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Original Communications.

EPIDEMIC CEREBRO-SPINAL MENINGITIS.*

BY J. S. NOWLIN, M. D., OF SHELBYVILLE, TENN.

I believe our nomenclature sometimes leads to a mistaken pathology.

The disease which we have been accustomed to term cerebro-spinal meningitis, is not in my opinion an inflammatory lesion, though the name at once and irresistibly directs our thought to an inflammation of the coverings of the brain and spinal column. Inflammation of these membranes does not differ from inflammation in tissues of like character in other parts of the body.

In all the different tissues of the body, this lesion has as great or greater uniformity in manifestation, than any other morbid process with which we are familiar.

It is true that the process is modified in accord with the particular structure, whether it be osseous, muscular, aveolar,

* A paper read before the Bedford County Medical Society.

mucous or serous. There must be, however, too much blood, with stasis, followed by a transudation or exosmosis of the corpuscles into the surrounding tissues, these corpuscles being arrested and out of proper relationship, swell from the absorption of fluids. They then break down themselves and destroy the tissues around, resulting in pus, or they are absorbed, ending in resolution, or in other instances, softening.

The death or recovery which follows such process is not preceded as a rule by such phenomena as we observe in cerebro-spinal meningitis, so-called.

Aitkin says, in all epidemics, cases have occurred in which no appreciable changes have been found in the cerebro-spinal membranes. These cases, exhibiting no evidences of change, were as often found when the patient had lived several days as when death occurred within a few hours.

Dr. Burdon Sanderson found "the gelatinous substance, together with the cell-like bodies in the sero-purulent fluid which occupied the spinal sub-arachroid space, and also in the ventricles, though exhibiting corpuscles and granules floating, yet under the microscope, did not present that uniformity of size and character which are met with in normal pus. Occasionally they exhibited the appearance of an external cell membrane, but in most instances they could not be made out, even in perfectly fresh exudations, in cases that were examined as early as eight hours after death. They invariably contained granules, some of which cleared away on the addition of acetic acid. Those remaining were highly refractive, but did not assume any special form of arrangement."

Two interesting cases were reported by Dr. Linc, of Philadelphia, in the *American Journal of Medical Sciences* for the months of July 1864 and 1865. One was an adult female, and the other a child aged eighteen months. One of these cases died in twelve and the other in fourteen hours after being seized in the midst of perfect health. In both cases the cerebro-spinal meningeal vessels were filled with black blood, but there were no traces of inflammation and the substance of the brain and the medulla oblongata was natural in appearance and consistency.

This line of argument might be greatly prolonged, with statements of eminent observers and investigators in pathology, but this will suffice for the purpose of this paper, and I pass this part of the subject with the remark that nothing should be called inflammation which does not uniformly present the pathological characteristics of that lesion.

If it is not an inflammation of these membranes, the question at once arises, to what cause then shall we look as productive of the peculiar and marked phenomena found in this disease?

In answering this the most logical conclusion looks to a malarial congestion of the nerve centres, as being capable of setting up all the varied symptoms and sequelæ met with in this fearful trouble. It will be admitted that the word congestion is not just what we want, and indeed, I do not think it essential, but I do put weight and stress on the term malaria, as the cause, and the nerve centers as the seat of the affection.

Here, then, is the thought desired to be set forth in this paper—that is to say: the etiology is malaria, and the pathology is found in the nerve centers. The proof is found in the following compilation of facts:

The epidemic influences which produce this disease have been prevailing in Shelbyville and vicinity from December last. From that time to the first of April I have seen a few of the most marked and malignant types, together with the manifestations of this disease in every conceivable shape.

In December Mr. H., aged 44, was attacked. He had not been well for two or three weeks; he had pain in shoulder and neck, and pain in the arms and back. He kept up his work on his farm and attributed his pain to rheumatism. He came to Shelbyville and returned on Saturday, a distance of four miles; during the day his nose bled freely, this had also occurred on different days previously; he complained somewhat the same way on Sunday. Sunday night at 8 o'clock he had a chill, head, neck and eyes pained him intensely. His knee-joints were excessively painful; his throat was sore. In less than an hour he was delirious and almost entirely deaf.

Dr. Ab Ryal was called to see him, and found his pulse

about 90, and bounding, with a temperature of 100. He could be kept in bed only by the greatest efforts of two or three strong men. He put him upon the bromides, with heavy mercurial purgatives, and large doses of morphia. He also cupped him, and poured large quantities of well water on his head.

At 11 o'clock Monday night, after he had been sick twenty-four hours, I saw him with Dr. Ryal. He was hardly conscious of his surroundings, his mind was entirely obscured, and he was very deaf. He could see with difficulty, and there was ptosis of the lid of the left eye. The pupil of one eye was much more dilated than the other, and both were slow in responding to light. He was continuously tossing, and when he was still for a moment, it was on the side, and never on the back. He was constantly desiring to micturate, but voided his urine with the greatest difficulty. He had red spots on his body, face and arms, from the size of a pin point to a five cent piece. His knuckles and wrists were especially red; his skin was in the highest state of hyperæsthesia I have ever seen; pressure upon the hand would produce contraction of the muscles of the face. There was an herpetic eruption on his lips and around the mouth. The head was slightly drawn backward. He had a distressing nausea, vomiting from the beginning.

We gave him six drops of veratrum every three hours, and ten grains quinine every hour until six in the morning, having given the first dose of quinine at about half past 11 o'clock. Although he vomited frequently, we thought he had retained most of the quinine. At 6 o'clock in the morning his symptoms were very much relieved. He was rational, could see fairly well, though one eye squinted; stomach better, and he had lain quiet and slept some. He drank some milk and had had a free and copious action from the bowels.

