Original Communications.

A HISTORY OF FOUR CASES OF CEREBRO-SPINAL MENINGITIS WHICH OCCURRED IN PROVIDENCE, R. I., IN 1870.

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THESE four cases all occurred in a dwelling house occupied by one family, and situated in the lower part of the city. The house is seventy years old or more, is two stories high, and covers an area, with its out-buildings, of about fifteen hundred square feet. A steep hill of about $22\frac{1}{2}$ degrees inclination rises towards the east, behind the house, and extends about three hundred feet before it meets any surface drainage. This extent is covered pretty thickly with trees and shrubs, and the soil is clay-loam lying upon hard-pan slate and granite. There is no under-drainage on this side hill.

The house fronts westward—frontage 50 feet—and this is the only side of the house that is freely open to sun light or ventilation. The cellar floor of the house is about ten feet above high-water mark. It has a drain beneath it communicating with the sewer; nevertheless the cellar is represented as having been always wet, the utmost care of the proprietor not sufficing to keep it dry. In front of the house, about six feet distant, and under the curb-stone, is a large opening into the street sewer. Formerly the premises were open freely to sun light and fresh air, but now they are encircled by brick walls, near and distant.

The first case occurred on the 14th of March. A woman, 22 years of age, domestic, who had been in Providence two years, and who had resided in the house six weeks, was seized with uncontrollable vomiting and diarrhoea and general febrile symptoms. She remained sick in the house for one week, and was then conveyed to the Rhode Island Hospital.

For some notes of her case I am indebted to the Hospital Records, from 20th March to 1st April, as follows:—March 20th. Vomiting and diarrhoea; tongue dry, with a yellowish-brown coat; skin dry and hot; pulse

108; some difficulty in breathing; pain in limbs; anæsthesia of hands and feet; some deafness, ears sensitive to sound; occasional delirium and spasms of masseter muscles; no eruption. Vomiting continued from time to time. Discharged, improved, April 1st.

The first of August, this woman made a visit to the hospital. She then complained of weakness, numbness and pricking in the hands and feet. This was five months after the first attack.

The second case was that of the lady of the house. She had slept on the same floor with the first case, and had been much with her during her illness. This lady was seized on the 6th April, three weeks after the commencement of the first case, and two weeks after that case had been removed to the hospital, with severe headache, nausea, chills, and fever, uncontrollable vomiting and purging; dyspnoea; pulse 125; pricking in hands and feet, followed by paralysis of all the extremities; loss of motion and sensation; mutes before the eyes. No paralysis of bladder. Mind intact. On the 1st of May it was considered wise to remove her from the locality. She was accordingly taken to private apartments in the Rhode Island Hospital.

I find noticed in the Hospital Record, 1st May, an eruption like chickenpox over the chest; pulse 120; no albumen in urine.

May 3d.—Pain in arms and legs; spasmodic movements of arms and legs; hyperæsthesia of lower extremities; sleeplessness; temperature $99\frac{1}{2}$; pulse 104. Quinine, belladonna, nux vomica.

May 20th.—Desquamation of cuticle of face; spots on feet. These spots are described as resembling ecchymoses. Pain in limbs; sleeplessness. Morphine injected.

May 24th.—Dyspnoea; sleeplessness; tingling in feet, with coldness; pulse 112; temperature 100; no appetite.

Under a treatment mainly palliative and sustaining, gradual improvement is noted, until August 1st, when patient could feel electricity in both hands; could extend forearms and hands, the lower extremities remaining paralyzed.

[WHOLE No. 2230.]

I saw this patient 1st of October; she had much improved in motion of hands and arms.

The third case was the house-keeper. She came under my charge, at the Rhode Island Hospital, on the 1st of July. From her I obtained a very clear account of her case. She is remarkably intelligent and observing. She had lived in the house for several years. Six weeks previous to the appearance of the disease, she returned from Nova Scotia, where she had remained two weeks, and had taken care of a sister, sick, as appears from careful questioning, of traumatic erysipelas and pneumonia only. She had nursed the first case here described, and, while nursing the second, on the 24th April, or three weeks after the commencement of this second case, having for several days previously experienced vertigo and general *malaise*, she herself was seized with chills and fever, pain in head, and uncontrollable vomiting. Diarrhœa followed, and continued for two days. Emesis ceased on the fourth day. On the 27th April, or on the third day of her attack, on awaking in the morning, the patient found the whole right side paralyzed completely, the left side incompletely, the extensors more than the flexors. At this period she experienced severe pains along the spine and limbs, with hyperæsthesia of right leg and foot and anæsthesia of left foot and both hands. The pain was particularly severe in back of head and back of neck. The head was drawn backward convulsively, and there was slight opisthotonos on a few occasions. The muscles of the back of the neck were stiff. There was some difficulty in swallowing, but no stiffness of the muscles of the face. There was a sensation of heat in the feet, while they felt cold to the touch. There were crawling and pricking sensations, and numbness in the limbs. These last three phenomena were first felt in the right heel, afterwards in the left foot and in both hands. There were no convulsions, but slight convulsive movements of right arm and leg occasionally. There was headache, dizziness and sleeplessness, and sometimes stupor. The senses of taste and smell were gone. The eyes were sensitive to light; the patient was unable to read, and motes and sparks floated before the sight. The breathing was labored, sometimes painful. There was retention of urine and constipation. There was no eruption.

This patient was conveyed to the Rhode Island Hospital on the 1st of May. Ac-

cording to the Hospital Record, she continued to improve from first of May to first of July, suffering a good deal from pain in back and limbs, sleeplessness, nausea and hyperæsthesia. Quinine, nux vomica, belladonna, bromide of potassium, chloral, injections of morphine, ether and electricity were all tried.

