS-SERUM
ANTI-GANGRENE-SERUM	ANTI-TYPHOID-SERUM



Behring-Institute, Marburg-Lahn

Sole Agents for India and Ceylon

**VOLKART BROS., BOMBAY, CALCUTTA,
MADRAS, KARACHI & COLOMBO.**

CRESIVAL.

(Syrupy 6% Sol. of cresol calcium sulphonate).



Its high expectorant efficiency and its mild taste makes CRESIVAL the most dependable remedy in bronchitis and colds.

May be taken pure or dispensed in a cough-mixture.

MITIGAL OINTMENT.

The well known sulphur preparation offered in the most convenient form at cheapest price.

Indicated in Seborrhœa, Pruritus, Dermatomycosis, Farus, Acne Vulgaris.

AFRIDOL SOAP.

Germicidal soap of high quality. Not irritating nor caustic. Stable in any climate.

The most efficient prophylactic and treatment of prickly heat.

Literature and full particulars on application.

Havero Trading Co., Ltd., Calcutta.

Pharmaceutical Department, Bayer-Meister-Lucius

POST BOX 2122.

15, Clive Street, Calcutta.

fevers, if no microscopical examination of the blood is made as a routine for the presence of malarial parasites or other abnormalities of the blood. The anxiety and trouble caused to the patient and his relations by this delay in diagnosis is considerable. An early diagnosis might result in quick control of the fever by quinine and early return of the patient to his avocation.

Cases of low fever are likely to be condemned as tuberculous even without any definite tuberculous signs being apparent. This has happened in places like Madras and Saidapet where filariasis is endemic, no evidence of enlarged glands either in the groins or other regions being seen. An examination of the night blood as shown in many cases the presence of filarial embryos circulating in the blood giving rise to the low fever which later on might flare up with severe shivering even worse than malarial rigour.

Again cases of kala-azar have been overlooked in localities which have been understood to be practically non-endemic simply because there was no palpable spleen or liver, and the patient drugged with quinine to the stage of deafness. With the test devised by Major Chopra and Captain David it is possible now to diagnose the disease by a simple method. The blood has to be drawn into a small test tube containing some citrate solution 1 or 2 c.c. of blood is enough to prevent coagulation. To this is added 1 or 2 c.c. of a 4% per cent solution of urea stibamine. At the junction of the fluids a whitish flocculent precipitate will be seen in a positive case of kala-azar. This test is said to be very reliable and can replace a spleen puncture examination.

Till very recently it had not been realised how very extensive bacillus coli infection is as a cause of fever,

A systematic examination of the urine of many male and female patients with fever not ascribable to any definite clinically apparent causes, has revealed that most women who had undergone the sufferings of child-birth even once and a considerable number of males, who had secretly suffered from the results of impure illicit intercourse, show bacterial infection of the urinary passages of some kind or other.

It must be admitted that the prejudice which once existed in the past towards laboratory methods in general is fast disappearing. The reason for the prejudice lay in the fact that laboratory results have shattered the time honoured clinical diagnoses based on painstaking bedside observations. The laboratory expert was equally sure of his results based on accurate experimentation. This want of co-operation for some time set back the progress of science. Till very recently, and even now one can hear the echo, it was believed and expressed that faked or indifferent results were produced by our bacteriological laboratories and medical officers used to send samples of blood or other specimens of the same patients under different names and on different occasions and obtained apparently incongruous or contradictory results. Such apparently contradictory and incongruous results are usually explainable by the intercurrent factors which modify the results obtained on different occasions during the course of the disease.

An attempt is made in this paper to describe some of the commoner bacteriological methods with the limitations in their efficiency in diagnosis and treatment of clinical conditions. It is necessary to emphasise the latter point. Since it is likely that the clinician might depend too much on the laboratory at the sacrifice of

valuable bedside observations, and it is not impossible to imagine the picture of the physician trying to diagnose the trouble in the constitution of the patient from an array of figures and charts and cardiographic tracings, skiagrams, giving pictures of the heart's action, the condition of the stomach and intestines, and the compositions of the various fluids and excretions of the body, and their organismal content, entirely for putting that the human response to various disease germs and varying constituents of the fluids of the body is different to each individual, and the individual factor of the temperament of the patient counts to a considerable extent in the manifestations of pathological states.

The Diagnosis of Enteric Fevers.—Both in hospital and in private practice most use of the laboratory is made in the diagnosis of enteric fevers, in which may be included bacteraemia due to B. Typhosus, B. Paratyphosus, and other allied organisms of the intestinal flora. The onset of the fever immediately follows the invasion of the blood by the causative organism. These organisms can be cultivated from the blood during the first week, and a diagnosis established as early as the second or third day after the onset of the fever. So much so it is now become the custom as soon as a case of fever is admitted to the General Hospital a blood smear is taken and a blood culture is ordered. A widal reaction is also done along with the culture. Thus practically no case of enteric leaves the hospital undiagnosed. The great advantage in this early diagnosis is that the patients are not unnecessarily drugged nor are they put on needlessly strict regimen. It also prepares us to be on the guard for any complications that might arise in the course of the disease.

