

**ACUTE INFECTIVE MENINGITIS BEGINNING NINE HOURS  
AFTER INCEPTION OF ACUTE SUPPURATIVE INFLAM-  
MATION OF THE TYMPANUM, DIFFUSE MENIN-  
GITIS IN THIRTY-SIX HOURS—DEATH.**

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The following case is believed to be not only remarkable as regards the early appearance, explosive violence and speedily fatal termination of an acute tympanic suppuration, but instructive as regards questions of the bacteriology and the probability or not that death could have been prevented by very early surgical interference according to the authoritative otological teaching of to-day:

Mrs. S. R., æt. 57, for years had had headaches of gastric origin. Never any ear trouble; no tubercular condition, and was in better health than for years, when, about May 4, 1897, she was attacked with a mild form of influenza prevalent in this city at the time, with cough and some bronchitis. Her son-in-law, Dr. C. A. Wayland, a careful and competent physician, attended her, and she was kept in bed until the 9th, when she had so improved as to be allowed to get up, but not to go out of doors until the 12th, being cautioned then against any imprudence.

On the afternoon of Thursday, May 13th, she occupied herself watering her garden, and that evening complained of a "stuffed up" nose. At bedtime, 7 p. m., a very severe earache began on the right side, and an intelligent trained nurse sat up with her all night, irrigating the ear with hot water every two hours with some alleviation of the intense pain. At 4 a. m. the following (Friday) morning the patient remarked that the pain (in the ear) was less, but that "As soon as it got better I began to have an awful pain in the back of the head." This pain, which later became an agonizing general headache, never left her, notwithstanding that at 10 a. m. of the same day (Friday) the membrana ruptured and a purulent discharge appeared with considerable relief of the otalgia. Temperature 11 a. m., 101°. At noon of this day, Dr. Gordon, a specialist, was called in, examined the ear and found a moderate discharge tinged with blood. Temperature 5 p. m., 103°; 11 p. m., same. According to the nurse's record, at 3 a. m. Saturday, the discharge ceased, and 9 a. m. the patient was so delirious as to recognize no

one. Temperature 8 a. m.,  $100^{\circ}$ ; 3 p. m.,  $102^{\circ}$ . At this time (3 p. m.) I was called in consultation with the hope that something might be done surgically to re-establish the discharge, or to check the course of the malady. The patient was now wildly delirious. Inspection revealed free perforation of the membrana, having blood-tinged margins, and but a bare show of pus.

As the case seemed hopeless to all the consultants, nothing was done, save to make a deep incision into the cellular tissue of the attic. There was no sign of mastoid involvement, and diffuse infective meningitis was diagnosed. Later in the day coma supervened; the temperature rose to  $104^{\circ}$ ; pupils enlarged; there was slight paresis of the right arm and leg with proptosis of the right eye, and on Sunday (16th) at 4:30 p. m. death ensued without interruption of the coma.

*Resume and Remarks.*—An elderly lady, recuperated from a mild catarrh of the respiratory tract, is suddenly attacked with severe acute suppurative inflammation of right tympana. Nine hours thereafter severe and unceasing pain indicative of meningitis. Perforation of membrana in fifteen hours, and temperature of  $101^{\circ}$ , steadily increasing to  $103^{\circ}$  and  $104^{\circ}$ , with cessation of discharge in thirty-two hours, and in thirty-six hours all the symptoms of diffuse meningitis. Finally symptoms of basilar extra-dural abscess. No symptom of mastoid involvement at any time.

Infective intra-cranial disease, as a sequel of *acute* tympanic supuration in adults, is relatively infrequent, comprising about 5 per cent. of any large series of unselected cases of the disease. Macewen (*Lane Lecture, 1896*,) states that "When you have an acute process occurring in the middle ear, you comparatively seldom have any invasion of the brain. \* \* \* Infective processes in the *internal* ear do not, in my experience, lead to abscess, but to infective meningitis."

