Chronic Prostatitis and Neurasthenia.

Another very important fact to note is the effect of chronic prostatitis on the general health. A man with chronic prostatitis may lose a stone or more in weight, may become severely neurasthenic, and so depressed as to be suicidal. This neurasthenic condition is often aggravated by a low meat free diet, which the patient has adopted on the advice of his doctor. All this vanishes with the cure of the prostatitis. Probably a chronic toxæmia is responsible, or it may be that subconscious irritation of the complex nerves of the prostate with their close emotional connexion in the mid-brain, may be the cause of the nervous depression. Remember that nothing helps so much in the cure of a chronic prostatitis as cheerful suggestion and attention to the general health. Sea air, a generous diet, and open-air exercise are the most important elements in success in treatment.

"Sciatica," "Lumbago," "Chronic Rheumatism."

Another clinical fact should be emphasized. I find that a very large number of cases labelled as chronic sciatica, chronic lumbago, chronic rheumatism, have their origin in an unsuspected gonococcal focus in the prostate or seminal vesicle. In such cases the doctor is often content to squeeze the urethra and if no discharge is obvious then he dismisses gonorrhoea as a possible cause. More careful observers may even look at the urine. But here again in most cases not even threads are to be seen, let alone pus. The only way to exclude chronic gonorrhoea as a cause of obscure rheumatism is to massage the prostate and vesicles and examine the secretion under the microscope. If pus is detected, then the cause has probably been found. If treatment directed to the cause is instituted, in six weeks to three months all the pains vanish and a brilliant cure is obtained.

Fever.

There is another clinical sign to which I would like to call attention. So long as the disease is confined to the anterior urethra we seldom, if ever, find fever. It seems clear that the anterior urethra is a highly resistant surface and does not allow the passage of fever-producing poisons into the blood. Once the disease has spread to the deep urethra fever is quite common, especially if the patient is not at rest in bed. The deep urethra is a highly absorptive surface and lets through at once the fever-producing poisons. Over and over again I have met with patients suffering from a deep urethritis who have been allowed to get about by their doctors with a temperature of 103° or 104° F. It has not occurred to their doctors that it is necessary to take their temperature. In the case of any other acute disease the temperature would be taken as a matter of routine, and no patient would be allowed to be up and about with such a high temperature. It should become a routine practice to take the temperature in cases of acute posterior urethritis, and if the temperature is raised above the normal the patient should be ordered to bed.

Another interesting fact is that in cases of chronic posterior urethritis which are not doing well a persistent subnormal temperature can often be noted. When the disease takes a turn for the better, simultaneously the temperature rises to normal and remains there.

Haematuria.

Haematuria is not an uncommon symptom at the onset of an acute posterior urethritis. Usually a few drops of blood are squeezed out at the end of micturition. If strong irrigations are exhibited in such cases a profuse haematuria may be set up. In such cases use only the mildest injections, for example, 500 potassium permanganate, and above all do not use a sound or a cystoscope.

Retention of Urine.

This is quite common at the onset of a hyperacute posterior urethritis. In such cases rectal examination always reveals a large abscess of one or both lobes of the prostate. Gentle pressure with the finger will empty the abscess a little, and the retention may at once be relieved.

REFERENCE.

¹ Treatment of Infected Wounds, BRITISH MEDICAL JOURNAL, June 3rd, 1916, p. 793.

DISAPPEARANCE OF MALIGNANT TERTIAN CRESCENTS FROM THE BLOOD FOLLOWING THE INTRAVENOUS INJECTION OF TARTAR EMETIC.

BY

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[PRELIMINARY NOTE.]

