

tion to the malignancy of the case yielding them, and its contagiousness.

On exposure to the air diphtheritic membrane of the most virulent type loses its contagious power, and the micrococci *pari passu* lose their power of growing in culture fluids.

Under successive generations of artificial culture the diphtheritic micrococci lose their growth, activity, and also their power of infecting the rabbit.

It has not been experimentally directly proven, but it is a necessary inference from the two facts just stated, that under certain favoring circumstances the sluggish micrococcus puts on growth—activity, and, in all probability, *poisonous properties*.

Every grade of case can be found in man from an ordinary sore throat, through simple pseudo-membranous angina and trachitis, up to malignant diphtheria.

Any inflammation of the trachea of sufficient intensity may cause the formation of a pseudo-membrane.

A case may begin as one of sthenic "pseudo-membranous croup" and end as one of adynamic "diphtheria," with blood poisoning; and in cases of this character not infrequently no exposure to contagion is discoverable, and there is clinically every reason to believe that the blood poison has been developed within the body of the patient. The theory of the disease which they would deduce from these facts is that the micrococcus, which directly or indirectly causes the diphtheria, is not a specific organism different from that common to healthy and inflamed throats, but is an active state of that organism; that certain circumstances outside of the human body are capable of throwing this common micrococcus into this condition of active growth and engendering an epidemic of diphtheria. When diphtheria is thus epidemic the micrococci light upon a throat, and if the throat have little resisting power, as in the child, inflame it or increase a catarrh already existing into a violent inflammation, and also rapidly enter the blood and cause systematic poisoning.

On the other hand, a catarrh in a weakly subject may, in the beginning, be simply an inflammation from cold, but the ordinary micrococci in the throat or mouth, favored by the special conditions, etc., may gradually change from the dormant to the active state, and by and by act upon the throat, and at last force their way into the system, and a self-generated diphtheria be formed out of a "cold."

It has already been abundantly proven, they think, that there is no specific character detectable in the micrococci of diphtheria. The history of wounds infected with diphtheritic poison and of those infected with hospital gangrene lends further countenance to the idea that diphtheria and certain other septic diseases are really different manifestations of the one affection, the difference in symptoms depending rather upon the difference in the location than in a difference of the nature of the septic process. In order to test this they made a few experiments.

Drs. Wood and Formad very properly do not claim that these experiments are sufficient to establish the identity of diphtheria and other forms of local gangrene, but consider that they certainly favor such a belief.

In concluding their report they suggest the great necessity of further research, especially upon the relations to diphtheria of scarlet fever, pyæmia, erysipelas, and various septic diseases in which micrococci that seem to be similar to those of diphtheria occur.

Hospital Practice and Clinical Memoranda.

TWO CASES OF PROBABLE TRICHINOSIS.¹

BY C. W. WOOLDRIDGE, M. D.

On the 26th day of February, 1880. I was called to see Mr. Henry Miner, a laboring man living in the village of Montague, Michigan. I found him suffering from fever and a general sense of discomfort, but his request when I came into his presence was that I should do something for his eyes, the tissues about which were greatly swollen while a general puffiness seemed to be spreading over his face.

¹ Read before the Suffolk District Medical Society, February 25, 1882.

There was no appearance of inflammation, nothing that would serve to localize the trouble, no pain other than a general sense of discomfort and weakness, which the fever that he was suffering from might readily account for, and the stiffness about the eyes due to the cedema which he had supposed to be the seat of the disease, but which to my mind appeared to be but a symptom of some general disturbance.

To make the matter more peculiar, Mr. Miner's brother-in-law, a youth of about eighteen, living in the same house with him as one of the family, was suffering from exactly the same symptoms, with the difference that in his case they were a few hours behind in their development. This to my mind rendered improbable in the outset any diagnosis which I might otherwise have tentatively adopted. I could make nothing of it; however, as it was necessary to do something I gave them a little bitartrate of potassa as a safe eliminative and awaited developments. The next day I found the fever about the same, the swelling had become more general, involving the face and neck, while the hands and arms also showed some puffiness. It was not easy to tell which of my patients was the sicker man on this occasion nor afterward; they were alike. On this second day they complained of a more painful sensation over the stomach than before, and a diarrhoea had set in that was out of all proportion to the medicine that I had given them, though at first I was inclined to attribute it to its action. The third day there was but little change. They spoke of a painful stiffness of the neck, which either on this day or the day afterward involved the respiratory muscles also, causing a difficulty of breathing. The swelling was not much changed, but if anything it was a little more general, while that about the eyes was less marked.

On the fourth day the swelling had begun to diminish, but the fever continued and likewise the diarrhoea. By this time, too, their complaints of muscular pain were much more decided. They complained of pain, stiffness, and weakness, especially in the neck, but also in the arms and over the epigastrium. This painful stiffness increased for some time and became more general until it was painful to move at all, but the pain was never acute. It was not until this muscular soreness became somewhat prominent in the complaint of my patients that the thought of trichinæ occurred to me, and I began to look up the subject. The result of my doing so was that it became exceedingly probable to my mind that it was trichinosis that I was dealing with, and the next time I saw my patients I told them that I believed they had eaten a meal of raw ham, pork, sausage, or something of that kind a short time before they were taken sick. They immediately admitted that such was the fact, but it was several days before. They could not remember exactly the day, but they two had come in hungry from their work and had made their supper from a fresh ham which they had eaten raw with vinegar and pepper, making a hearty supper of it. They were too late for the regular meal and no one else ate with them. The rest of the ham had been cooked and eaten, not even the bone could be found. They had purchased the ham at a grocery store in the village, to which I went to see if I could find any trace of the hog from which it was taken. I found that according to their books Mr. Miner had purchased a ham of them about two weeks before his sickness, a rather earlier date than that assigned approximately by him. They remembered it; from its

weight they thought it was part of a hog which they had purchased about that time from a farmer in the neighborhood, but of that matter they could not be certain, and they had none of it left.