About 10 c.c. of blood is taken from the median basilic vein with all aseptic precautions with a syringe which is preferably sterilised in oil or vaseline, and put into a sterile medium containing ox bile. There are now available in the market contrivances for collecting blood for culture aseptically without being put to the necessity of carrying a syringe and culture media and other paraphernalia. The medium is contained in a vacuumised tube fitted with a sterile needle ready for use.* This is very handy for use in the mufasil, from where it may be sent to the nearest laboratory for culture and report. These sterules, as they are called, also have facilities for obtaining blood for widal reaction also. A cultural report takes at least 48 hours from the time it reaches the laboratory. Considerable care is necessary in taking the blood for culture. An intravenous injection can be given with less care but to take blood for culture more than surgical care is necessary. In surgical practice one can depend to some extent on the power of the tissues to overcome and destroy any organisms that might accidentally contaminate the wound. In bacteriological practice the media are intended to favour the growth of even very few organisms present in the blood. Any extraneous organism like the staphylococcus from an improperly sterilised skin should happen to find its way into the medium, it will flourish in large numbers there, and is likely to lead to false results. The best and the easiest way to cleanse the skin is to wash it with some soap and warm water, and when it is dry to paint it with some tincture of iodine or rub with absolute alcohol. The mouth of the bottle containing the medium should be carefully opened and flamed both before and after putting the blood in and replacing the stopper.

If the case should come to the notice of the clinician after the first week, a cultural examination is not of much use; but agglutinins would have developed, and a widal reaction will aid the diagnosis. This reaction may be done even by the clinician with a small outfit. The interpretation of results require a little experience. The blood sample can be taken in what is known as the Wright's capsule. The pulp of the finger is cleaned with some alcohol, it is then pricked with a needle with a little more than the usual force for taking blood for making smears. The ends of the Wright's capsule are broken open, the bent end being broken about the level of the middle of the bulb of the capsule. This end is then applied to the prick on the finger, and the blood is freely sucked in by the capillary part of the capsule. A thick drop of blood on a slide may be used in a case of emergency. The dry blood can then be diluted with saline and tested for agglutinins. This method is not reliable, but it is only a makeshift. A positive reaction of 1 in 25 dilution can be accepted to diagnose a case of fever as possible enteric; a 1 in 50 or above as a sure case. When there is a history of previous prophylactic inoculation with antityphoid vaccine a series of tests at varying intervals during the course of the fever has to be done and unless a steady upward curve of the agglutinins is seen a positive diagnosis cannot be made. The much talked of Dreyer's technique is not quite practicable and not necessary to be adopted for routine work. Killed emulsions can now be obtained commercially and with a small equipment this test may be done by the clinician himself with a little training.

Examination of fæces and urine for diagnosing enteric fever is not much resorted to, as the transmission of the material is not easy and the results are not so good

as the blood examinations. The use of this method is chiefly adopted for tracing carriers. The fæces sample should be about a gram in weight and preserved in 30 per cent glycerine if it has to be sent from the mufasil, and the receptacle carefully packed in a wooden or other unbreakable case. For sending a sample of blood for culture and widal from the mufasil by post a simple expedient may be adopted. The blood is collected in a Wright's capsule as for widal reaction and the serum may be used for widal reaction and the clot transferred to a bottle of ox bile medium for culture.

Diarrhœa is a clinical condition which requires careful microscopic and bacteriological examination from many points of view. It is not quite well realised that diarrhœa is only a symptom caused by many etiological factors. It has been the experience during the great war that almost all cases of diarrhœa were either amœbic infections of the bowel or milder varieties of bacillary dysentery. The cases of diarrhœa that precede a cholera epidemic if recognised in time by microscopical and bacteriological examinations would facilitate the control of subsequent epidemic. The early recognition of amœbic and bacillary dysentery and their quick control with Emetine or anti-dysenteric serum will mean the saving of the patient from a chronic bowel disorder and the community at large from the spread of these epidemics. Even if a cultural examination is impracticable a microscopic examination at least should be done. When a microscopic picture reveals the presence of bacteria, the absence of macrophage cells, then the search should be made for actively moving amœbæ, and the effort will not be in vain in most cases. The presence of macrophage cells and a large number of small cells and the absence of bacteria is

characteristic of dysentery of the bacillary kind and may warrant the giving of anti-dysenteric serum.

In sending a sample of fæces to the laboratory it is not always realised that a small speck of mucus is alone used for cultural purposes to reveal the presence of dysentery bacilli and a gram of fæcis will be enough for any examination. It is not necessary to send a big bottle containing the obnoxious material as is often done to the annoyance of the people who have to handle the same in the laboratory. It is essential that the sample should be fresh and should be examined as soon after it is passed (say not later than an hour). The shorter the time the greater the chances of obtaining positive results.

