

REPORT OF TWO CASES OF CEREBROSPINAL
MENINGITIS PRESENTING NO CENTRAL NERV-
OUS PHENOMENA UNTIL SHORTLY
BEFORE DEATH.

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Mr. X., age fifty-nine years, consulted me January 10, 1913. He complained of deafness in both ears and of pain in the right ear for a week, following influenza, from which he was convalescing. Examination of the ears revealed impacted cerumen, the removal of which restored his hearing to such an extent that he heard a whisper at three feet in the right ear and at eight feet in the left ear. The right membrana tympani was slightly reddened. He complained of headache, also of pain in the region of the right mastoid. There was no bulging of the membrana tympani, which was slightly injected, no edema, and no pain on deep pressure. The patient had two uncomfortable nights, then returned because of pain on January 12th. The temperature was 97.5° , the redness of the membrana tympani persisted. There was no bulging, no tenderness, but slight mucopurulent discharge from the accessory sinuses of the nose. His general appearance indicated a grave illness, and he was placed in bed in the Manhattan Eye, Ear and Throat Hospital, where myringotomy was performed under nitrous oxid anesthesia. The incision was not followed by discharge of pus. Nevertheless, he was irrigated with bichlorid 1/10,000; and in the course of six hours a profuse discharge of pus appeared in the canal. The infective organism was the staphylococcus. For the two following days the temperature was 99° and the discharge very profuse. On the third day tenderness developed over the tip and antrum of the mastoid, with slight drooping of the superior wall of the external auditory canal. Headache persisted and the patient seemed unduly apprehensive.

Under gas ether anesthesia a simple mastoid operation was performed January 18th. The mastoid process, which was extremely dense, with few cells, contained much pus. Softened bone, which was adherent to the knee of the lateral sinus, was removed. The tegmen of the antrum was softened and adherent to the dura. The wound was packed with iodoform gauze, and the patient was returned to bed in good condition.

The case progressed satisfactorily for two weeks, when there was an unexplained rise of temperature to 102°. There was no chill, no sweating. The wound was clean and healing nicely. That night he complained of marked pain in the muscles of the calf of the right leg. There was no redness, but there was tenderness. The next day pain developed in the muscles of the left calf; and there was considerable pain in the sciatic notch on this side, with backache. The tongue was deeply furred. There was marked indicanuria. The temperature was 99°. Free purgation and aspirin controlled the pains to such an extent that the patient went to the toilet and walked about the hospital. On February 4th (the seventeenth day after operation) the temperature rose to 101°, and there was an exacerbation of his pains. He complained again of headache, and that it hurt his eyes to read. Dr. Frank Van Fleet pronounced the eye grounds to be normal. The temperature then became irregular, ranging from normal to 102°. The pain left the legs and centered in the sciatic notch and in the lumbar region. There was no Kernig, no Babinsky. The patellar reflex was normal. There was no stiffness in the neck. Dr. A. B. Duel was called in consultation, and confirmed my findings, viz., a clean, healing wound, with nothing but the fever pointing to involvement of the central nervous system. Dr. Chas. H. Richardson confirmed my diagnosis of migrating muscular rheumatism. Free purgation and large doses of aspirin again gave considerable relief. The patient insisted on visiting the toilet, and seemed quite able to do so. The temperature continued to be irregular, ranging from 99° to 102°. The pulse varied with the temperature from 72 to 84; respiration 18 to 20.

On February 12th (the twenty-fifth day after operation) the patient was comfortable, and much less apprehensive than at any other time during his illness. The temperature was 100°, and he presented every evidence of a beginning convalescence.

In the evening of this day he went unaided to the toilet, which was adjoining his room; and told me that he felt better than he had felt for two weeks. At about midnight his temperature rose to 102° ; pulse was 108, respirations 104, pupils irregular. He gradually sank into unconsciousness, until at 5 a. m. (on the twenty-sixth day after operation) he was comatose. I opened the original mastoid wound. It was nearly healed. The lateral sinus seemed healthy. The dura was exposed and incised. The wound through it filled immediately with a great hernia of the brain. Careful search with a brain knife failed to reveal pus in the brain. A lumbar puncture brought forth a large amount of creamy fluid under great pressure. The patient died in a few hours, without having regained consciousness.

Autopsy was not allowed, but extensive examination through the wound failed to reveal an abscess. Much creamy fluid was recovered from the ventricles.

During the course of the illness there were frequent blood counts and frequent blood cultures—all negative. Widal and Wassermann were negative.

Examination of the cerebrospinal fluid resulted in the following report:

“Appearance, mucopurulent, with considerable admixture of blood.

Copper reducing substance, absent.

Lactic acid test, strong reaction.

Cytologic Examination.—About 10 per cent bulk of pus cells on centrifuging. These cells were largely polymorphonuclear leucocytes, with a few lymphocytes and endothelial cells.

Bacteria.—In the stained smear were many chains of streptococcus mucosus capsulatus, with an unusually heavy capsule, so heavy as to leave their identity in doubt until stained by Gram's method. These grew freely on blood serum.

