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**LATERAL SINUS DISEASE: THREE CASES ILLUSTRATING
POINTS OF INTEREST.**

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PTE. R. W.— was admitted to the Cambridge Hospital on July 28 suffering from suppurative otitis media in the left ear. The patient gave a history of left aural discharge of four weeks' duration. Signs of acute mastoid inflammation were present on admission. These signs were more obvious at the region of the mastoid apex, and at the region just in front of the apex. There had been no vomiting and no rigors. Nor was there any direct evidence that could bring the lateral sinus under suspicion. The patient walked up to the hospital. His condition on arrival was good. The temperature was 99.2° F., and the pulse 84. It was anticipated that a simple drainage of the mastoid antrum and involved cells was all that would be necessary.

Two days after admission an operation was performed. A perisinus extradural abscess of fair size was quickly encountered and drained. It was noticed that the pus in this situation was confined under an unusually high pressure. On exposure of the sigmoid wall, it was found to be covered with abundance of soft, recent, and, in certain places, necrotic granulations. After removing these, the wall itself was found to be red and inflamed. The exposed surface of sigmoid wall presented not the usual convex, but a very positive concave appearance. The wall was now opened by longitudinal incision, and a complete absence of blood, or of blood-clot was observed within the lumen. In other words, the vessel in this region was quite empty. Its anterior wall was depressed into a concavity, and lay almost in contact with the posterior wall. Incision at once exposed the white internal surface of the posterior wall. The pressure exerted by the extradural abscess had evidently compressed all contents right out of sigmoid lumen in this particular area. The deep jugular vein was ligatured and divided. The vessel contained no clot.

The sigmoid was now followed out both in an anterior and a posterior direction. In the anterior direction, healthy wall was encountered about 2 cm. above the jugular bulb. In the posterior direction healthy wall was encountered at a distance of about 4.5 cm.

posterior to the mastoid antrum. From both distal and proximal extremities of the lateral sinus thus exposed, septic clot was evacuated. As a result of this procedure, a fairly free hæmorrhage was eventually re-established. It was more copious from the distal extremity. The greatest care was taken to evacuate all *septic* thrombus, though it is certain that a complete removal of all clot present within the lumen was not affected.

The operation proved a prolonged and difficult one, and the bleeding had been not inconsiderable. The tympanic cavity was left untouched. Subsequent events, however, showed that the operative procedure had been sufficiently radical. The cervical incision healed by first intention. The antro-mastoid wound cleaned up rapidly and did well from the first. Convalescence proceeded without a set-back of any kind.

The most noteworthy point of this case was the very striking pressure concavity of the lateral sinus wall, brought about by the condition already detailed. It is a little difficult to understand why this is not a more common occurrence, seeing that the factors which may bring it about are so frequently met with.

Another point is, that omission to follow the clot backwards towards the torcular until its most posterior limit has been reached, does not necessarily mean failure.

The rapid clearing up of sepsis after operation was probably due to frequent "Eusol" irrigation, combined with "Flavine," 1 in 500 used on gauze packing. The sigmoid lumen was kept wide open and was lightly packed twice daily with gauze strips soaked in "Flavine" of the concentration named.

Pte. P——, aged twenty-nine, was admitted to the Cambridge Hospital, on July 14, suffering from acute mastoid disease.

Three months before admission there had been discharge from the right ear, but this had cleared up entirely and the present trouble dated from ten days before admission. On examination of the ear, it was found that there was a large fluctuating mastoid abscess present, and also purulent aural discharge. The abscess was apparently subperiosteal and subtemporal. An operation was decided upon without delay. An extensive subperiosteal and partially subtemporal abscess was incised and drained. An unusually large necrotic fistula through the mastoid cortex, immediately over the situation of the anterior border of the sigmoid sinus was at once identified. Through this orifice pus had burrowed into the superficial planes. The lateral sinus wall, on exposure, was found to be in a condition of phlebitis. Over a small area, the tegmen antri had crumbled, exposing a reddened surface of dura mater.

In this case, both sigmoid sinus and middle cerebral fossa approached into considerably closer relation with the mastoid antrum than is usual. Fortunately the outer mastoid cortex was thin, and broke down early. Convalescence was uninterrupted, and the patient made a complete recovery.

This is a case of well-recognised type, and reveals nothing new. It is recorded now, because it so well illustrates the fact that the course taken by acute infective disease of the middle-ear tract may be, and nearly always is, much more dependent upon anatomical dispositions than upon the nature and virulence of the infection.

Driver W——, aged twenty, was admitted to the Cambridge Hospital on May 13. He complained of pain and discharge from the

right ear, and gave a history of a sudden onset of right aural discharge a few days before admission. On examination, there was found to be profuse aural discharge, with the usual signs of acute mastoiditis.

Operation (Schwartz).—A condition of diffuse suppuration involving the antrum and cells was revealed. Thick pus was evacuated from the mastoid process at the very first removal of bone from the cortex. A precautionary exposure of the lateral sinus wall showed it to be healthy. The following periodic notes record the subsequent history of the case:

May 30: Progress since the operation has been good. The temperature has not been raised above normal for over a week. The wound has been secreting a large quantity of thick greenish pus, necessitating a twice daily dressing. The mastoid sepsis has on the whole, however, been gradually decreasing daily. This evening there was a rise of temperature to 104.3° F., and a faintly marked erythematous rash made its appearance over the front of the chest. An organism of identical appearance with the pneumococcus was to-day recognised in considerable numbers in the direct film.

June 1: The temperature remains of a septic type. No spontaneous nystagmus: no vertigo or vomiting.

June 5: The temperature has maintained its septic character, showing marked rapid oscillations.

Second Operation.—The wound was fully re-opened. An additional posterior incision at right angles to the original one was made, and the mass of granulations overlying the formerly exposed lateral sinus were freely curetted away. A necrotic fistula was now found perforating clean through the anterior wall of the sigmoid sinus. A probe passed through the fistula, down on to a solid intra-sinus clot. At this stage, a resection of the deep jugular vein in the neck above the level of the common facial was effected. There was no thrombus in the vein. The thrombosed sinus was finally dealt with in the usual way.

A specimen of cerebrospinal fluid obtained by lumbar puncture just previous to the operation was reported upon as follows:

"2 ccc. of turbid fluid. Globulin increased in amount. Reducing power (Fehling) somewhat lessened. Centrifugalised deposit: Films show no micro-organisms. Cultures sterile after twenty-four hours."

The report on a subsequent specimen was as follows:

"Fluid markedly turbid and containing flocculi. Microscopically polymorphonuclear leucocytes are present, and also gram + capsulated cocci. The cultures have grown a pure growth of pneumococcus."

The report on the final specimen was as follows:

"Markedly turbid fluid. On standing a large purulent coagulum. Fehling not reduced. Albumen, a thick cloud on boiling. Globulin much increased. Direct films show pus and endothelial cells, and an enormous increase of pneumococci over those formerly present."

The patient died of acute purulent pneumococcal meningitis.

The following are the outstanding points:

(1) The involvement of the lateral sinus after an initial operation that appeared at the time to provide a very free drainage.

(2) The virulent pneumococcal infection of the middle-ear tract and finally of the subarachnoid system.

(3) The clean and complete perforation of the sinus wall.

(4) Subsequent events showed that unfortunately too long a time was allowed to elapse before the second operation was performed.