A NOTE ON PROGNOSIS IN TETANUS.

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The undernoted cases admitted to the septic wards present some points of interest. Both were under treatment or observation when symptoms of tetanus appeared. Antitetanus serum was used freely in each, and yet the course of the disease and the results of the treatment were quite different.

The following histories are founded on the notes made by Drs. Muir and Sinclair respectively:

CASE I.—J. K., aged 52, miner, was admitted on January 6th, 1909, with a large fungating mass on the outer aspect of the left thigh of two years' duration. He complained more, however, of pain in the stomach of a fortnight's duration. A large tender swelling was found in the hypogastric and left iliac regions. The patient looked ill and perspired freely. An enema was given with little result; the bowels had not moved for four days. Pulse 111, temperature 100.6°. The patient gives a history of having been in the Royal Infirmary two months earlier, when he was advised to have the leg amputated. I found marked tenderness and rigidity of the abdomen, and rigidity also of the muscles of the lower jaw and of the extremities. He was given a dose of croton oil and an injection of antitetanus serum. Films were prepared from the surface of the epitheliomatous mass, which showed the tetanus bacillus in large numbers. Under treatment by antitetanus serum and the daily application of hydrogen peroxide the rigidity gradually passed away, and by February 5th we were able to disarticulate the leg at the hip. The patient is now well.

CASE II.—J. K., aged 38, calendar finisher, was admitted on April 18th, 1909, from the dispensary, complaining of stiffness of the jaw and back of the neck of one day's duration. On Saturday, April 10th, he fell on the point of his thumb, which he dislocated at the interphalangeal joint; the skin was broken, and the head of the second phalanx protruded through the aperture. Evidently the parts had been for about an hour in this state before he came to hospital. At the dispensary the finger was steeped for half an hour in 1 in 40 carbolic solution. The dislocation was then reduced and a wet dressing applied. The finger had been dressed daily since. Suppuration started in the finger, which became red, swollen, tense, and painful. On April 17th the opening at the joint was enlarged downwards to allow the pus to escape. On admission the patient was complaining of pain in the upper left part of the abdomen and there was marked rigidity of the abdominal wall. The legs and arms were not rigid. The bowels had not moved for three days. Pulse 120, temperature 99°. Nasal feeding was tried, but was unsuccessful. An enema was also given without result; 30 grains of chloral were administered per rectum, with a nutrient enema of peptonized milk. On April 19th, in the morning, he had a spasm. Chloroform was given, and during the administration pulse and respiration ceased, but were ultimately re-established. Nutrient suppositories were given every two hours. At 9.15 a.m. next day he had another spasm. He became cyanosed, and respiration was difficult. The pulse became weak and could hardly be felt. There was not marked opisthotonos. Shortly after this the pulse could not be felt and the respirations stopped. The patient died at 9.30.

On comparing these cases it seems evident that the difference in the result was due to the difference in the site of the infection and the resulting difference in the facility for multiplication afforded to the bacillus. In Case II on *post-mortem* examination pus was found in the tendon sheath, extending to the elbow, a condition which could not be diagnosed clinically, and was not even anticipated by the pathologist, but found when looked for. In pus taken near the elbow the tetanus bacillus was discovered.

The conclusion to be drawn from these cases is that the synovial fluid of the tendon sheath is an excellent medium for the growth of the tetanus bacillus, and that steeping in 1 in 40 carbolic will not prevent the occurrence of tetanus if the tendon sheaths are exposed. When tetanus has occurred, also, the sheath of the tendon should be freely opened up, even although there is no apparent necessity to do this. From Case I also it is evident that hydrogen peroxide is capable of destroying the tetanus bacillus when it can be reached. Whether the antitetanus serum was of any value or not it is impossible to say.

I am indebted to Dr. Robert Taylor for permission to publish Case II, the patient being under his care.

The late Miss Annie Marples, of Broomfield, Sheffield, has bequeathed £2,000 each to the Sheffield Royal Hospital, the Sheffield Royal Infirmary, and the Hospital for Women at Sheffield.

THE STERILIZATION OF THE SKIN OF OPERATION AREAS.

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Most surgeons will admit that occasional cases of suppuration occur in their practice for which they are unable to account. The most frequent are small stitch abscesses. They are generally attributed to the suture material, but I venture to think that such blame is often misplaced. Of all our preparations the one least under control is the sterilization of the skin. It is impossible to perform or even to supervise the process, and we are therefore dependent upon the assistant or nurse who undertakes the duty. The results we obtain prove that it is efficiently carried out in the majority of cases, but it is improbable that amongst a large number occasional defects will not occur.

The ideal method is one which can be inspected by the operator or one which will leave visible proof that it has been thoroughly carried out. If a substance could be discovered which would render the skin sterile when painted over it and leave a visible stain there would be little chance of error.

Thinking of this I was much interested in an article describing the method of skin sterilization with iodine, as used by Dr. A. Grossich, of Fiume, in the *EPITOME* of the *JOURNAL* for November 21st, 1908. It was again brought before your readers by Major Porter on February 6th, 1909, and in the following week Mr. Goodwin informed us that it is used in the clinic of Professor von Eiselsberg in the *Allgemeine Krankenhaus* at Vienna. The method appeared to me exactly what I desired. I was, however, very sceptical as to its efficiency, and I could not bring myself to paint such a strong solution of iodine as recommended (10 per cent.) on the skin, especially as it was directed to repeat it twice. I have seen acute dermatitis follow a single painting—a condition I should not like to produce about an operation wound. It struck me that perhaps a weaker solution might be sufficient, and I accordingly decided to try the tincture of iodine *B.P.*, which is about a quarter of the strength.

I commenced with minor cases, but I was soon so well satisfied that I extended it to others. During two months I have used it in upwards of 50 cases, the particulars of which are given in the table on page 369.

Where a "perfect" result is recorded, there was primary union without any suppuration, stitch abscess, or inflammation. In two cases there was some separation owing to deficient skin, which caused a granulating wound, but otherwise they healed immediately. Three of the goitre cases were discharged from hospital in a week.

The cases described as satisfactory were septic at the time of operation. The two cases of appendicitis were suppurative ones, requiring drainage. The colostomy wound was, of course, immediately subject to faecal contamination, and the same applies to the three colotomies, as they had to be opened immediately. All of them healed with a minimum of inflammatory trouble.

The ages of the patients varied from 2 months to 84 years. In none of them did the iodine application cause the slightest discomfort. The cases are fairly representative, and include some of the most anxious—knee-joint, fracture, hernia, etc.

If we disregard the 6 septic cases, there remain 51 consecutive successes and no failure.

The method I adopt is to paint a wide area of the surface to be operated upon with the iodine solution previous to the administration of the anaesthetic. It is painted on very freely, especially over hairy parts, and allowed to soak in. It is again painted immediately preceding the operation. After the stitches are inserted they are painted over for a margin of an inch all round.

The first and only dressing is usually made on the eighth day; the stitches are then removed, and the line of incision with a margin of 1 in. is painted with the iodine solution. If for any reason the wound requires to be inspected at an earlier date, it is painted as above described.

No previous preparation of any kind is undertaken—no bath, no scrubbing, and no shaving. The latter is an