

## XLIX.

# REPORT OF A CASE OF THROMBOSIS OF THE SUPERIOR PETROSAL SINUS OF OTITIC ORIGIN, PRESENTING A SYMPTOM COM- PLEX STRONGLY SUGGESTING THE DIAGNOSIS.\*

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In considering the diseases of the sinuses of the dura mater secondary to otitis, one finds the literature relating to purulent inflammation of the sigmoid sinus rich in the reports of cases diagnosed and operated with curative results.

Zaufal<sup>1</sup> was probably the first to suggest the operative treatment of sinus thrombosis. With the addition of ligation of the jugular vein and the use of the jugular skin fistula, as practiced by Alexander, the percentage of recoveries is now about 75 per cent.

The symptoms of sigmoid sinus thrombosis are fairly well defined and generally the diagnosis is made without difficulty.

Unfortunately phlebitis of the other sinuses is not so easy of diagnosis. Possibly the lack of clear cut symptoms may account for the sparsity of the literature on primary petrosal sinus thrombosis. Quite a few cases of primary sigmoid sinus thrombosis with extension into the superior and inferior petrosal and even the cavernous sinus have been reported in the literature.

In those cases of extension into the petrosal sinuses the symptoms most frequently observed are swelling of the veins in the temporal region; thrombosis of the retinal veins (Politzer<sup>2</sup>); attacks of epistaxis and epileptiform seizures. When the process has invaded the cavernous sinus a clot will occasionally form in the ophthalmic vein, when there will occur engorgement of the vessels of the orbit, disturbances of vision,

\*Read before the Philadelphia Laryngological Society, Feb. 7, 1922.

photophobia, paresis or paralysis of the motor oculi, abducens and trochlear nerves; exophthalmus, ptosis, edema of the eyelids, neuralgia of the trigeminus, and rarely, sloughing of the orbital tissues<sup>2</sup>. When this symptom complex occurs the diagnosis of thrombosis of the cavernous sinus may readily be made; however, at this stage operative measures promise but little.

Thrombosis of the superior petrosal sinus as a primary condition occurs, perhaps, oftener than has heretofore been suspected, but for lack of conclusive diagnostic symptoms it has remained unrecognized. Recently the opportunity was afforded of observing a case of primary superior petrosal sinus thrombosis with extensions posteriorly into the sigmoid sinus, and anteriorly into the cavernous sinus with fatal termination. The symptom complex presented by the case when first seen permitted of but one diagnosis. The case was twice operated, in spite of which the life was not saved. At autopsy the clinical diagnosis was confirmed. It is because of the above facts that the case is reported.

History (as related by patient).—Family history not obtainable in detail, but so far as could be ascertained it is negative as to the present condition.

Past History.—Patient states that he has always been in good health. Two years ago, following an abscess of the left ear, a chronic discharge resulted. At the same time there was an abscess on the back of the neck (apparently a carbuncle). The ear was poulticed and discharged. At first the discharge was odorless, but later became offensive. He has never had bleeding from the ear.

History of Present Illness.—Patient states that up until about three weeks ago he enjoyed good health, with the exception of the intermittent discharge from the left ear. At this time he developed a "cold on the left side of the face," with severe pain extending up over the region of the left temple, along the lower jaw and over the face. (In other words, that region supplied by the trifacial nerve.) The pain was very severe over the side of the head in front of the ear. Patient states that he does not have headache, nor has he had headache at any time during the past three weeks. He claims that at times he has felt chilly, developing into a feeling of warmth

and fever, followed by sweat. His answers are prompt and intelligent.

Examination.—The patient appears rather thin, considering the relatively short duration of his illness.

Nose.—Externally the nose is inclined to the right. The nasal septum is deviated high up to the left and low down to the right. There is a bilateral spine along the suture line. The left middle turbinate is visible before shrinking, but is in contact with the septum and with the lateral wall. The inferior edge of the left inferior turbinate is hyperplastic. The right middle turbinate is not visible before shrinking. The inferior edge of the left middle turbinate is hyperplastic.

Throat.—Secondary catarrhal pharyngitis. Tonsils medium sized and submerged; no deposit on pressure.

Functional hearing test revealed moderate reduction of hearing on the left side.

Otoscopic.—A. D. Membrane intact, rather dull, opaque; long process of the anvil not visible because of the opacity. Hammer handle slightly foreshortened. Short process of the hammer quite prominent. Very limited motion with the Siegel otoscope.

A. S.—The greater portion of the membrane has been destroyed. Granulations on the inner wall are visible through thick yellowish purulent secretion, which has an offensive odor characteristic of diseased bone.

Examination of Cranial Nerves.—I, II, III, IV, VI, VII, IX, X, XI, XII nerves on both sides appear and perform normally. The V nerve on the left side presents neuralgia according to the history, but is normally sensitive to all stimuli. The VIII acoustic branch is normal (the hearing impairment was due to the middle ear suppuration on the left side.) The vestibular branch is normal on both sides.

