

SUPPOSED CAVERNOUS SINUS THROMBOSIS.*

BY EWING W. DAY, M. D.,

PITTSBURG.

Aside from the desirability of reporting obscure cases involving the cranial cavity, that each may add its share to the existing knowledge, it is also well to confess our manifold mistakes and errors, as well as to cry abroad our achievements. In both the following cases the first diagnosis was wrong, and the final diagnosis was proven only in the second case and, from these facts, they present several interesting points.

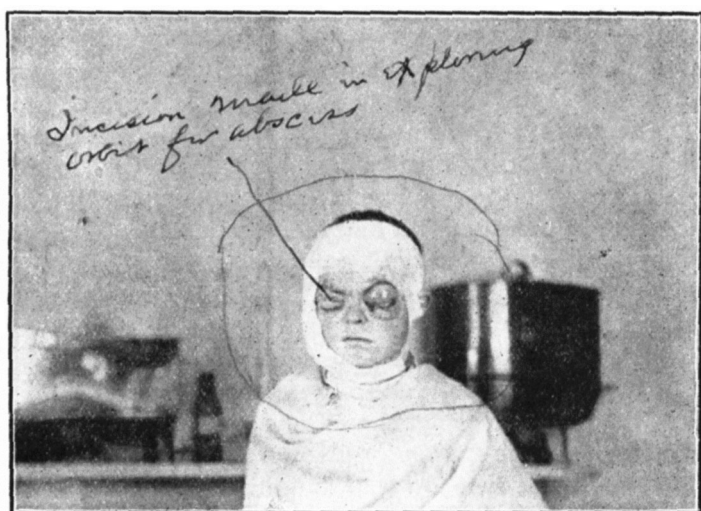
Harry H., aged 11, was admitted to the Children's Hospital on the evening of January 7, 1901. Family history negative. The previous history of the child, so far as could be ascertained, was that ten months previous he had had measles, and four months ago an attack of typhoid fever. On admission to the hospital the child was very anemic and emaciated. He had had purulent discharge from the right ear for the past eight months. This discharge had been gradually becoming more profuse. The glands in the right cervical region were enlarged and tender to pressure, and over the right mastoid a sinus leading into the middle ear was discharging pus. The temperature of the child on admission was 103; pulse, 120.

As the patient presented all the symptoms of septic infection an immediate operation seemed advisable. He was operated upon that night at 10 p. m., with the assistance of Drs. Ewing and Milligan, and the mastoid freely opened. It was found to be broken down and filled with necrotic bone, granulations and pus. The swelling below the mastoid was punctured with a large aspirating needle but no pus obtained. The lateral sinus was free from involvement.

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The wound was dressed and the next morning his temperature had fallen to $97^{\frac{2}{5}}$; but by evening had risen to $100^{\frac{1}{5}}$. On the second day his temperature went to $104^{\frac{2}{5}}$.

It being evident that all of the pus had not been evacuated an incision was made through the swelling in the neck and a pocket found containing a large amount of pus. This was evacuated, drainage tubes were introduced, and the wound again dressed. For the next two days the temperature, as a result of septic absorption, ranged from $104^{\frac{2}{5}}$ to normal, with slight chills.



On the morning of the 12th the patient's right eye was found swollen, the lid slightly discolored, and the tissue tense from pressure. The next day the discoloration had increased. All movements of the eyeball were lost, it being held rigid by the swollen tissues. The lids could only be partially closed.

The eyeball was pushed forward by pressure from behind. At consultation Dr. Robinson made the following report after examination of the eye:

The conjunctiva of the right eye was chemotic—the lids edematous, cornea clear, the eyeball protruded and limited in its excursions—the pupil was semi-dilated, but reacted to light stimulus. With the ophthalmoscope the

ocular media were all clear and transparent: the optic disc and the retinal vessels were readily seen and presented no gross abnormalities. There being no conjunctival nor corneal infection and the ophthalmoscopic examination excluding panophthalmitis. The ocular symptoms were believed to be due to retro-bulbar pressure. Accordingly an incision was made into the orbit and the orbital cavity thoroughly explored for a tumor or abscess—neither was present, the orbit being completely free from pus. This incision temporarily relieved the tension on the globe.

There was but little blood from the incision and this of a venous nature. The diagnosis of infective thrombosis of the cavernous sinus was made. The patient was closely watched and hourly temperature readings taken for the anticipated septic changes.

The temperature on this day had fallen, and the general condition of the patient seemed improved. On the 16th, or 4th day since the eye involvement appeared, the discoloration in the upper lid had increased and a gangrenous area about the size of a dime was formed on the lid below the line of the incision. The swelling was so great that at no time could the condition of the muscles of the eye be determined as to involvement of the several nerves. On the 19th the temperature reached 104 degrees for a short time, but on the whole there was a noticeable improvement in the patient. On the 22nd the gangrenous patch below the incision was sloughing. Ulceration and sloughing of the cornea began with a free muco-purulent discharge, caused by the pressure, together with the lack of protection from the lids.

