

ence of those agents in the etiology of tetanus. I will now outline the symptoms as generally observed and laid down in books, adding others which I noted in the case under consideration, before proceeding to a detailed description of the case itself with its peculiarities, treatment, course, and termination.

When tetanus, due to a wound, is about to occur, the wound becomes irritable, cicatrization ceases, the suppuration changes its character, pains shoot towards the body, a feeling of stiffness in the neck, and difficulty in opening and closing the jaws, comes on—the jaws quite soon becoming tightly closed; the muscles of the pharynx suffer, and swallowing becomes difficult and painful, from spasms; the muscles of the face often assume a fixed position, the mouth being sometimes closed, and the lips protruding; but more frequently, as in my patient, the lips are drawn asunder, the forehead transversely wrinkled, the eyebrows elevated, and the angles of the mouth so raised by the contraction of the levatores and zygomatici, as to produce that peculiarly frightful expression, termed the *risus sardonius* or canine laugh. In a short time the muscular rigidity extends to the trunk and extremities, and the whole body becomes at times as stiff and inelastic as if frozen. The flexors of the upper extremities, and the extensors of the lower, suffer the most, and hence we find closure of the fingers, and “pointing of the toes.” But this is what we might expect, since the flexors of the hand and the extensors of the foot are homotypic muscles.

In the beginning of an attack of tetanus the rigidity is not, as a rule, general or constant; separate groups of muscles being separately affected, and remissions, or even complete intermissions, irregularly occurring. Soon, however, the intermissions cease, the paroxysms become more severe, and almost continuous, and extend to all the voluntary muscles; the body is then bent backwards, forwards, or sideways; the face is horribly distorted, the breathing is rendered difficult and painful, the heart's action is seriously interfered with; groans and even loud yells, and urine, and fæces, are forced from the patient by the spasms, and detonating expulsions of flatus per rectum. The feet are incurved and extended, the hands firmly clenched and drawn up, with the fore-arm towards the body, and the whole

condition of the sufferer one of the most excruciating torture. At this period of the disease the slightest cause—a breath of air, a touch, a word, a noise, two or three gathering around the patient's bed, almost only a look, is sufficient to excite a paroxysm, with all its attendant horrors. And it is just at this point that death is liable to occur from heart contraction (arrest in systole), or from spasms of the muscles of respiration. The temperature is not generally much raised until just preceding the close; the body is bathed in profuse perspiration; the pulse is, as a rule, quick and feeble; the bowels are constipated and the urine scanty. Sleeplessness is an annoying symptom. When sleep is procured by narcotics the spasms cease, when not too violent, but recur when the patient awakens; but when the spasms are severe they never really relax, and the patient is apt to awaken into a paroxysm. The tongue is frequently protruded from the mouth, by spasm, and caught and terribly lacerated by the teeth snapping suddenly together.

The prognosis of tetanus is always unfavorable, death occurring early in the disease. Hippocrates noticed that, when the patient survives beyond the fourth day, he stands a better chance of recovery. No doubt this is true, but death has occurred as far along as thirty-nine days after the commencement of the attack. It is generally believed that if life can be prolonged beyond three weeks, recovery is quite probable; but the periods of death, in 327 cases, analyzed by Mr. Roland, give us the most reliable data in this matter: 79 died within 2 days, 104 in from 2 to 5 days, 90 in from 5 to 10 days, 43 in from 10 to 22 days, and 11 beyond the 22nd day; giving an average period for death of between six and seven days. So unfavorable is the prognosis in every case, that we should keep death constantly before our own mind, and the minds of the patient's friends, while doing everything in our power to relieve and save.

The diagnosis of tetanus is not difficult, and need not claim our time and attention in this paper; the treatment is of the most importance to us, and it is in this that we shall find the greatest scope for ingenuity and good judgment. Amputation of the affected part, excision of a portion of the injured nerve, and stretching of