The case above reported is believed to be extremely rare; at least the writer has not found, in a considerable mass of literature at his command, any reported case in which general diffuse infective meningitis of aural origin in an adult was established with coma in forty-eight hours after the inception of the pain—*i. e.*, of acute otitis. That rapid invasion of the tympanum by the diplococcus pneumoniae, either alone or with other pyogenic bacteria, occurred, is evident from the history, for Netter (1889), in twenty-five cases of purulent meningitis, examined thirteen cases microscopically. Four of

the cases were complicated with purulent otitis, six with pneumonia, and three with ulcerative endocarditis. The pneumococcus was found in sixteen of the twenty-five cases.\*

In the case here reported, unfortunately, no microscopic examination of the pus was made. The onset of diffuse meningitis was so rapid, and so astonishingly outside the experience of the physicians in attendance, that it is more than doubtful whether even a deep paracentesis into the posterior portion of the attic, if done as early as within an hour after the otalgia began, would have saved the patient; for the infection would seem to have taken a very short path through the vessels of the tympanic roof, or perforated the latter, to have established meningitis so promptly. Still, this appears to the writer a timely occasion to refer to the means at the disposal of many general practitioners, whereby they can, not infrequently, abort an acute suppurative process of the tympanum, and whereby they can determine intra-cranial involvement at its inception.

No author has more clearly set forth the principles and indication for surgical treatment than Dench†, who remarks: "The first stages of the process (Acute Purulent Otitis Media) consist in a hyperæmia of the affected parts. The folds in the vault of the tympanum become engorged with blood, increase in volume, and often fill the space (attic) completely, shutting off all communication with the atrium; \* \* \* local necrosis takes place, the tissue breaking down with formation of pus. \* \* \*† If local depletion does not produce immediate relief the parts should be thoroughly incised. \* \* \* The incision should lie above the short process of the malleus and posterior to it. The knife is entered just behind the processus brevis and carried upward and inward parallel to the neck of the malleus until it has pierced the cellular tissue within the tympanic vault and impinges upon the bony wall. The knife is then swept backward to the periphery of the membrane, the deep tissues being divided throughout the entire extent of the incision. If the long process of the incus is encountered, as may happen if it lies high up in the cavity, or if the incision is carried a little too low, care must be taken not to displace it, the knife being allowed to glide over it, and afterward being pushed inward to the original depth to complete the incision. It is well, also, on reaching the periphery, to extend the section directly outward along the supero-posterior wall for a distance of a quarter of an inch, dividing all the soft parts

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\*Sternberg. Manual of Bacteriology, p. 300.

†Diseases of the Ear, 1894, p. 337.

‡Ibid, p. 334.

down to the bone. It is to be distinctly understood that we do not expect to liberate pus by this procedure, but to prevent its formation. Consequently the greatest care must be taken that the field of operation is in an aseptic condition \* \* \* as all instruments and the fluids used subsequently. \* \* \* This measure, when performed sufficiently early, may completely abort the attack.

\* \* \* "When seen at a later period, and when the parts are distinctly bulging, it is wise to vary the procedure to the extent of beginning the incision over the area of the greatest bulging, remembering that our object is to incise the vascular tissues located in the superior portion of the cavity, and to liberate any contained fluid as well. Here, instead of carrying the incision outward upon the canal wall, the knife may be plunged directly into the most prominent portion of the tumor, carried deeply into the tympanic vault, and the parts divided directly upward as far as the superior margin of the meatus; the peripheral attachment of the membrane posteriorly should then be followed downward for a short distance, thus forming a triangular flap, to favor free drainage."

The writer has quoted freely, since his own experience with the author's methods has accomplished all he has claimed, being founded on sound pathology, and also because he has not found the general practitioner, who most often witnesses the disease in its incipency, acquainted with them, nor some otologists, for that matter. As to the early signs of intra-cranial involvement, as Knapp puts it:\* "*The warning signal should be given as soon as Meningeal Irritation is noticed. \* \* \* The chief symptoms of meningeal irritation are: Headache; occasional nausea, vomiting, and dizziness; moderate increase of temperature; some acceleration of the pulse. The two latter symptoms, though mostly present, seem to depend more on the virulence of the primary disease, the otitis, than on the meningeal involvement.*"

The same author has, in his usual lucid manner, stated that:† "*It is difficult to recognize when meningeal irritation passes over into Meningeal Inflammation. As soon as in the course of otitis media, with its manifold symptoms, the headache becomes persistent; is followed by attacks of nausea and vomiting, dizziness, drowsiness, delirium, or stupor; at first acceleration, later retardation of pulse and rise of temperature, dry tongue, thirst, and constipation, we may be sure that meningitis has begun or is fully developed; the lethal issue is commonly preceded by spasms in the extremities, and coma.*"

\*Archives of Otology, vol. xxii., p. 143 et seq.

†Ibid, p. 152.