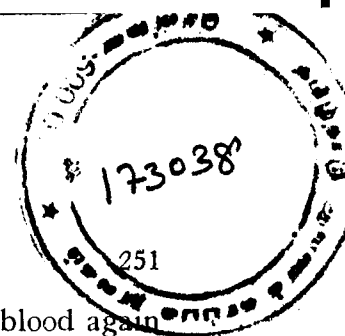
It is probably believed that a catheterised specimen is an absolute necessity for cultural examination of the urine. In women it is certainly a necessity. But in the case of men specimens may be obtained for culture without a catheter. The prepuce being withdrawn, the glans must be cleansed with sterile cotton wool soaked in anti-septic lotion and the patient made to void the first part of the urine into a urinal and the rest of the urine is collected in a sterile receptacle with sterile precautions. The important point to remember is that the receptacle should not be filled with the urine and the strile stopper made wet (a wet cotton wool stopper cannot be a proper filter of air borne organisms, and contaminations easily occur when such a specimen is cultured. The quantity of urine required is only a few cc. When a sample of urine has to be examined culturally one or two culture tubes containing what is called Mc Conkey's bile salt medium should be requisitioned and a drop of urine drawn with sterile precautions in the way described above is introduced into the culture tube and sent by post carefully packed.

the parasites are usually found there in greater numbers. On one occasion a medical officer sent slides to the laboratory with the films filling the entire slide. When he was informed that the margins should be within the slide, subsequent slides were sent with the margins well scratched out so that the real margin entirely disappeared from the slide.

The diagnosis of Ratbite fever may be made by inoculating a few cc. of the patient's blood during the height of fever into a guinea pig when the spirillum concerned can be demonstrated in the blood of the animal by the dark ground examination in about a week.

In the diagnosis of syphilis the Wasserman test has not been replaced by other tests, though Kahn's test is being done along with the Wasserman test in most laboratories. The diagnosis in the primary stage has to depend upon the microscopic examination of the serous exudate from the primary sore for spirochetes. In the subsequent stages the serological tests give positive results. The curve of positive results goes up as the weeks pass by after the primary infection to fall again somewhat in neurosyphilis. This fall in the curve in the later stages of the disease may be converted into a rise by doing the Wasserman test and the colloidal gold test of the cerebrospinal fluid in these cases.

In the Wasserman test the reading of doubtful positives and weak positives require some history of the case. A requisition for the history is sometimes looked upon with some suspicion. The result is that full advantage of the test is not taken in the treatment of the case. For instance, a doubtful positive can be reported as positive weak in the primary stage of the disease, with the hope



that it will enable the physician to send the blood again after a provocative dose of salvarsan. In a case under treatment a doubtful positive might be read as positive weak if the case has already shown a positive strong before treatment to give the clue to the clinician to further treatment. In this and in other respects a history of the case is very valuable to interpret doubtful reactions or to repeat the test if necessary.

Bacteriological therapy mainly consists of treatment with vaccines and sera. Serological therapy is sufficiently well known and standardised to require any description in a paper like this. Vaccine therapy on the other hand, is much abused. The reason being that its limitations are not realised. The remarkable success achieved in some varieties of infections in the early days of vaccine therapy led to its trial in all manner of infections. The result was that it soon fell into disrepute to some extent. The principle in vaccine therapy is its prophylactic quality of increasing the production of anti-bodies and opsonins in the healthier parts of the organism, thus limiting the focal infection, allowing nature to tackle it easily. In skin infections success is most seen. In impetigo contagiosa, erroneously termed pemphigus occurring in children due to a streptococcus one or two injections of a 5 million dose brings about a rapid cure. Pyemic abscesses and other staphylococcal infections of the skin yield remarkably to vaccine therapy. The next best results are obtained in urinary infections. In these cases improvement can be expected up to a certain stage, afterwards a chronic state results when neither vaccine nor chemicals seem able to effect any further progress. One or two injections of the vaccine whenever the resistance is lowered and the infection gets the upperhand is able to keep down the virulence of the organism. Vaccines are extensively used in certain

JL
Lm 211, N 21 MM
N 29. 114.

A few years ago the belief was current that diphtheria was not common among Indian children. It has been amply proved by cultural examinations of throat swabs that it is not uncommon. It is well known that a prompt examination of a smear from the fauces or the tonsil from a suspected case has saved many a child's life. Perhaps by the more extensive use of such throat swab examinations the real extent of the incidence of the disease will be revealed to us. A cultural result will take at least 24 hours. It is not advisable therefore to wait for the cultural report to give antidiphtheritic serum. A microscopic positive result should suffice to warrant the giving of the serum. Diphtheria bacillus being somewhat resistant, swabs may be sent easily from the moffasil by post and a positive result obtained by wire from the laboratory. A West's swab or a bit of iron wire about six inches long to one end of which a small twist of cotton is tied, and the cotton end introduced into a clean test tube whose mouth is closed with some cotton wool, may be used after it is sterilised either in an autoclave or by heating over a spirit lamp till the cotton at the end of the wire is a little charred. The latter is only an improvised method for an emergency.