The quinine was suspended until evening, the veratrum was not given after 4 o'clock in the morning. He had morphia, bromide of potassium, and tincture of gelseminum through the day. He passed through the day Tuesday better than on Monday. As the night approached his ugly symptoms all returned,

and notwithstanding the quinine and every other available means were pressed through the night, it was quite evident on Wednesday morning that he must die, which he did about 9 o'clock Wednesday night. On Tuesday his son, thirteen years old had a chill, followed by pain in nape of the neck, sick stomach, headache and sore throat, pain in the back, and the peculiar pain about the joints of the lower limbs. He was given quinine and calomel, and recovered in a few days with very little trouble. He had a similar epistaxis to that of his father. He had no eruption.

On Friday forenoon, Mr. H.'s little daughter, aged five years, apparently in fine health, and out in the yard at play, came hurriedly to her mother, and complained of a pain in the abdomen, in the region of the umbilicus. She soon had a shivering, followed by pain in the head and neck. Pulse 140, breathing rapidly, with an occasional sigh, temperature 103; delirium and sick stomach, marked opisthotonus, skin hyperæsthetic. She lost the sight of one eye from infiltration of the cornea, which became perfectly white, and she had the red eruption. She was bathed, givengelsemium, quinine in large doses, and nothing was left undone that promised relief. She died on Monday night.

Enquiry developed the fact that Mr. H. had not been well all the autumn, that he had pains in the shoulders, neck and arms, which he thought was rheumatic.

This family lived on the side of a considerable hill. The front of the house was three or four feet above the surface, while the rear was resting on the ground. The ground around the rear and South side of the house was continually damp. The water that the family drank for the most part, was from a spring, which had been dry during the summer months. It had been walled up years ago with wood, which is now in a state of decay. The washing of soil, leaves and grass, and every conceivable thing, had lodged for years within this walled enclosure. When the stream from the spring began in the autumn, it was very sluggish. Here, in my opinion, is found the source of the cause of sickness in this family.

On March 6th, Will G. was attacked with shivering, followed by intense pain in head, neck and back, and bowels. His knee-joints were painful, and had sore throat. He had been very unwell for several days. His nose had bled several times. The cold stage was followed by contractions of the muscles of the arms and hands. He had spells of difficult and rapid, panting, breathing; his pulse and temperature were normal. He was attacked about 10 o'clock on Wednesday, the 6th of March. Dr. Will Orr was called to see him, and gave him anodynes, bromides, mustard and calomel. Dr. G. L. Landis saw him that afternoon. I should mention that he was boisterously delirious from the beginning and had sick stomach. He had spots on the face and herpetic eruption of the lips. On Thursday afternoon I was called to see him, with Dr. Orr, and found the patient as above stated. We gave him large doses of quinine, calomel and morphine; the morphine did not affect him pleasantly. In eight hours we had given him eighty grains of quinine, would have given him the same amount in less time, but had to be governed by the nausea. We also gave him every four hours one drop of carbolic acid with three drops of tincture of iodine in water. He had large quantities of cold water on the head, at first, but it was soon noticed that hot water had the most desirable effect, as it quieted him for the time being.

He recovered in about twelve days. I may mention that after being up a few days and walking a quarter of a mile to a neighbor's, he had a relapse, in which many of the first symptoms recurred, as I am informed by Dr. Orr. He has at this writing entirely recovered. His sister had the same symptoms, not so severe; she recovered.

On March 24th, G. C., aged 21, living in Shelbyville, had a chill, followed by fever; pain in head intense, pain in neck, back and limbs, especially in calves of legs and knee-joints, hyperæsthesia of skin and sick stomach. Temperature 103, pulse 100, tongue broad and coated. He had red spots on hands, wrists and body. I saw him at 10 o'clock Sunday night, the 24th. At this time he was only slightly delirious. Gave him

ten grains calomel and forty grains quinine during the night, with sufficient morphine to keep him quiet. Monday morning, temperature lower, and pulse 90; pain in head more intense and patient somewhat stupid. Considerable deafness and muttering delirium. He was given bromides, with gelsemium, ergot and calomel. He also had the tincture of iodine and carbolic acid mixture. Quinine was given as rapidly as possible. Dr. T. S. Hardison, of Lewisburg, saw him with me. On Thursday afternoon he had a convulsion. Thursday night the convulsions recurred several times and his right side became paralyzed. He died Friday afternoon, having been sick five days.

These cases were of the most malignant type. Quite a number of cases, more mild, were treated during the months of January, February and March. They had the erratic pains, which were felt in different parts of the body. Headache, pain in nape of neck and in lower limbs. Many cases had redness of the skin on hands and wrists. Some had fever for three or four days, others for a much shorter time. I could give the detailed history, if necessary. They passed under the head of cold, or bilious attacks, or malarial, and were frequently called rheumatism. They all yielded readily to quinine.

The three cases in Mr. H.'s family covered the extreme manifestations of malaria. The prodromata in the father's case were clearly indicative of nerve lesion, the same as usually produced by malaria. The shifting and shooting pain in the body, the headache, pain in back and limbs, all point in that direction. The epistaxis was evidently dependent on malarial toxæmia.

The bleeding nose in the beginning or in the early part of a fever is strong evidence of a malarial origin. The herpetic eruption about the lips was clearly the result of a malarial nerve lesion, and is often observed in the milder types of malarial trouble.

If we take the three common types of malarial fever—the intermittent, remittent, and pernicious, we have extremes wide