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BRISTOL ROYAL INFIRMARY.

THE TREATMENT OF TETANUS: WITH CASES.

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THE attention of the public, as well as of the medical profession, has been lately so especially directed to this disease, that it may not be ill-timed to publish a few of the cases which have fallen under my notice; and I wish to lay more stress on the treatment than on the symptoms and paroxysms which have been so well and so frequently described by surgical authors.

Cases of tetanus occur in groups; for we have three or four in one month in a large hospital; and afterwards, perhaps, two or three years will elapse without our seeing an instance. I have no means of determining whether this is due to any atmospheric peculiarity or other condition affecting the air of the hospital, or to the state of health of those who meet with the injury; or whether it is only another form of the coincidence (if such it is), which brings in fractured thighs in one week, cases of hernia in the next, and cases of extravasation of urine in a third, as if they had been grouped or classified.*

The voice of surgical experience and authority has tolerably plainly declared that removal of the injured part in traumatic tetanus has been found useless, and the proceeding has been accordingly condemned; indeed, by most writers, it is considered to be absolutely injurious. Patients with tetanus will now and then go on to a favourable termination; and if death does not occur in the first week from the setting in of the symptoms, there is a fair prospect of recovery. Professor Miller speaks highly of the cannabis Indica and general support; and with reference to operative proceedings, he says, "Amputation has been proposed and practised, but with indifferent success. It can be of use only at an early period of the case, as already observed. The result of my own experience is favourable to minor operations, and unfavourable to the larger."

The discovery of chloroform—an agent capable of destroying spasm, and, in full doses, of annihilating all muscular action and destroying all pain—promised at first to do good service in the way of alleviating, if not of curing, the disorder. But in this we have been disappointed. Patients may be temporarily relieved; but in several instances the chloroform has appeared to depress the powers too much in this exhausting malady. At the same time, the power which it gives us of lulling pain and of lessening, or altogether setting aside, the shock of an operation, will tend to modify the unfavourable verdict which the result of operative measures in cases of tetanus has hitherto justified. As long ago as 1848, a case was published by Mr. Baker, where traumatic tetanus set in on the fifth day after the receipt of an injury, and chloroform exhibited once for three quarters of an hour cured the patient. His finger was subsequently amputated.

About three years ago, we had several cases under

treatment at the Bristol Royal Infirmary: two under the care of my colleague Mr. Morgan, and three under my own care.

CASE I. In the case of this young man, acute traumatic tetanus came on very slightly on the twelfth day after the receipt of a gun-shot wound of the hand, and on the evening of the day when I had removed a sloughing finger. For more than a week, the only symptom was that he bit his tongue in his sleep; and it was in consequence of the soreness of his tongue that my particular attention was directed to his state. Acute and severe symptoms set in twenty-seven days after the injury, with excessive opisthotonos, trismus, intense sweating, and collapse. The treatment consisted in cannabis Indica, administered in half-drachm doses of the tincture every hour, or every two hours, and a large quantity of stimulus (thirteen bottles of wine in eleven days); and in fourteen days he was convalescent. Many months afterwards I removed the remains of the finger and the head of the metacarpal bone, under the influence of chloroform, without any evil consequences. About this time, Mr. Morgan had under treatment a somewhat more chronic case.

CASE II. A woman, four months advanced in pregnancy, received a blow upon the nose, which was followed by so much hæmorrhage, that it was found necessary to plug the posterior nares. Symptoms of tetanus set in before long, and continued some time, gradually becoming more severe; and when the spasms were the worst, she had excessive opisthotonos, with rigidity of the abdominal muscles and trismus. The treatment was at first cannabis Indica persevered in for some time; but as it had no especial good effect, it was given up, and tonics with stimulants were given instead. Under this treatment, she gradually and slowly recovered, without having suffered any particular inconvenience or danger from her state of pregnancy in connexion with the spasms and rigidity of the muscles of the abdomen. She went out cured, and was delivered of a living child in due time.