The cerebro-spinal fluid has risen in great importance in clinical diagnosis in recent years. It is essential that the fluid be sent to the laboratory as early as possible after removal from the patient. Samples of C.S.F. have been recieved at the laboratory in a state of gross contamination with organisms. Such contaminated specimens are not fit for any tests whatsoever. Strict precautions have to be observed to obtain the fluid aseptically. In examining a C.S.F. for meningococcus infection it is necessary that the specimen be sent to the laboratory as early as possible ; if this is not practicable it may be

preserved in a thermos flask containing lukewarm water so as to form a sort of an incubator. A diagnosis can however be made on the finding of large numbers of polymorpho cells in the fluid, which is usually found to come under pressure ; no harm will come however by giving antimeningococcic serum from the above findings alone.

For collecting C.S.F. for the Wasserman reaction aseptic precautions are necessary but the presence of blood does not interfere. For the colloidal gold test however the fluid should be free, from blood : so also for doing a cell count, the presence of blood interferes with the accuracy of the count.

Empyema is a condition in which a bacteriological examination will be useful in giving a prognosis ; when of streptococcal origin the prognosis is grave, when of pneumococcal origin the bacteriological report is in many cases "sterile." The reason appears to be that the pneumococci are easily killed by autolysis in the serofibrinous effusion. A sterile empyema pus should however be inoculated into a guinea-pig for evidence of tubercular infection. In about six weeks the animal will show evidence of tubercular infection by the development of enlarged caseating glands containing the acidfast bacilli, or at least giant cells.

Blood cultures for endocarditis and even acute rheumatism have been somewhat disappointing in results. This appears to be due to the fact that acute rheumatism is very rare in our country. But the results of blood culture in other countries appears to be not very encouraging.

The ordinary blood film examination need not be described here as it is sufficiently well known. Mention may be made of the necessity for having clean slides free from grease and for having the film margins within the slide as

conditions of the lungs with very doubtful results. It is well known that asthmatics give very little credit to our curing skill. The condition is so distressing that they will try any and every remedy. They also referred to vaccines for relief. If the asthma had started from a primary catarhal inflammation benefit by vaccines can be expected, not otherwise. Peuperal infections, when subacute or chronic yield to vaccine therapy. Streptococci have been isolated from most of these cases, and a polyvalent vaccine of these strains has been tried with benefit in the Government Maternity Hospital. As other conditions like chronic bronchitis, chronic pharyngitis, chronic colitis vaccine treatment has shown indifferent results. The cost and the labour involved in the preparation are not commensurate with the amount of success achieved.

Several factors seem to interfere with the success of vaccine therapy. The antigenic value of different bacteria varies within wide limits. The antibody response from the patient is not produced if the bacterial antigen is not able to reach the specific tissue. (Besredka's theory of local immunisation). The maximum success obtained with vaccines for cutaneous infections is to be explained on the same local immunisation theory, since the subcutaneously given vaccine is able to protect the skin from further infection. Perhaps in the case of chronic pharyngitis, and other similar chronic conditions of the bronchi and respiratory passages, vaccines applied locally to the pharynx or insufflated in the form of a spray into the respiratory passages may be expected to produce improvement if the local immunisation theory can be generally accepted.

As the subject is vast only a superficial survey is attempted. Details of bacteriological technique have

been avoided since they are amply described in Text-books. The object of the paper will be gained if it should bring about better understanding between the clinician and the laboratory expert and mutual co-operation leading to the more extensive use of the laboratory methods, and the advancement of medical Science in Madras.

TUBERCULOSIS OF THE BREAST

BY N. S. NARASIMHAN, F.R. C.S., ETC.

Surgical Department, General Hospital, Madras.

The condition is not so uncommon as is supposed, and many cases of chronic mastitis especially those ending in suppuration, are really tuberculous in nature. The disease commences around the acini and may involve a considerable number of lobules. The glands in the axilla soon become enlarged.¹

Of the 100 cases reported in literature only 65 have been confirmed microscopically.²

The incidence of tubercle of the breast is 1% of the hospital admissions for diseases of breast.

Age:—50% occur between the ages of 25-35; very few after menopause but old age is not exempt.

Generally it is a unilateral affection and may be the only discoverable focus in the body, but in 50% of the cases it is secondary to tuberculosis elsewhere as supraclavicular, axillary glands or lungs. Infection usually occurs through the blood stream or by direct extension from adjoining ribs or pleura, or as a direct infection along the ducts from the nipple. In its earlier stages it cannot be distinguished from chronic mastitis.³

Three cases have been reported by me in the *Antiseptic*³ of tuberculous disease of the breast.⁴

I have met with a case in a woman aged 70, which may be readily have been mistaken for cancer but for the histological examination. I am now reporting another case that came under treatment.