THE discovery of the value of cinchona and quinine in malaria has been of incalculable value. Nevertheless, even quinine is not an ideal drug for the disease, because, although it rapidly kills the intracorporeal stage of the parasite and brings about the cessation of the febrile paroxysms, yet it completely fails to destroy the extracorporeal cycle, which is responsible both for the frequent relapses of the ague, and, still more important, for the infection of mosquitos, and through them of other persons. The difficulty in completely eradicating a malarial infection is well known. Thus Norman Chevers relates that he suffered from attacks for eighteen years in India after contracting the disease in Chittagong, and for six years more after he returned to England, and that his friend, Sir Ranald Martin, had frequent attacks of ague throughout his long Indian service, and for no less than thirty years more in England, although both of them took quinine freely for the attacks. Prolonged daily doses of quinine for months at a time will often prevent relapses, but even this measure may fail. A drug which will really cure malaria and destroy the infective extracorporeal stage of the parasite is, therefore, still much to be desired.

The uniform success which I have already reported, in the cure of kala-azar by tartar emetic intravenously, now amounting to over twenty consecutive cases in Europeans, led me to hope that the drug, once it is able to kill the Leishman-Donovan parasites, which are so highly resistant to quinine, might possibly also be inimical to the quinine-resisting stages of the malarial parasites, of which the malignant tertian crescents are the most characteristic. It is well known that once they appear in the blood they remain present for months on end quite uninfluenced by quinine. Thanks to the kindness of my friend Captain N. H. Hume, I.M.S., I have recently had an opportunity of testing the effect of the drug in the following two cases showing numerous crescents in the blood.

CASE I.—*Apyrexic Case showing Numerous Crescents in the Blood treated with Tartar Emetic Intravenously.*

A Russian sailor, aged 20, admitted for general debility, but without fever. Numerous malignant tertian crescents found in the finger blood, one in every few fields of the microscope.

The following tabular statement will best bring out the treatment and its effects:

	Blood Examination.	Treatment.
First day ...	Very numerous crescents	—
Second day ...	" " "	—
Third day ...	" " "	—
Fourth day ...	" " "	Tartar emetic 4 cg. intravenously.
Fifth day ...	Very few crescents	Tartar emetic 8 cg. intravenously.
Sixth day ...	" " "	—
Seventh day ...	No crescents found	—
Eighth day ...	One crescent found	Tartar emetic 8 cg. intravenously.
Ninth day ...	No crescents found	—
Tenth day ...	" " "	—
Eleventh day ...	" " "	Tartar emetic 12 cg. intravenously.
Twelfth day ...	" " "	—
Thirteenth day ...	" " "	—
Fourteenth day ...	" " "	—

The patient left hospital two days later much improved in his general health, and having gained 10 lb. in weight. His temperature was normal while in hospital except for a rise to 100.2° on the evening after the injection of 12 cg. of tartar emetic.

Unfortunately it will not be possible to follow this patient up, as he has left Calcutta in his ship. The rapid disappearance of the crescents from his peripheral blood was most encouraging, but I realized that it would not be safe to draw far-reaching conclusions from a single case. Fortunately a second one very soon presented itself.

CASE II.—Acute Malignant Tertian Infection yielding to Quinine; subsequent Appearance of Numerous Crescents, which disappeared after Intravenous Injections of Tartar Emetic.

European male, aged 45, admitted for fever of ten days' duration accompanied by rigors. Very numerous ring malignant tertian parasites were found, several in every field of the microscope. The following tabular statement shows the progress and treatment of the case:

	Blood Examination.	Treatment.
First day ...	Very numerous malignant tertian rings	Quinine gr. 10 t.d.s.
Second day ...	—	Tartar emetic 8 cg. intravenously. Quinine omitted.
Third day ...	No malarial parasites	—
Fourth day ...	" " "	—
Fifth day ...	" " "	—
Sixth day ...	A few crescents found	—
Seventh day ...	Very numerous crescents	—
Eighth day ...	" " "	—
Ninth day ...	Crescents fewer	Tartar emetic 8 cg. intravenously. Temperature rose to 104.8 F.
Tenth day ...	Very few crescents	—
Eleventh day ...	No crescents found	—
Twelfth day ...	One crescent found	—
Thirteenth day ...	No crescents found	—
Fourteenth day	" " "	—
Fifteenth day ...	" " "	—
Sixteenth day ...	" " "	—
Seventeenth day...	" " "	—

The rise of temperature to 104.8° on the evening after the injection of 8 cg. of tartar emetic, followed by a very great reduction of the crescents in the peripheral blood, is very significant, in view of the fact that similar rises occur in kala-azar after the injections only as long as parasites are present, for such reactions are best explained as due to the liberation of toxins from the parasites destroyed by the drug. This view is supported by the fact that no ring intracorporeal forms of the malignant tertian parasites were found during the time the crescents were present which could account for the febrile reaction.