CASE III. A sailor was admitted under my care, having just crushed his first and second toes beneath the edge of a water-cask. The toes sloughed on the eighth day, and were very black and offensive on the ninth. He complained of some stiffness of the jaws during the morning, but at 5 P.M. was taken with decided symptoms of lock-jaw. The tincture of cannabis Indica was ordered, but he could swallow none of it, for his teeth were tightly clenched, and he had great general spasm. The next day he was much worse, with strongly marked opisthotonos, quick and weak pulse and complete inability to move his jaw or to swallow.

Upon consultation with my colleagues, my proposal to remove the metatarsus and toes under chloroform, was ultimately agreed upon, and I performed the operation at once, taking away the toes, metatarsus, and internal cuneiform bone. A wooden peg was introduced between his teeth while he was still insensible; and as he was recovering consciousness, he swallowed a little wine, the first fluid he had taken since the attack. Injections of brandy and beef-tea were ordered. He relapsed into spasm immediately on recovering from the chloroform, became much worse in the evening, and died in the night, about forty hours after the first symptom. The *post mortem* examination was negative in its results.

CASE IV. This case was under the care of my friend Mr. Morgan, and the injury was similar—viz., crushing of the great toe. The patient was an iron-turner by occupation, aged 36 years, and was admitted into the same ward

* In the week just passed (ending May 19th), I have had in the Bristol Royal Infirmary two cases of suicidal wound of the throat, quite independent of each other, and both fatal. Some time ago, one of my colleagues had four cases of hernia in one week, all requiring operation.

but a short time after the death of the last case, having crushed his great toe under the wheel of a locomotive engine. The soft parts were much contused and lacerated. Upon the tenth day after the accident, he experienced some difficulty in opening the mouth, and this increased by the evening, when spasmodic rigidity of the jaws was noticed. He was ordered a turpentine injection, and subsequently a drop of croton oil, and fifteen minims of the tincture of cannabis Indica every three hours.

On the next day, he had occasional twitching of the injured leg; pulse 80 to 90; has no power of emptying his bladder; toe sloughing; pain in the line of the absorbents, and in the femoral glands; bowels much confined. The great toe, with the head of the metatarsal bone, was removed under the influence of chloroform, after a consultation on the case. The foot was lightly dressed afterwards. He was ordered to take thirty minims of the tincture of cannabis every two hours.

In the evening he was decidedly improved. The pulse fell after the operation, and he opened his mouth better. The abdominal muscles were relaxed, and his bowels open. He was ordered to have an ounce of wine every three hours.

On the day after the operation, there was some difficulty in swallowing. The pulse was about 100. He was ordered to take another drop of croton oil. The quantity of wine was increased, and he was ordered some quinine. The wound was in an unhealthy state without suppuration. He complained of some difficulty of breathing and tightness about the chest.

In the few following days, the chief change in his state was an increased rapidity of the breathing, while the pulse became slower; he had opisthotonos, great rigidity of the abdominal muscles, and frequent spasms. The inspirations were thirty in the minute.

During the fifth night after the onset of the disease, he was kept partially under the influence of chloroform; and it was found that thirty minims administered on a sponge produced rapidly the effect of soothing pain, and bringing on a quiet and apparently natural sleep, from which he was easily roused. He took nine drachms during the night, and appeared depressed in the morning, the pulse being much slower.

In this way he went on for nearly a week. The tetanic symptoms gradually yielded, and at last he had few or none, and he could open his mouth tolerably freely. The chest symptoms became much worse, and it was evident that he had inflammation of the lungs, for which he was treated, but without avail. He died on the morning of the fifteenth day after the first symptom of tetanus.

At the *post mortem* examination, he was found to have pleuropneumonia of the lower part of the right lung, with some consolidation of the left lung, and congestion of the pulmonary mucous membrane. The membranes of the brain were also congested.