A female patient L. A. aged 35 admitted on 21st July 1929 with history of some pain in the right breast noticed by her for five months previous to admission. Soon after the pain a lump began to form and gradually grew bigger. She is married but has no children.

The condition was diagnosed as a fibro-adenoma and was removed. During the operation it was noticed that it was not encapsulated and the pathological report was "Tubercle of breast."

The patient was carefully examined. She had no enlarged glands in the neck or either axilla, but had a thin non-adherent scar just below the left ear. She had become fatter since the complaint. Wasserman reaction was negative and X-ray of the chest showed nothing abnormal.

REFERENCES.

1. *Chayne and Burghard*—Manual of Surgical Treatment, Vol. II, Part VI.
2. *Gisendrath*—Surgical Diagnosis.
3. *Choyee*—System of Surgery.
4. *Antiseptic*—December 1923.

RECENT ADVANCES IN THE TREATMENT OF ACUTE INTESTINAL OBSTRUCTION.

In 1926 Williams¹ advanced the hypothesis that the toxæmia in cases of intestinal obstruction, whether of organic origin or secondary to peritonitis, is due at least in part to the absorption of toxins of *B. Welchii* from the obstructed bowel. There are points of similarity between the clinical pictures of intestinal obstruction and of gas bacillus infection. He found *B. Welchii* in large numbers in the contents of the obstructed bowel and in the vomits of these cases. He adduced experimental evidence to prove that the symptoms of intestinal obstruction were due absorption of a soluble toxin through the portal circulation. This has been confirmed by B. G. Scholefield.² McIver, White, and Lawson³ repeated the experiments with ligation of the veins from the obstructed loops and they concluded that *B. Welchii*, although found in enormous numbers in the obstructed loop, did not play an important role in the production of fulminating toxæmia. But the factors favouring this absorption are (a) time, (b) increased intra-intestinal pressure, (c) involvement of upper bowel, (d) presence of bacteria especially *B. Welchii*.

Experimental findings suggest that therapeutic measures should be directed along following lines:— (a) early adequate relief of intra-intestinal pressure, (b) drainage of jejunum (ileum not being enough) to prevent stasis, (c) administration of normal saline with glucose in large amounts to combat toxæmia—4 to 6 litres in twenty-four hours subcutaneously, intravenously and per rectum, “water early, water continuously and water late” (Circle), (d) the use of anti-gas serum which possibly has an immunising action in these cases. The use of antigas serum in appendicitis, in peritonitis and in acute intestinal

obstruction certainly prolongs life in human beings and in experiments.⁴ The serum was used by me (in Third Surgeon's wards) in a case with very good results.

Regarding drainage of jejunum experimental evidence in dogs shows that it may not entirely be beneficial. It seems safer to recommend the drainage of the distended small intestines at a point most easily accessible. A great fall in the blood-chlorides is found, both by vomiting and drainage of jejunum in obstructed animals. Sodium chloride is found of value in combating the toxæmia, it increases the tone of bowel-wall and aids inhibiting distension and paralysis. It also replaces the Clion lost by vomiting.

Surgical interference should be delayed in these toxic cases till the toxæmia has been treated by infusion of N. saline. In a large percentage of cases of intestinal obstruction with toxic symptoms, enterostomy alone of the most accessible loop should be substituted as a temporary procedure with the administration of large amounts of saline-glucose. After the patient is improved there is a reasonable chance for the permanent relief of the obstruction.

Value of estimation of blood-urea in these cases:— A rise in the non-protein nitrogen of blood as estimated by urea determination is a very constant feature in cases of obstruction. It is not very uncommon for a mistaken diagnosis of uræmia to be made in cases of obstruction brought moribund into hospital. A high blood urea at the time of admission would be a strong indication for operation and in cases of progressing obstruction would be evidence that the condition was not improving. This is particularly applicable to cases of paralytic ileus complicating peritonitis.

REFERENCES.

1. Williams, B. W.—Brit. Jour of Surg., Vol XIV, p. 295 of 1926.
2. Scholefield, B. G.—Guy's Hosp. Reports 1928.
3. McIver, White and Lawson—Annals of Surg., May 1929.
4. Copher, Stone and Heidreth—Annals of Surg., May 1929.
5. Surgery, Gynecology and Obstetrics, p. 285, February 1929.

A CASE OF PERINEPHRIC ABSCESS.

A boy aged 10 was admitted on 10th July 1929 for swelling in the left flank with inability to extend the left thigh. Previous history of fever off and on in the evenings since April and presence of pus and albumin in the urine in June, was reported by his Doctor.