Stain for tubercle bacilli, negative.

(Signed) J. G. CALLISON, M. D.,
Pathologist.”

G. T., male, age nineteen years, was admitted to my service in the Manhattan Eye, Ear and Throat Hospital December 5,

1912, with the following history: When an infant he fell, striking the back of the head. He was a delicate child, and did not develop well physically or mentally. The lack of mental development continued and he became an idiot. During early childhood he had measles, with a discharging ear which supposedly healed. Scarlet fever developed a few years later, accompanied by a discharging right ear. The discharge continued until the time of admission. No more complete history could be obtained because of the extreme ignorance of the patient's relatives.

Examination of the right ear revealed a large mass of spongy granulations nearly filling the canal; mastoid tender; deafness; no vertigo; no nystagmus. The temperature was normal.

A Schwartz-Stacke mastoid operation was performed under gas ether anesthesia by Dr. S. McCullagh. The external auditory canal, middle ear and attic were found to be filled with granulations, and the ossicles were absent. The position of the dura was unusually low, and the lateral sinus was far forward. The antrum was absent. There was a large exposure of the dura and of the lateral sinus. The wound was packed and the patient was returned to bed. The next day the temperature rose to 102°, the patient became restless and complained of pain in the ear and in the back of the neck. There was no suggestion of central nervous involvement. The general condition was good. The temperature dropped to normal on the third day, and for three days following pursued an irregular course, ranging from 99° to 101°. On the fifth day the temperature rose to 103°. The wound looked healthy and clean. The patient remained restless and persisted in rising from his bed. No rigidities were apparent. Babinsky and Kernig symptoms were absent. The eye grounds were normal. The blood culture was negative. Blood count: Leucocytes, 18,100; large mononuclear leucocytes, 5 per cent; small mononuclear leucocytes, 9 per cent; polynuclear neutrophils, 86 per cent.

For the three weeks following, the temperature ranged irregularly from 100° to 102°. Other symptoms, though sought for, were not found. The eye grounds remained normal. The restlessness continued and the boy persisted in leaving the bed and in walking about. Typhoid and malaria fevers were elim-

inated by blood examinations. Many of my colleagues in the hospital saw the case in consultation. Dr. Hutton, the attending physician, made this note on the 20th of December: "Deep-seated suppuration; if intracranial, so located as to give no definite localizing signs. Heart, lungs and abdomen negative."

On December 28th the boy was found wandering in the hall of the hospital. On the following day there developed a fleeting external strabismus, and on the operated side slight facial paralysis. Ankle clonus and exaggerated knee jerk demonstrable, and Kernig's sign positive. Neck slightly resistant. The eye grounds were normal. A lumbar puncture revealed the cerebrospinal fluid, which was under pressure, to be almost creamy in color and consistency.

The evidences of central nervous involvement did not increase. A few hours before he died he arose from his bed and appropriated articles belonging to other patients. He sank into coma an hour or two before death.

Autopsy revealed an unusually well developed cerebrospinal leptomeningitis.

Examination of the cerebrospinal fluid resulted in the following report:

"About 15 cc. recovered. 10 cc. sent to laboratory.

Appearance, greenish, creamy, mucopurulent.

Amount of sediment, $2\frac{1}{2}$ cc. in 10 cc.

Copper reducing substance, absent.

Lactic acid test, very marked reaction.

Cytologic examination—Cellular elements are mostly polymorphonuclear leucocytes, with some lymphocytes and endothelial cells.

Bacteria.—Large numbers of either streptococci or pneumococci, with some bacilli resembling *B. pyocyaneus*. These cocci were culturally proved to be *streptococcus mucosus*.

Stain for tubercle bacilli negative.

(Signed) J. G. CALLISON, M. D.,
Pathologist."

The postmortem examination, conducted by Dr. Kopetzky, revealed the spinal cord covered with a thick, creamy exudate, which extended into the ventricles of the brain. There was no involvement of the lateral sinus. The dura was normal over

the seat of the mastoid operation. The internal auditory meatus was filled with granulation tissue and pus.

I have reported these two cases not because cerebrospinal leptomeningitis of otitic origin is a rare disease, but because in my experience, covering twenty-five years of otologic practice, I have not seen a single other case which did not present long before death some symptom other than fever pointing to involvement of the central nervous system. I confess myself at a complete loss to explain the lack of symptoms here presented. Brieger, quoted by Preysing, in the Transactions of the German Otological Association, 1912, says:

"In many cases of suppurative meningitis we see all the symptoms disappear after opening the labyrinth and after repeated lumbar puncture. I have seen such cases, which appeared almost in the last stages, seemingly completely recover. They got up out of bed, walked about, felt perfectly well; and we were astounded to see that within a few hours after a conditions of apparent complete well-being death should supervene. Autopsy revealed that in some cases there occurred in parts of the subarachnoid space, inaccessible to lumbar puncture or to other exploratory methods, a widespread plastic infiltration, while in other cases there existed, in addition to these localized infiltrations, diffuse inflammation of the meninges."