Here we have a second case in which recently developed crescents rapidly disappeared from the peripheral blood following the intravenous injection of a single 8 cg. dose of tartar emetic. Two such consecutive cases are very unlikely to be an accidental phenomenon. The dose used in the last case is less than half what has been safely given repeatedly in kala azar cases.

THE INFLUENCE OF TARTAR EMETIC ON BENIGN TERTIAN PARASITES.

The following experiences of the use of tartar emetic in benign tertian malaria are also of interest. Early in September last an Indian boy was admitted to my kala-azar ward. I found very numerous benign tertian malarial parasites in his blood. Although I recognized the presence of a rather serious infection I decided to try tartar emetic, and gave 4 cg. intravenously in a 2 per cent. solution, the strength used in all the cases mentioned in this paper. His temperature had varied during the previous three days from 99° in the morning to from 101° to 102° F. in the evening, but on the evening of the day on which the tartar emetic was given it rose to 104°, showing a strong reaction. On the following day very few benign tertian parasites could be found. Two days after the first injection the same dose was repeated. On that morning only one parasite was found, and none on the next day or on several other occasions during the next three weeks. As low fever persisted when I saw the patient again, after an interval of three

weeks, I did a spleen puncture and found Leishman-Donovan bodies, showing the case to be a mixed infection—a rare condition in Calcutta. As the boy objected to further intravenous injections he was given antimony ointment inunctions. He gained weight steadily, and has had no rise of temperature to above 100° F. during the last month. However, on making a recent examination of his blood I found one ring and one extracorporeal benign tertian parasite, thus showing that the two comparatively small doses of tartar emetic had failed to eradicate his malaria completely, and suggesting caution in expecting too much from such a short course of the treatment. A 4 cg. dose was now given, and the parasite had disappeared again by the next day. He has had no quinine during the two months he has been in hospital.

Captain Hume has kindly tried tartar emetic injections in two other cases of benign tertian malaria. In one man it required three doses of 4, 8, and 10 cg. to stop the paroxysms of fever and to cause the malarial parasites to disappear from the peripheral blood, so that in this case the drug appeared to be less efficient than quinine against the intracorporeal stage of the benign tertian parasite. In the other case one 4 cg. dose was followed by the cessation of one paroxysm, converting the infection from a double to a single one. Quinine was then given and the fever ceased.

In the first of the above cases the effect of the tartar emetic on the malarial parasites was very striking, but in the second and third it appeared to be less efficient than quinine against the intracorporeal stages of the parasite, while it is certainly far less convenient, owing to the administration of quinine by the mouth being much simpler than giving an intravenous injection.

COMMENTARY.

Much further experience will be required to settle these points, but the indications to be derived from these few cases appear to be that quinine should be used to check the malarial paroxysms, while tartar emetic should subsequently be given intravenously, in the hope that it may prove of value in destroying the extracorporeal stages of the malarial parasites, and so prevent relapses, and greatly lessen the infectiveness of the patient to malarial-bearing mosquitos, by killing the crescents of the malignant tertian variety and the corresponding resisting forms of the other types of malaria.

In view, however, of the many disappointments which have been met with in attempts completely to eradicate the protozoal parasites of malaria, sleeping sickness, and amoebic dysentery, it is well not to be too sanguine regarding the success, possibly only temporary, of tartar emetic given intravenously in causing the malignant tertian crescents to disappear from the peripheral blood in my two cases. The observations are, however, of sufficient interest and importance to make it advisable to place them on record without delay, in order to allow others to investigate the subject, as many prolonged observations will be necessary before any reliable conclusions can be arrived at. If this drug should prove successful in really curing malaria, or in removing the infectiveness of the patients treated with it, a new and most important addition will accrue to our armamentarium in the battle against the most widespread scourge of tropical and subtropical countries, the value of which it would be difficult to overestimate.