On admission.—There was a distinct tender swelling to be felt in the left lumbar region; left thigh was kept flexed at an angle of 60°, temp. 101, pulse 160, resp. 32.

Urine.—Acid, pus, albumin, and R. B. Cs present. Staphylococcus was grown by culture and guinea-pig inoculation.

X-ray.—Showed a dense shadow in the left renal area. Lumbar vertebræ and hip were normal.

Blood urea.—394mg. per 100 cmm.

Urine-urea:—1. 64%.

Urea concentration test.—

	Quantity of urine. % of urea.	
Before urea administration	...34 cc	0.91%
First hour after urea administration,	...89 cc	0.98%
Second hour after urea administration...	95 cc	2.25%

A CASE OF PERINEPHRIC ABSCESS. 259

Cystoscopy.—left ureteral orifice ejects pus, right ureteral orifice injected and surrounded by œdema.

Chromo-cystoscopy.—Right ureter ejects blue in 10 minutes; nothing was seen to issue from left ureter for 25 minutes.

Diagnosis.—Perinephritic abscess of left side pressing on the ureter.

Treatment.—The abscess was cut down upon and two drainage tubes were inserted. The kidney appeared normal to feel. Hexamine by mouth and auto-vaccines were given. Patient made an uneventful recovery. Urine cleared up quickly.

The following summary of an article on "Perinephritic Abscess" from "Surgery, Gynecology and Obstetrics" gives us the present knowledge on the subject.

Perinephritic abscesses may be classified into those of renal origin and those of extrarenal origin.

Abscesses of renal origin would include those associated with pyonephrosis, lithiasis, traumatism, tuberculosis or other infections of kidney. Abscesses of renal origin or the direct extension to the cortex and the abscess forms beneath the capsule and a definite infection of the urinary tract can be demonstrated.

Those of extrarenal origin show no pathological changes of urinary tract. The urine is clear and culture is negative and there may be no renal symptoms. The etiology of this variety of abscess has been disputed at various times. Most authorities support the view that most of the perinephritic abscesses are of cortical or

subcapsular origin. In most of the cases furunculosis has preceded them. Smears and cultures of the pus show presence of staphylococcus aureus.

These abscesses develop as a rule on the posterior aspect of the kidney, become moderately enlarged, irritate the psoas muscle and working towards the point of least resistance, extend downwards over the anterior surface of this muscle. They are therefore most manifest. Abscesses of the anterior surface are extremely rare. The abscess forms between the kidney, the renal niche and the psoas muscle, and pushes the kidney, pelvis and ureter anteriorly and somewhat laterally. If this can be demonstrated by a pyeloureterogram it will give positive information of the presence of retrorenal mass. There is also a slight lateral curvature of the spine, a blurring of the line of psoas and transverse processes of the vertebrae on the affected side to be seen in a roentgenogram.

Age incidence.—from 8 to 63 years; average being 32.5.

Sex.—It is more common in men than in women, due probably to the greater frequency of cutaneous infections in the former from trauma.

Symptoms.—Fever is present in all cases, nausea and vomiting. Duration of symptoms in the extrarenal type is 9 days to 6 weeks preceded by furunculosis or skin infection; but in the renal type of abscess the duration is much longer even to 5 years. Most renal infections develop slowly and extend beyond the kidney only after considerable damage has been done. A unilateral backache at the level of the third to the fourth lumbar vertebra and in the costo-vertebral angle is present. Pain is

constant, fixed and increased by walking or any movement of vertebrae. Irritation of psoas muscle and erector spinæ with resultant spasm, rigidity and fixation of these muscles occurs. The presence of an abscess in the renal fossa explains the rigidity of the spine and at times a lordosis, and may lead to spasm of psoas and flexion of the thigh. Tumefaction is present in most of the cases, leucocytosis is invariably present, pyuria and hæmaturia may also occur.

Differential diagnosis.—From tuberculosis of the kidney and in children from tuberculosis of hip and spine. Cystoscopy, ureteral catheterisation and X-ray, though essential in excluding disease of the upper urinary tract or vertebrae, may be of no positive help in diagnosing these abscesses. The three principle points in diagnosis are continued fever, leucocytosis, and abdominal or costovertebral tenderness.

X-ray findings that may be of use are.—The disappearance of the line of psoas muscle, the obscuring of the transverse processes of the lumbar vertebrae, a poorly defined kidney outline and lateral curvature of the spine. Stereoscopic radiograms will show the displacement of the kidney and ureter antero-laterally.

Flexion of the thigh or pain in extending it are characteristic.

REFERENCE.

Surgery, Gynecology and Obstetrics, June 1929.

THE PRACTICAL MEDICINE.

(ESTABLISHED 1903.)

P.O. Box 49, Egerton Street, DELHI.