Kernig's sign negative; Babinski is negative; knee jerks perhaps a trifle exaggerated, but bilaterally equal. No ankle clonus.

Further Examination.—Patient has a spot of tenderness to deep percussion about 7 cm. posterior to a line perpendicular to the outer canthus of the left eye and about 7 cm. above a line drawn from the outer canthus of the left eye to the upper

attachment of the auricle. The spot itself is about  $3\frac{1}{2}$  cm. in diameter.

#### EYE FINDINGS.

**External Examination.**—Eyes move well and together in all directions, with nystagmic jerkings when looking to the extreme left and when extreme right. No nystagmus when looking straight ahead.

Pupils round, black, equal in size; react promptly to light, accommodation, convergence and consensually. Vision O. D. 6/6, O. S. 6/6.

**Direct Ophthalmoscopic Examination.**—O. D. Disc round, sharply defined with the exception of the nasal margin, which appears slightly fuzzy, but within normal limits. Physiologic cup medium size, well defined; lamina cribrosa visible; size and distribution of the vessels normal; fundus, including the macular region, normal.

**Direct Ophthalmoscopic Examination.**—O. S. Disc round; physiologic cup medium size, sharply defined; size and distribution of vessels normal; fundus, including the macular region, normal; no evidence of choking or inflammation of the disc.

**Roentgenographic Findings.**—Stereographic roentgenograms made of the head in both right and left lateral positions reveal a shadow on the left side beginning at the frontoparietal suture about midway between the vertex and base, posterior end about one inch wide and the anterior end about one-half inch wide. Irregular in shape and extending forward about 2 inches from the frontoparietal suture and is suggestive of abscess formation.\*

**Blood Count.**—Hemoglobin, 80 per cent; erythrocytes, 4,500,000; leucocytes, 10,000.

**Urine.**—Amber; acid; sp. gr. 1025; clear; faint trace alb.; sugar, quantity neg.; diazo, acetone neg.; casts neg.

Crystals, leucocytes, erythrocytes, bacteria, epith. cells, normal.

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\*Because of the misinterpretation of the roentgenograms, the name of the radiographer is withheld.

Spinal Fluid.—Clear, normal pressure; reaction alkaline; sp. gr. qs. not suf.; globulin neg. to ammonium sulph.; cell count 8 per cm.

In discussing the case with the patient's family physician, Dr. C. F. Hadley, of Camden, Dr. Mackenzie stated positively that the case was not one of brain abscess as was suggested by the X-ray specialist, besides, an exact diagnosis of the case would need to satisfy the following history and findings:

1. An illness of comparatively sudden onset.
2. Agonizing pain over the region supplied by the trigeminal nerve without headache.
3. Fever characteristic of pyemia.
4. Emaciation and pallor (without icterus).
5. Discharge from the ear with the characteristic odor of dead bone.
6. A blood count showing leucocytosis.

The diagnosis of primary thrombosis of the left superior petrosal sinus of otitic origin was made by Dr. Mackenzie as the only condition that could satisfy the totality of symptoms and findings enumerated above. Operation was considered imperative and was accordingly done.

The patient was operated the same day, November 27, 1921.

The usual postauricular incision through the skin, soft tissue and periosteum was made. The periosteum was elevated from the underlying bone down to and including the tip. The membranous external canal was separated from the superior, posterior and inferior walls of the osseous canal to the tympanic membrane. The mastoid process was opened with Alexander No. 10 chisel and was found to be generally eburnated. The antrum was opened and the bony ridge protecting the facial nerve was levelled to the floor of the canal. The lower osseous wall of the canal was levelled to the floor of the tympanum. The upper wall of the canal levelled to the tegmen tympani. The inner wall of the antrum was necrotic. This necrotic area was evident in the triangle bounded posteriorly by the anterior margin of the sigmoid sinus, superiorly by the tegmen antri and anteriorly by the external and superior semicircular canals. The necrotic area led toward the edge of the petrous bone where the superior and posterior surfaces meet—that is, the location of the superior petrosal sinus posterior to the

osseous labyrinth. The inner table of the mastoid overlying the sigmoid sinus was intact and to all appearances normal. The middle ear cavity was carefully curetted and a remnant of the hammer removed. The eustachian tube was curetted. The healthy bone overlying the sigmoid sinus was then removed and its surface appeared normal and glistening; however, following finger compression the sinus tended to refill with blood unusually slow, the sinus with its contents had a putty like resistance. It was then decided that there must be a thrombus in the sigmoid. The deep jugular was then ligated with two ligatures and divided between the ligatures. The sigmoid sinus was next incised, but without a flow of blood. The incision was enlarged and a red thrombus was uncovered. The thrombus was too large and the vis a tergo was insufficient to expel it. For this reason a horizontal incision was made through the scalp and periosteum extending from the posterior margin of the original external incision backward about two and a half inches. The underlying bone was bared and a groove in the bone was cut with the large Luer bone forceps for a corresponding distance. The lateral sinus was exposed half way to the torcular and the original incision of the sinus was extended posteriorly another inch and a half. A small spoon curette was introduced into the sinus posteriorly to the torcular when the thrombus was removed quite intact. Iodoform gauze pack was introduced into the wide open lateral sinus. Plastic after Panse. Iodoform gauze wicks were introduced into the wound cavity; outer plain gauze dressings and bandage were applied. The fact should be emphasized that there was no erosion of the inner cortex covering the sigmoid sinus. Neither was any cholesteatoma found.