Since writing the above I have been fortunate enough to meet with the following two additional cases:

CASE III.—Malignant Tertian Crescents of an East African Infection treated with Tartar Emetic Intravenously.

A European male, who had just returned from British East Africa, where he had suffered from several attacks of malaria, was sent by his doctor to consult me. I found crescents easily in his blood on two occasions with one day's interval. Eight cg. of tartar emetic were now injected intravenously, and two days later no crescents could be found by a careful search of two blood films. Two further doses of 10 cg. each were given on alternate days, and on each occasion the blood was examined for parasites with a negative result, and he stated that he felt much better after the treatment.

No reactionary rise of temperature occurred in this case, the crescents having been fewer than in Case II. As blackwater fever frequently follows repeated attacks of African malaria, if the destruction of the crescents in the

peripheral blood should prove a preventive of relapses, blackwater fever itself may possibly be greatly diminished by the tartar emetic treatment.

CASE IV.—Benign Tertian Gametes disappearing from the Blood after the Intravenous Injection of Tartar Emetic.

A European male from Assam, admitted for malarial fever for which he had taken quinine; he had had no fever after admission. Only the quinine-resisting extracorporeal fully developed parasites were present in the peripheral blood, and were easily found on three consecutive days. On the fourth morning 8 cg. of tartar emetic were given intravenously. A blood slide taken that evening showed after a long search one benign tertian gamete with distinct chromatin body and pigment, but with an incomplete outline as if it was breaking up. A careful search on the following four days showed no malarial parasites. During this time he received two further doses of 10 and 12 cg. respectively of tartar emetic intravenously, after the last of which he felt some nausea. He has now left hospital, but I hope to be able to follow him up.

This case indicates that the drug has a destructive effect on the gametes of the benign tertian as well as the malignant tertian variety of malaria, and makes it probable that it will act similarly on the quartan form, which is rare in Calcutta.

THE X-RAY DIAGNOSIS OF GAS IN THE TISSUES.

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(With Special Plate.)

THE war has added a new and important rôle to those already performed by the *x* rays, namely, the early diagnosis of the presence of gas in a wound.

The subject has previously been mentioned in at least two short articles—by Woodburn Morrison¹ and by Ledoux-Lebard.² But as time goes on, and experience with this serious condition increases, we have become more and more impressed with the importance of the *x* ray findings, both in regard to the much earlier diagnosis of the presence of gas which can be made by this method than by any other, and also by the definite information given as to the extent of tissue involved.

We here deal with a number of interesting examples of this condition, in several of which the early warning given the surgeons, through the *x*-ray findings, probably saved the limbs, if not the lives, of the wounded men. At the same time it must be noted that the interpretation of the skiagrams of such cases is not without its own particular pitfalls.

Where the typical clinical symptoms—the tender, swollen tissues, which on palpation give the characteristic crepitation; the foul odour about the wound; the rapid, thready, pulse, and greyish drawn appearance of the face of the toxic patient—are well marked, the surgeon, naturally, does not need to rely on the *x* rays for diagnosis; but even in such cases, where possibly amputation of the limb is the only treatment giving any hope of saving the patient's life, most valuable information may be supplied by the *x* rays as to the extent of the tissues involved.

On the other hand, a number of cases have been observed in which the presence of gas in the wound was entirely unsuspected till revealed by the rays during the routine examination for pieces of metal or for fractures. Figure 1 is an instance; the gas appears as white spaces in front of the humerus. All cases in which gas was reported by the radiographer were immediately operated on, and very free drainage established. The presence of gas was confirmed in every case. In several of them (Case 1) the gas continued to spread for a time, even after free drainage was established; in others the patients made an uninterrupted recovery.

