

TWO FATAL CASES OF TETANUS.

BY W. B. HADDEN, M.D.

CASE I.

H. F., aged 51, a gardener, was admitted into St. Thomas's Hospital, under the care of Mr. Croft, on February 26th, 1885.

For the three weeks preceding admission he had been drinking heavily. He stated that since his youth he had suffered from attacks of bleeding piles, occurring at intervals of about a month. Six days before admission he was thought to have a prolapse of the rectum. It was reduced by a doctor after it had been down three days, and bled rather freely afterwards.

When seen by the house-surgeon, on admission, the risus sardonius was marked, the head was thrown well back, the sterno-mastoids tense, the back arched. The limbs were not then affected. The respirations were 36, occasionally interrupted by spasm; the pulse 112, irregular, weak and compressible. He was sweating freely. A rectal examination revealed some internal piles, and chronic thickening of the mucous membrane. Two hours after admission, chloroform inhalation was tried with marked benefit. After a few whiffs the respirations became regular, the pulse full and steady, and the jaw more relaxed. He usually lay on his face, but after the inhalation he allowed himself to be turned on his back. The chloroform was administered off and on for three hours. He then fell into a quiet sleep, during which the muscles were quite relaxed. But the respite was short. In half an hour he awoke, the opisthotonos returned with violence, and hiccough came on. Chloroform was again given. The hiccough disappeared, and the back became less arched. At 9 P.M. (seven hours after admission) the flexors of the left forearm and the fingers began to twitch. It was noted, also, that before a spasm he raised himself on his hands and knees. At 11 P.M. the pain was very intense, and the attacks began to occur every ten minutes. The paroxysms continued to recur, with short intermissions. Sometimes they came on apparently spontaneously; at other times they were induced by external impressions. The sound of a falling saucer, the chiming of Big Ben, the passage of an enema tube, the

removal of the sheet on which he lay, and sometimes the act of micturition, were sufficient to bring about a paroxysm. During the attacks the respirations became quick and shallow, and the pulse rapid and thready. Sometimes the pupils became dilated, and once priapism was noticed. During the seizures he often passed flatus, and two or three times fæces. He perspired much. Between the attacks he dozed occasionally. His chief complaint was of pain at the back of the head and in the abdomen. As the attacks became more frequent and severe, the chloroform was less efficacious, and a larger quantity was required in order to produce relaxation. There was much difficulty in feeding him. Condensed liquid nutriment was given by mouth and by enemata; but he was often disinclined to be fed. Two or three times liquid food was given by the œsophageal tube; but it was not retained. Towards the end the paroxysms became so violent, that now and again he nearly rolled off the bed.

Death occurred at 4.55 A.M., on February 28th (about thirty-eight hours after admission), from a spasmodic attack, affecting the larynx and muscles of respiration. The temperature varied from 99°·4 to 103°.

Post-mortem Examination.—Body fairly nourished. Rigor mortis well marked. Jaws firmly closed. Some old pleuritic adhesions on both sides. Pericardium and peritoneum healthy. The cavities of the heart contained a little fluid blood; the right side was dilated and hypertrophied. The air-passages contained blood-stained mucus. The lungs were bulky, emphysematous at the edges, and there was much blood in the dependent parts. The kidneys and spleen were healthy. The cervical and abdominal glands were swollen. The vessels on the surface of the brain were injected. There was marked congestion on the floor of the fourth ventricle and of the grey matter of the spinal cord, especially of the posterior horns.

The cervical and dorsal sympathetic, the phrenic, pneumogastric and fifth nerves were examined, but no change detected. There were slight external piles, but no prolapse of rectum. Just within the anus the mucous membrane was somewhat swollen, but there was no bruising.