CASE V. The last of this series of cases occurred in the person of a lad whose right foot was caught between two rough heavy rollers at the Cotton Factory, and was much lacerated. The skin was torn from the back of the toes and metatarsus, the tendons were much scratched, and one of the joints of the middle of the toes was laid open. The wounds were dressed with water dressings, and he was allowed full diet.

On the fifth day after the accident the wound looked very sloughy, and a poultice, with a chloride lotion, was ordered. During the next two days he suffered from spasms of the leg, especially at night, and was not able to sleep. He looked anxious and depressed. Pulse quick, and skin hot. The nurse's attention was drawn to him in the night by his crying, and she found him with his leg spasmodically drawn up, so that the knee was bent at an acute angle. The wound was very unhealthy, and he had enlarged and painful glands in the femoral region, and pain in the course of the absorbents. The spasms of the muscles of the thigh and leg came on now and then, accompanied with great pain. I removed the toes and metatarsus with the pro-

jecting anterior extremity of the internal cuneiform bone, under chloroform. Two or three vessels required ligature, and I introduced five sutures, bringing the flaps well together. He was ordered to take twenty drops of laudanum every four hours. The day after the operation he complained of the foot; the pulse varied from 100 to 120, and he had a few spasms, the leg being drawn up now and then. In the evening I loosened the bandages and removed the sutures. He took one or two doses of castor oil, as his bowels were much confined, and some Dover's powder at night, and three days after the operation the spasm ceased. A little redness extended up the ankle. Urine excessively alkaline, with a deposit of phosphates. To remedy the erysipelatous condition, and to relieve his general state of depression, I ordered him twenty drops of the tinctura ferri sesquichloridi three times a-day, and from this time his progress towards cure was uninterrupted.

REMARKS. In the first of these three cases in which an operation for the removal of the injured parts was performed after the onset of tetanic symptoms, the disease was so severe and acute that there was no time for treatment. The patient only lived thirty-six hours from the time when the jaw became fixed, and he only swallowed a few drops of wine when partially under the effects of chloroform, immediately after the operation. In such a case, I believe an operation to be quite useless, for the entire disease is suddenly and rapidly developed to a degree that is quite out of the reach of remedies, and too much of the poison (if poison it be) has been absorbed to be eliminated from the system.

In the second instance, the treatment adopted, viz., the amputation, chloroform, and stimulus, undoubtedly checked the complaint, and the patient died apparently from pneumonia, and without any spasm. He had tetanus for fourteen days, and the spasms were entirely subdued. The condition of the lung found after death was not such as would have destroyed life, except in a person worn out by some such depressing cause.

In the third case, the spasms were very distinct, and were evident to all my colleagues: they were also local, for the patient had no trismus, and it is well known that in a certain proportion of cases the disease begins locally, and that the system generally is subsequently affected. After the amputation of the foot, he had scarcely any symptoms of a tetanic nature. He snapped his teeth together a few times convulsively in his sleep, but the evidence of trismus was not at all conclusive. It is well worthy of notice that in this boy, as well as in Mr. Morgan's case, there was distinct affection of the absorbents, and inflammatory enlargement of the femoral glands, and that, in all three cases, the tetanic symptoms commenced as soon as the injured part began to slough.

I believe that, in these cases of local tetanus, removal of the injured part under chloroform is an important feature in the treatment, and one that gives the best promise of success.

ST. MARY'S HOSPITAL.

CASES OF NERVE-DISORDER, RECORDED WITH REFERENCE TO THE PROBABLE OPERATION OF MALARIA AS A CAUSE.

By C. HANDFIELD JONES, M.B., F.R.S., Assistant-Physician to the Hospital.

[Continued from page 447.]

CASE V. J. O'C., female servant, aged 35 years, Irish, was admitted on July 16th, 1855, into St. Mary's Hospital. She has been ill two months with her present disorder, which commenced after exposure to cold and wet. She has had palpitation during the last eight years, on and off. Her general health has been good; she had hæmoptysis and evacuation of blood *per anum* at the age of 14; no other disease that she can recollect. Catamenia regular. She had excessive leucorrhœa for three months, which