This monthly medical journal of great practical value enjoys an exceptionally wide circulation among the rank and file of active practitioners in every quarter of India, Burma, and Ceylon and other countries where English language is spoken. It is eagerly awaited by its numerous readers, and is read from cover to cover. Its original articles, selections and reprints are a great help to busy practitioners, it economises your expenditure for periodicals, it saves your precious time, it gives you cream of the world's medical literature and its query department is of great use to subscribers in difficult and complicated cases.

It is a leader in the medical advertising field of India, its advertisers reach that class of people with whom their business is chiefly concerned and anyone with *anything* to sell to a doctor will find it one of the cheapest and yet most powerful aids in attaining success.

SPECIMEN COPY FREE.

Advertising rates on Request.

NOTICES.

EDITORIAL.

Original articles, Clinical lectures, Medical Society addresses and interesting 'cases' are invited. Contributors of original articles will receive 20 reprints of their papers *gratis* if applications for the same are made at the time the contributions are sent.

All **Editorial communications**, reports and books for review and exchange should be addressed to **the Editor, Madras Medical Journal, 48, Harris Road, Mount Road, Madras.**

BUSINESS.

Letters relating to the **Publication, Sale and Advertisement** department must be addressed to **The Manager, The Madras Medical Journal, 48, Harris Road, Mount Road, Madras.** The rate of annual subscription is as follows: Indian, Rs. 5, post free; Foreign, Sh. 7/6 or its equivalent, post free. All subscriptions are payable in advance.

RATES OF ADVERTISEMENT.

	One page.	Half page.	Quarter page.
	Rs.	Rs.	Rs.
Single insertion ...	20	12	7
Three insertions ...	40	24	14
4 insertions ...	50	30	20
4 „ (inside reading) 60	...	...	...

All advertisement charges are payable strictly in advance.

For further particulars, apply to—

**The Manager, MADRAS MEDICAL JOURNAL,
48, Harris Road, Mount Road, Madras.**

RELIEF!



...from the moment it is applied!

Relief, too, for the busy nurse, who knows from experience that **ANTIPHLOGISTINE** applied warm and thick can be depended upon to supply and maintain a uniform degree of moist heat during her entire off-duty period.

By virtue of the synergistic combination of its ingredients the osmotic action of Antiphlogistine begins promptly, activating the superficial circulation, decongesting and allaying the painful processes without irritation and inducing natural and restful sleep.

Prescribed by the Medical Profession the world over for more than a quarter of a century in preference to fomentations and messy flaxseed poultices because its efficacy in the treatment of inflammations of both superficial and deep seated structures has never been questioned.

Antiphlogistine

A proven adjuvant in the treatment of Pneumonia.

MULLER & PHIPPS (INDIA) LTD.,

21, OLD COURT HOUSE STREET,
CALCUTTA.

The Medical Review of Reviews.

Fourth year commenced from January 1929.

It numbers amongst its contributors, able writers and acknowledged authorities. Its tone is bright, fearless and strictly impartial. It belongs to no clique or party, and to the CITY as well as the VILLAGE PRACTITIONER it is of equal interest.

Subscriptions, Rs. 5 (post free) per annum.

Published monthly.

Subscriptions from any month.

Specimen copies to the Medical Profession sent post free on application.

315, BALLYGUNJ AVENUE, P. O. KALIGHAT, CALCUTTA.

FIVE RUPEES WILL BRING YOU THE ANTISEPTIC.

(ESTABLISHED IN 1904.)

Post free every month for a year.

The Antiseptic, an independent journal devoted to the interests of medical men in the Indian Empire, is the *periodical* for the busy practitioner to keep him professionally up-to-date.

EDITED BY

Hon'ble U. RAMA RAU,

Medical Practitioner, and member, Madras Medical Council, and contributed to by Indians and Europeans who are in the forefront of the *profession*.

Specimen copy free. XXIII Vol. began January 1926.

Address all Literary communications to the Editor and business letters to the Manager, P.O. Box No. 166, Madras.

The best medium for advertisement.

Rate card on request.

The Burma Medical Times THE ONLY MEDICAL MONTHLY JOURNAL

PUBLISHED IN BURMA

EDITED BY

DR. THEN MAUNG, B.A., M.M.F. (BENG.), M.L.C., BURMA.

DR. H. MIN SEIN, M.B. (CALCUTTA).

DR. T. D. HARI RAO.

Best Medium of Advertisement for Medical and Scientific Articles.