The subsequent course of the disease in my patients was that after ten or twelve days there was a gradual improvement, but long after all active disease seemed to have ceased they were nearly helpless, and two months afterward they were but beginning in a feeble way to try to do a little work.

I was very desirous of obtaining evidence of the correctness of my diagnosis that could not be questioned, and for this purpose I persuaded Mr. Miner to let me cut into his shoulder, and remove a small portion of muscle for examination. This I did on the 18th of March, twenty-two days after the beginning of the sickness, removing a minute portion of the deltoid.

I considered that the chances were against my finding trichinæ there, even allowing their existence, since I could not expect them to be so numerous in my patient, who was recovering, as they would probably have been in a fatal case, nor in that particular muscle as in others not so conveniently situated for examination in a living man. Nevertheless it was possible that I might find some. Accordingly I examined the specimen I had obtained carefully with the microscope, and always found on the slide distinct specimens of striated muscular fibre, but no trichinæ.

It will be proper here briefly to review the natural history of this disease, which has attracted so much attention of late by reason of its having disturbed our commercial relations with Europe. Aitken says: "The disease begins a few days after eating the meat in which there were trichinæ, with loss of appetite, general discomfort after eating, irritation of the stomach, vomiting, and diarrhœa. These symptoms last from four to eight days, till the progeny are born. Severe symptoms may set in and continue until the parasites are encapsuled if not previously fatal. There are continued diarrhœa and fever, œdema of the eyelids, also pain, or at least a painful sensation of weakness, in the limbs, œdema of the joints, sometimes of the whole body, difficulty in moving the tongue, profuse, clammy perspiration, and the patients who do not become convalescent die either unconscious with symptoms of typhoid fever, or, in a few cases, remain conscious to the end, complaining of inability to breathe freely."

Professor Dalton, speaking of the symptoms in two cases which he studied in 1864, which proved to be trichinosis, says, "These symptoms were abdominal pain and diarrhœa soon after eating the suspected food, followed by œdema of the face and diarrhœa. Niemeyer speaks of *insidious* trichinosis, in which the preliminary symptoms are absent, and the secondary symptoms of the disease, œdema, fever, and the symptoms characteristic of the trichinatus myositis are the first to be developed. "But," he says, "far the greater number of patients complain in from a few hours to a few days after the poisoning, when the young brood have been hatched, of severe pressure in the stomach, of eructation, and nausea, combined with a feeling of great heaviness and depression. There is almost always diarrhœa accompanied by more or less severe colicky pains. These symptoms are soon accompanied by those of the entrance of the trichinæ into the muscles, vague pains, and a feeling of stiffness, as well as a peculiar œdema of the face, affecting the eyelids."

Renz, as cited by C. W. C. Glazier, M. D., in the report on trichinæ and trichinosis, prepared under the direction of the United States government, 1881, mentions the possible division of the disease into four stages: first, the prodromal; second, the stage of intestinal irritation; third, the stage of muscular irritation; and, fourth, the stage of retrogression and convalescence; but adds, "Such a stereotyped division does not always correspond to the course of the disease, nor could it reasonably be expected that it would. Of the four possible stages," he says, "none except that of muscle irritation is entirely certain." Krautz observed a period of incubation lasting from a few hours to forty-three days, and he had cases in which there were no disturbances of the digestive functions. The most important and constant symptoms of the second stage, he says, "are œdema and perspiration. This stage is ushered in usually with œdematous swelling of the eyelids, which often spreads to neighboring parts, and sometimes is associated with a light form of conjunctival catarrh." Heller, in Zeimssen's Encyclopædia, says, "With the appearance of œdema of the face and eyelids on the seventh day trichinosis must be naturally suspected. The further progress of the disease is so characteristic that the diagnosis can scarcely remain in doubt." He also says, "The diagnosis becomes indisputable on the discovery of a single intestinal trichina in the stools or upon the observation of muscle trichinæ in excised portions of muscles, but a negative result of the examination of the discharges and of small portions of muscle is no evidence against the correctness of the diagnosis, while it is to be remembered, on the other hand, that a positive diagnosis of the trichina disease may be made without these observations."

I desire in conclusion to express the opinion that mild cases of trichinosis occur much more frequently than they are recognized. The cause is found everywhere, and there is no practical way in which it can be detected and avoided. If people would be safe they must cook their meat.

I would also call attention to the fact that Dr. H. I. Bowditch, is among the earliest investigators of this disease, having independently discovered it in a patient, and published an account of it with illustrations in 1841, nearly twenty years before its origin began to be understood; although Owen, of London, and others, as Dr. Bowditch reports, had seen the animalculæ without having connected them with any particular food.

BOSTON LYING-IN HOSPITAL.

CASES IN THE SERVICE OF W. L. RICHARDSON, M. D.

REPORTED BY F. B. HARRINGTON, M. D.

CASE I. PUERPERAL INSANITY.

H. E., is a married woman, twenty-five years old who came to the hospital and was delivered of her third child November 25th. From her previous pregnancies she had made rapid recoveries. Her general condition on entering the hospital was good. The urine was normal.

The labor was normal, and for two days she seemed to do well, although she was thought to be somewhat hysterical.