I will now give the description of the actual state of this patient on the 1st of July (being the commencement of my term of service in the Rhode Island Hospital), copied from my hospital notes.

July 1st, 1870. Female, age 30; single; house-keeper; born in Nova Scotia; in Providence four years.

Actual State.—Countenance nearly natural; some expression of suffering. No emaciation. Mind clear, intact; intelligence remarkably good; gives a clear account of her case. Temperature, to touch normal throughout; in axillæ, 98 to 100. A few papules of lichen on feet; some herpes on face. Left extremities weak; nothing else abnormal on left side. Right side: Anæsthesia throughout—of scalp, of face, neck, both sides of tongue, and of both right extremities. Hyperæsthesia of right limbs only, particularly of right leg and foot when pain in back is great. Movements of tongue and face uninterrupted. Some motion of hand and forearm. Slight movement of fingers—of flexion, not of extension; partial contraction of flexors of fingers and toes; forced movement of fingers painful. Right hand and foot have a sensation of heat, while they feel cool to the hand of the observer. Slight tumefaction of right hand and fingers. Pricking, formication and pains along right extremities. Right leg: Very slight power of extension of thigh; very slight movement of toes. Spasmodic movements of right arm and leg occasionally. Electro-sensibility and electro-contractility do not exist below right elbow and knee. Head: Pain in back part of head actually; in frontal region occasionally; no dizziness; sleep not good—two to four hours with anodyne. Sense of taste has never returned. Sense of smell increased. Ears less sensitive to sound; some deafness. Eyes not sensitive to light; no dilatation of pupils; can read a little; still sees motes and sparks. Spine: Great pain, with intermissions, along spine and extremities, particularly in lower extremities; some pain on pressure from summit to lumbar region, most remarkable along right side of spine. Patient complains of the sensation of a bar across the chest. Respiration is at times irregular and labor-

ed. Lungs and heart normal. Pulse 80, normal. Mouth and throat normal; swallowing uninterrupted. No relish for food; digestion medium. Constipation. Retention of urine; urine of normal quantity; contains some traces of epithelium and lithates; no albumen. Uterine functions normal.

Diagnosis.—The history of the case, its endemic character, two similar cases having already occurred in the same locality, followed by a fourth, the patient experiencing, at the commencement, vertigo, general *malaise*, chills and fever, pains in the head, severe pains in back of neck, with contraction of muscles of back of neck, opisthotonos, uncontrollable vomiting, intense pains along the spine, extending to lower extremities, with paralysis, hyperæsthesia and anæsthesia, spasmodic movements of extremities, paralysis of bladder, increased sensitiveness of sight and hearing, labored respiration, present a train of symptoms characteristic of what has been described as simple cerebro-spinal meningitis.

I found I had to deal with the sequelæ of cerebro-spinal meningitis, or that disease in its chronic form. I applied ice, cups and issues to the spine, ordered the utmost quiet and repose, disturbing the stomach as little as possible with remedies. I gave as much nourishment as the digestive organs would bear, and relieved pain and suffering by such means as art suggested. Injections of morphine, and electricity were most useful.

I kept daily notes of this case. The changes were few and the amendment slow. Nausea and vomiting occurred from time to time, and pain along the spine and extremities, bringing with it the spasmodic movements and hyperæsthesia of right arm and leg, and sleeplessness.

July 14th.—Patient turned on right side spontaneously for first time, rotated right forearm, and began to taste her food more.

By the first of August she had pronated right hand, adducted and abducted right foot, slept without anodyne, and had some appetite.

Aug. 14th.—Felt electricity along median nerve of right arm for first time; can supinate right hand perfectly; can pronate it less perfectly; considerable muscular power in flexor muscles of right arm. Slept well. Nothing else new.

According to notes, the pains returned from time to time, with convulsive movements of right arm and leg, with little or no nausea.

Sept. 7th.—Free from pain. Good night. No nausea. Good appetite; relishes her

food. Countenance natural. Patient thinks her state much improved. Pricking sensation in limbs; formication felt in right leg several days ago. Can flex right thigh a little, and move leg; can flex and extend right foot and toes slightly. More movement of right arm and hand; can pronate right hand and extend fingers. Anæsthesia of right arm, hand, leg and foot. Feels electricity in right elbow and wrist. Anæsthesia of right side of scalp, face and both sides of tongue. Ears less sensitive to sound; less deafness. Sight good; can read for a longer time; motes and sparks less frequent; pupils normal. No hyperæsthesia actually present; it returns with intense pain. Convulsive movements not so frequent. Breathing not affected. Heart and lungs normal. Pulse 80. The patient has had no bed-sores. No emaciation. Retention of urine and constipation still continue. Uterine functions normal. Nothing else remarkable.

There was occasional increase of pain, with its accompaniments, nausea, convulsive movements and hyperæsthesia of right limbs, until Sept. 18th, when patient had more motion of pronation and supination of right arm; flexed and extended right hand and fingers more easily, and grasped my hand with considerable force. Could flex the right thigh, adduct and abduct right foot, flex and extend right foot a little, felt hypodermic needle in right leg, and could stand on left leg.

To complete this history, I must mention the fourth case, that of the son, aged 12. He was taken on the 1st of May with vomiting, diarrhœa and fever; was sick three days, and recovered.

These were the only cases observed in Providence at that time or subsequently.

With regard to the cause, suspecting poison, careful chemical examination was made of the water and water-pipes, without result.

So far as I have been able to ascertain, this is the first time that cerebro-spinal meningitis has been observed in Providence.

The first and only record we have of its appearance in Rhode Island was in 1863, when it prevailed in the Naval School at Newport.

PROF. JOHN T. DARBY, of the University of South Carolina, recommends the liquid silicate of potash, in place of plaster of Paris, starch, &c., for immovable surgical dressings.