We cannot but feel that the results, particularly in the former cases, might have been far different than they proved to be had it not been for the timely warning supplied by the skiagrams. The quantity of gas found in the

tissues is no criterion of the virulence of the infection. We have several times seen patients where, according to the radiogram, much gas was present, do quite well on opening up the tissues, whereas in other cases where but little gas was found, the infection spread with such rapidity as seriously to endanger the patient's life. A consideration of the clinical findings, in conjunction with those afforded by the *x* rays, will, in most cases, give a clue to the virulence of the infecting organism. A high temperature and other indications of toxæmia, and the presence of gas (even in minute quantities), is always indicative of virulent infection; whereas, when no clinical signs of intoxication are present, even comparatively large quantities of gas in the tissues may be considered to be due to organisms of but low virility.

It is not our intention to deal here with the bacteriological side of the question. In all our cases cultures were made from matter taken from the wounds. This was done, with one exception, by means of swabs, and in all these cases the results were negative. In this one case (Case 1), however, pieces of the infected muscle were sent to the laboratory; the result was a pure culture of *B. aerogenes capsulatus*. This was obtained in anaerobic agar medium. No aerobic culture was made. It is intended that, at this hospital, in future all cultures of such cases will be made according to this method.

When gas is present it usually appears in the skiagram as bubbles, varying in size, and arranged in strings (Fig. 2), or scattered broadcast through the tissues (Fig. 3). In one case (Fig. 4) it lay as a clear layer under the skin and between the muscle sheaths. In another it lay in thin layers widely scattered through the tissues about the wound. Occasionally it appears as large, irregular spaces in the wounded area. A case in which the presence of gas was first diagnosed by the *x* rays before any clinical evidence was visible except some swelling of the leg which might have been due to an ordinary septic wound is shown as Fig. 5. These are cases in which the difficulty of differentiating between the shadows caused by the gas in the tissues, and those caused by the wounds themselves, are particularly marked. Only experience, and a general consideration of the case, can help in arriving at a correct diagnosis.

Another pitfall to be avoided is the differentiation between surgical emphysema and gas in the tissues of the thoracic wall. Fortunately it is but rarely that both conditions are present at the same time. This did occur, however, in one of our cases, and Fig. 6 shows surgical emphysema of the chest wall in a case of hæmothorax.

Then, again, there are the shadows of normal structures which must be kept in mind when making a diagnosis; as, for example, in Fig. 7, where the shadows caused by the normal popliteal space are shown; and, in Fig. 8, showing the presence of a bursa under the quadriceps extensor tendon.

In conclusion, let us again indicate the two points which appear to us to be of the utmost importance regarding the diagnosis of gas in the tissues by the *x* rays:

1. It supplies a means of making an earlier and more definite diagnosis than can be made by any other method.
2. In cases where an amputation is under consideration, the rays will give information as to the extent of the tissues involved, and, by so doing, may obviate a further operation later on, which might otherwise be necessary owing to the fact that the first operation did not include all the infected tissue.

CASE I.

Pte. F. H. Wounded in the right shoulder. Temperature 102°, pulse 103. X-ray report: Fracture of scapula, and some damage to neck of humerus. No metal present. A small quantity of gas present in the posterior axillary fold.

Treatment.—Free drainage, and excision of all gangrenous tissue. In spite of this treatment, the gas (which, previous to the report from the *x*-ray department, was entirely unsuspected) continued to spread rapidly. The spread was finally stopped by the use of hypochlorite dressings and the intravenous injection of eusol. He was discharged to England some three weeks later.

CASE II.

Private G. C. Perforating wound 3 in. above the knee. Exit wound on inner side of the popliteal space. X-ray report: No metal present. Small gas pockets above the knee-joint. There is a large quantity of gas between the muscle sheaths and under the skin from the knee to the ankle (Fig. 4). Temperature 100°, pulse 84.

Treatment.—Free drainage. Gas escaped. Discharged to England a week later. Temperature 98°, pulse 80.