The left superior petrosal sinus was not opened because the patient was in a very poor condition, and it was hoped that the expelling of the clot from the left sigmoid sinus had served to empty out the left superior petrosal sinus.

On the third day following operation (November 30, 1921,) the patient's temperature had fallen to 98 F., and remained below 98 F. until the evening of December 2nd, when it reached 99 F. The following morning it had fallen to 97.8 F., but reached 100 F. the evening of December 3rd. On the

morning of December 4th the first redressing was made, at which time the patient's temperature was 99 F. At 2 p. m. the same day the temperature was 98.2 F., but by 5 p. m. it had risen to 101 F. and at 10 p. m. it was 101.6 F. No chill was reported by the patient, nor was any noticed by the nurse. Aching of the teeth on the left side was complained of. There was no headache; no changes in the eye grounds observable at the bedside with the electric ophthalmoscope. Babinski was negative. There was no spontaneous nystagmus when looking straight ahead. The spinal fluid was normal. The blood Wassermann was negative, as was also the spinal fluid. The leucocyte count was 11,000.

December 7th, following the third redressing, the patient developed a chill with a rise of temperature to 103 F., followed by a fall to 99.6 F. The patient still complained of pain in the teeth on the left side. No fundus changes were observed. Babinski negative; spinal fluid normal; leucocyte count, 9,500; urine analysis normal; patient delirious at times.

Dr. G. W. Mackenzie was again called in and he felt that a remaining clot in the left superior petrosal sinus was the cause of the trouble. A second operation was performed on December 9th. The thin intervening wedge shaped piece of bone that remained over the region of the left superior petrosal sinus was removed and the sinus incised. No free bleeding was obtained. The smallest spoon curette was introduced into the sinus and a small clot was removed. A wick of iodoform gauze was placed in the cavity of the sinus. This operation was not followed by any improvement of symptoms.

Ptosis of the left eyelid was first noticed on December 10th. Pupils still equal in size and react normally to light. The patient was delirious at times. The Babinski was questionable on the right side. Small spasmodic twitchings were noticeable on the right side of the face, accompanied by a tendency to grind the teeth. The spasms were tonic in character and seemed to involve the muscles supplied by the seventh cranial nerve. The spinal fluid still remained normal. The mastoid wound looked healthy except for a small area necrosis in the region of the superior petrosal sinus just posterior to the osseous labyrinth and anterior to that which Dr. Mackenzie

removed at the second operation. Whether it was present at the time of the second operation or developed later is a question; however, I am inclined to believe it was present at the time, for the operator hesitated to open the labyrinth for fear of labyrinthine infection following and adding another complication. No changes in either fundus are evident at this time (December 13, 1921.) The patient was in very poor physical condition. Nourishment was taken only with the greatest difficulty.

The morning of the 14th of December the first pupillary change was noted, when the left pupil was found to be slightly larger than the right, but still reactive to light. There was also present a slight degree of exophthalmos of the left eye. Spinal puncture made at this time gave a questionably slight increase in pressure; otherwise it was normal. At 2 p. m. the left pupil was dilated and fixed. The left fundus showed blurring of the disc outline. There were spasmodic seizures of the right side of the face and the right shoulder and arm, but not of the right leg. The patient died at 8:30 p. m.

Postmortem findings: Patient, male; emaciated appearance. The left side of the brain beneath the dura felt fluctuating. The dura was incised and a purulent exudate sponged out. There was no evidence of brain abscess. The brain is normal except for those surface changes found in the presence of a circumscribed purulent meningitis. The sigmoid sinus was observed to have been opened during life. The left superior petrosal sinus was partly opened with a red thrombus extending from about its opening into the left cavernous sinus. The left cavernous sinus also contained a red thrombus.

There is no involvement of the sinuses on the right side.

#### COMMENTS.

1. Given a case presenting the three cardinal symptoms offered by this patient, namely, (a) trifacial neuralgia, (b) pyemic temperature, (c) the presence of a chronic purulent otitis media, with a discharge having the odor of dead bone, the diagnosis of primary thrombosis of the superior petrosal sinus of otitic origin is justifiable.



2. From the experience gained in this case it is felt that in primary thrombosis of the superior petrosal sinus it is far better to sacrifice the labyrinth in the effort to secure a freer exposure of the superior petrosal sinus than to attempt to conserve the labyrinth at the cost of a less free exposure of the sinus.

## BIBLIOGRAPHY.

1. Prag. med. Wochenschr., 1891.
2. Chimani, Politzer, Burckhardt-Merian, Wiethe, Jansen: Mentioned by Politzer in "Lehrbuch der Ohrenheilkunde," 1908, p. 522.

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