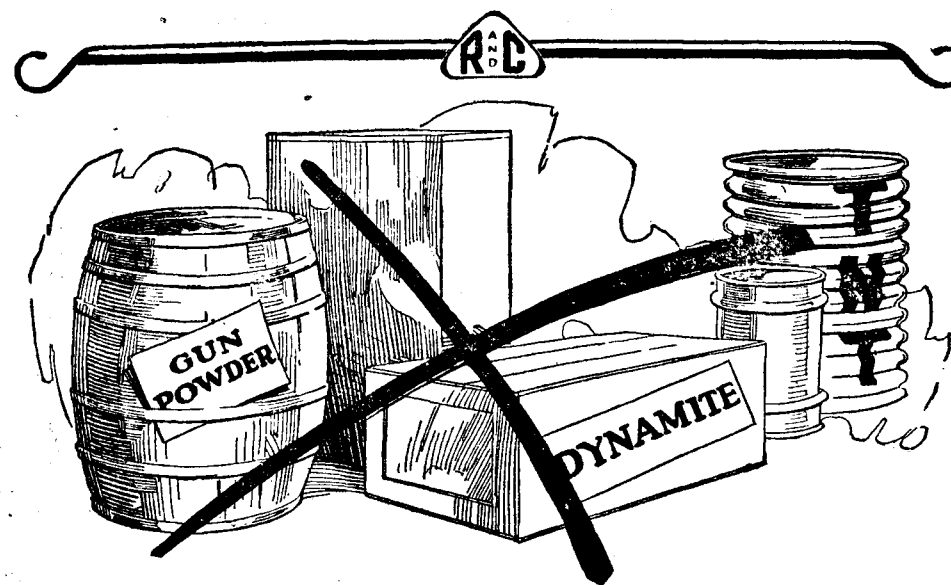
For Rates etc. Write to:—

MANAGER,

31-G, Lewis Street, Rangoon.

Annual Subscription Rs. 5.

Please note our change of address.



Drastic cathartics are known colloquially as dynamite, or T. N. T. Purges are as much out of place as T. N. T. would be in razing a Broadway building. Constipation calls for

Pancrobilin

This product is an exact replica of Nature's pancreatic machine, and it stimulates the liver to a freer biliary secretion. One or two Pancrobilin Pills Plain after each meal enable many people to establish a definite habit of evacuation.

For those patients whose alimentary systems do not respond readily to Nature's own enzymes, prescribe PANCROBILIN PILLS COMP. Each Pill contains aloin, 1/5 grain, in addition to the usual amount of bile and pancreas. Aloin assists the bile in providing slow, but constant, stimulus to peristalsis.

PANCROBILIN LIQUID, for women and children, should be taken, one tablespoonful after meals, the dose to be increased, or decreased, as necessary.

Pancrobilin each day keeps constipation away.



PANCROBILIN

REED & CARNRICK, Jersey City, N. J., U. S. A.
PANCROBILIN is obtainable from all Chemists, or through

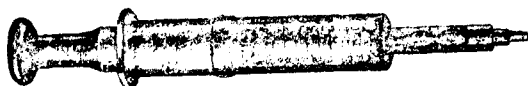
MULLER AND PHIPPS (ASIA) LIMITED
Hong Kong, Prince's Building
Colombo, 46 Keyzer Street
Cairo, P. O. Box 1764
MULLER AND PHIPPS (MANILA) LIMITED
Manila, Pacific Building
MULLER AND PHIPPS (CHINA) LIMITED
Shanghai, No. 24 The Bund

MULLER AND PHIPPS (HAWAII) LIMITED
Honolulu, 1015 Port Street
MULLER AND PHIPPS (INDIA) LIMITED
Calcutta, 21 Old Court House Street
Bombay, 14-16 Green Street
Madras, 21 Sunkurama Chetty Street
Karachi, 726 Napier Road
Rangoon, 4-5 Shafraz Road

COATES & COOPER, 41, Great Tower St., London, E. C. 3, England

ALL GLASS SYRINGES

THE SOLUTION OF SYRINGE PROBLEM !!

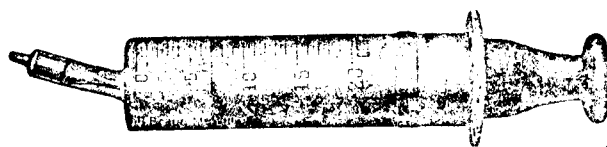


A glass syringe with brake-ring and double-metal mount. The brake-ring keeps the piston in every desired position. The metal mount and the glass have the same co-efficient of expansion.

2 c.c. Rs. 2/2 ; 5 c.c. Rs. 2/6 ; 10 c.c. Rs. 2/10.

Without needles and case.

ORDER No. 828.



New Improved Varix Injection Syringe.

Designed by Mr. C. J. CELLAN-JONES, F.R.C.S.

5 c.c. Rs. 4/6 ; 10 c.c. Rs. 5/6 ; 20 c.c. Rs. 6/8.

Without needles and case.

ORDER No. 830.

Krupp's V₂ A Rustless Needles Rs. 3 to Rs. 4 per doz.

SOLE DISTRIBUTORS IN INDIA.

ADAIR, DUTT & CO., LTD.,

KALEELI MANSION

MOUNT ROAD, MADRAS.

LONDON

CALCUTTA

BOMBAY.

"Published by the Secretary, Madras Medical Association, Madras."

Printed by Messrs. Solder & Co., Madras, S. E.