Microscopical Examination.—There was marked dilatation of the vessels of the grey matter in all the regions of the spinal cord. The white matter was comparatively free. In some places the distended vessels had given way and hæmorrhages were seen. In the lumbar region, which was the most affected, they were present in both anterior and posterior cornua, but were more abundant in the former. There was rather a large hæmorrhage into the grey matter midway between the anterior and posterior horns in the dorsal region. The

cervical part was congested, but no hæmorrhage was found. The multipolar cells everywhere were healthy. There was no exudation. The phrenic nerve and the trunk and ganglia of the vagus were normal. The ganglia and cord of the cervical sympathetic were quite healthy, as well as the first dorsal ganglia; but in the dorsal cord the vessels were much distended, and there were numerous hæmorrhages.

CASE II.—C. B., aged 21, a gardener, was admitted into St. Thomas's Hospital, under the care of Mr. Sydney Jones, on April 11th, 1885. Fourteen days before admission he cut the tip of his left forefinger with a wood-chopper. The wound was dressed by a doctor at once. The patient seemed to be progressing favourably until five days before admission—that is, nine days after the injury. He then noticed some sore throat and stiffness about the neck. On the evening of the same day he had some difficulty in opening the mouth, and occasional twitching pains of the back. On admission, the face was flushed and anxious. The tetanic spasms came on every two or three minutes. In the attacks the body assumed the usual arched position, and the risus sardonicus was present. In the intervals he could open the mouth fairly well, and was free from pain or discomfort. His mind was unaffected. The temperature was $99^{\circ}4$. There was an unhealthy-looking wound at the tip of the left forefinger, but there was no swelling of the parts around, and no pain in the course of the nerves. On April 17th, the two terminal phalanges were amputated. He was ordered hydrarg. subchlor. gr. vi., and a mixture of chloral hyd. gr. xx., pot. bromid. gr. xxv., every three hours. The next day it was noticed that he was sweating, that the face was more set, and that the spasmodic action of the muscles of the back was accompanied by great pain. The attacks occurred about four times in the minute. The pulse was 112, compressible. The bowels acted after the calomel. He was ordered ext. physostig. gr. $\frac{1}{8}$ every three hours. It is unnecessary to give the details of the case. The spasmodic fits continued to occur at frequent intervals; the jaw became so fixed that it could only be opened sufficiently wide to allow the tip to protrude; the pulse was quick and compressible, the respirations rapid and shallow. On April 21st an ice-bag was applied along the spine, and morphia injections were used. On April 23rd the physostigma pill was given every hour. After the first day the temperature was always above the normal. In the evening it was usually 1° or 2° higher than in the morning. The highest temperature was $104^{\circ}2$. He died on April 26th.

Post-mortem Examination.—Body fairly nourished. Some lividity about arms. The two terminal phalanges of the left

index-finger have been removed, the distal end of the first phalanx being left bare. The spinal dura mater was healthy; the pia mater injected, especially posteriorly and in the lumbar region. The grey and white matter appeared quite normal, and there was no unusual vascularity. There was no change in the medulla oblongata and floor of the fourth ventricle. The venous sinuses within the skull contained fluid blood. The brain was healthy, except that the puncta vasculosa were well-marked. The blood everywhere was fluid. The organs generally were congested, but exhibited no other abnormal change.

Microscopical Examination.—There was no sign of neuritis of either the plantar or dorsal branch of the digital nerve going to the left index-finger. Sections from the cervical, dorsal, and lumbar regions of the cord were examined and found healthy. The multipolar cells had their normal appearance; there was no congestion and no exudation. The medulla oblongata was healthy.

Remarks.—Case I. shows that in tetanus congestion and hæmorrhage may exist not only in the spinal cord, but elsewhere, *e.g.* in the dorsal sympathetic. Case II. shows that there may be no congestion of the spinal cord or medulla oblongata. Congestion and hæmorrhages occurring in tetanus are, in all probability, accidental, dependent on death from asphyxia. In both cases the multipolar cells were healthy, and there was no exudation, such as is described by some writers. Case II. has an additional negative value; the nerves of the injured finger presented no sign of congestion or inflammation. They were quite healthy. So far, then, as the actual cause of tetanus is concerned, these cases are negative.