The patient's temperature was varying from 100 to 103, with a rapid, thready and weak pulse requiring the free use of stimulants. On the 25th, or 13 days after the first involvement of the right eye, the left eye had commenced to swell and the lids to be discolored as in the right eye. Ophthalmic examination of this eye, made by Dr. Curry, was a duplicate of that of the first eye involved, made by Dr. Robinson. It was also impossible to determine the condition of the muscles of this eye on account of the great distension of the tissues. On the 28th the swelling in the left eye had increased; in the right eye it had decreased. The mastoid wound and the neck during this

time were granulating slowly, and there was some purulent discharge from the neck. The temperature was now near the normal mark, though the patient was very weak and showed signs of exhaustion. The tissues around both eyes seemed gangrenous. On February 2nd, the swelling in the right eye was decreasing, in the left eye was increasing, and the cornea sloughing; a purulent discharge was now present. The general condition of the patient was fair. Temperature nearly normal, pulse from 112 to 140.

This state of affairs continued until February 26th, when the temperature arose to 105, the patient complaining of pain over and below the mastoid wound. This old wound, which had been allowed to close, was again opened by Doctors Ewing and Milligan and thoroughly curetted, a quantity of pus evacuated and some necrosed bone removed.

For the next eight days there was a gradual lessening of the temperature variation until on March 6th it passed to the sub-normal line.

The patient at this time was extremely emaciated, his weight being $44\frac{1}{2}$ pounds. There was total loss of sight in both eyes. The ulceration of the cornea of the right eye had been so far controlled that the eyeball had not ruptured, but the left orbit had collapsed, and there was still a free discharge of pus from the orbital cavity.

The patient from this time until the date of his discharge slowly gained in strength, and the temperature never rising above 99. He was transferred to the Blind Asylum May 27th. The mastoid wound was healed, the right eye somewhat shrunken, the cornea covered with scars, probably the cause of blindness in this eye. The left eye collapsed, and the conjunctiva and iris could be seen deep in the socket.

In making a diagnosis of this case, our first impression is that we have to deal with thrombosis of the sinus of an infective nature. The fact that the boy had a purulent mastoiditis, though there was no involvement of the lateral sinus, made us conclude that in some way the purulent infection had been transmitted by some other route to the sinus which seemed so clearly involved.

The case presents many variations from typical cavernous sinus thrombosis.

Between the involvement of the first and second eye a lapse of thirteen days occurred, the usual time being over forty-eight hours.

In infective thrombosis in this locality we would necessarily have marked systemic manifestations. Here, however, the high temperature with its wide variations was wanting, and there were none of the signs of pyemia that did not improve when the mastoid was evacuated; moreover, infective thrombosis of this locality is invariably fatal.

The fact that this case recovered is enough of itself to prove that the thrombosis could not have been of the septic order. If a thrombosis was present it must have been a primary or non-infective one.

One point is especially interesting, that in the symptoms the chronic purulent otitis media was supposed to be a very important causative factor, but it proved in the end to be a coincidence without significance.

Edema of the lids, conjunctival chemosis, fixation and protrusion of the eyeball are symptoms seen in tenonitis, abscess of the orbit, panophthalmitis and thrombosis of the cavernous sinus. The ophthalmologists, Doctors Robinson and Curry who attended to his eyes throughout the disease, stated positively that tenonitis and abscess of the orbit were not present, that there was no panophthalmitis prior to the ulceration and sloughing of the cornea, but may have been present later from absorption through the abraded surface.

Primary thrombosis in the cranial cavity is almost always in the longitudinal sinus; rarely in the lateral and still more rarely in the cavernous sinus and occurs mostly at the extreme of life. The clots are resistant, dense, stratified, and non-adherent to the walls of the vein. They show a marked tendency to be organized or absorbed, and very rarely disintegrate.

The symptoms of primary thrombosis are often uncertain and are prone to be masked by the disease which precedes and which is the cause of the trouble.

The diagnosis is difficult and is seldom definitely determined during life. There are none of the characteristic symptoms of temperature which are found in infective thrombosis.

When the thrombus is located in the cavernous sinus, though one sinus is affected at the outset, yet thrombosis in the majority of cases spreads through the circular sinus to the cavernous sinus on the opposite side. The symptoms, though unilateral to start with, later become bilateral.

The sinus in which the symptoms are first noticed, as shown by the exophthalmos, may be partly restored, while the opposite side becomes markedly affected. This alteration of the seat of the symptoms is diagnostic between abscess of the orbital cavity and cavernous sinus thrombosis.

There are two principal groups of symptoms generally present; one dependent on venous obstruction, and the other on a paralysis due to the pressure on the nerves supplying the cavernous venous plexus.

In considering the symptoms of this case, we have a patient who had within ten months passed through measles, typhoid fever, and sepsis from a purulent mastoiditis and abscess of the neck, producing an exhaustion favorable to the forming of a primary clot.

The symptoms were first marked exophthalmos, of the right eye; great edema of the eyelids and the corresponding side of the root of the nose. There was an absence of any characteristic temperature symptoms.

It was impossible to determine whether there was paralysis of the 2nd, 3rd, 4th, 6th, or the first division of the 5th nerve, on account of the great edema and the distension of the tissues.

After 13 days the second eye was involved rapidly, causing the same symptoms and appearances that were present in the first.

Coincident with the appearances in the second eye, there was a subsidence in the first eye affected. The implication of the second eye, if too long an interval does not intervene, is very indicative of thrombic extension to the opposite cavernous sinus.

While, as we have said, the diagnosis is unproven, still the writer believes the following is the most probable one: That in the beginning we had a primary thrombosis of the right ophthalmic vein, which slowly extended back to the right cavernous sinus and then to the left sinus and terminated in absorption or organization of the clot.