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A PARASITIC GROWTH IN THE EXTERNAL AUDITORY MEATUS.

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JUNE 12th, 1868. K. M., aged 22, weaver. Generally healthy, but for a long time very subject to cold in the head. Two years ago, first noticed noises in right ear, and soon found that she was becoming deaf; some six months ago, began to have noises in left ear, and gradually became deaf on that side also. This deafness was always increased by a cold in the head, and of late has become steadily worse. Never pain or otorrhœa; hears much better when in a noise as in the mill, and both she herself and friends are confident of this fact. Often has a violent itching in both ears. During a cold, the track of the Eustachian tube is painful to the touch and on swallowing; frequently has sore throat. Now requires a loud voice very near; watch (normally at six feet) heard only on contact. Both passages contain cerumen, which hides the membranæ tympani; largest quantity in the left. Throat generally red, with some superficial ulcerations on posterior wall; tonsils slightly enlarged. Both ears were syringed, but nothing brought away. On catheterization, air entered both tympana in puffs, increasing clearness, but not the distance of hearing. Ammonia murias (gr. v. ad ʒi.) injected through catheter. To inject into tubes, by Gruber's plan, the same twice a day.

16th.—Watch, left, 1 inch; right, on contact. Air-douche and injection by catheter as before; after it, watch, left, 3 inches. Nothing obtained by syringing, although the dark masses (cerumen, as supposed) are still to be seen. To instil into meatus, twice a day, glycerine.

19th.—Left ear feels clearer, and friends notice that she hears better. Watch, left, 4 inches; right, same. By syringing, a thin membrane, forming a perfect cast of the membrana tympani and part of the

meatus, was obtained from each ear. The membranæ tympani were now seen for the first time, and found to be somewhat thickened and slightly sunken; the hammers indistinctly seen, on account of swelling and redness of their vessels. The removal of the obstructing masses did not improve the hearing. Air-douche and injection as before. Omit glycerine.

The masses removed were found to consist of thin membranes, resembling the finger of a glove, which showed impressions of the membrana tympani and walls of the meatus nearly as perfectly as a wax cast—the inner surfaces uneven and of a dark-brown color; the outer, and especially those towards the membrana tympani, smooth and nearly white. By microscopic examination, on the 23d, the various parts of a vegetable parasite, filaments, sporangia, and sporules, were found in all stages of development, and so interwoven as to form a membranous structure; very little epithelium or *débris* was intermixed. The microscopic appearances and measurements corresponded generally with the descriptions and illustrations of *Aspergillus*, as given by Wreden, except that I found greater differences in size and more cross-divisions of the filaments than he describes. The following, by him, gives the chief characteristics of the plant:—" . . . Numerous cellular filaments, some broken at each end, others (unfruitful) running to a point, while others (fructifying) ended in a round, bubble-shaped swelling (sporangium); from all sides of this projected numerous long, spindle-shaped cells, like brushes, or, when perfectly ripe, rows of round sporules."

23d.—Reports that on 21st and 22d, an exceedingly hot followed by a very cold day, she took a severe cold, and again had noises and a "stuffed feeling" in ears. Cold now passing off, and noises less loud. Watch, left, 5 inches. To stop all treatment.

26th.—On examination, right membrana tympani rather dull; light reflex of normal shape and in normal position, but with ill-defined edges; above and behind, a dull, crescent-shaped, unusual light reflex; in

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position of hammer, only a bright-red line and the small process indistinctly seen, as through a thin, white membrane; meatus slightly red near the membrana tympani. Left membrana tympani apparently clean, showing only the thickening above described; meatus slightly red. Both membranes freely movable by Valsalva's plan. By syringing, nothing obtained from either meatus. To instil in right ear, twice a day, sodæ carbonatis gr. iij., aquæ ʒi.

30th.—Reports, to-day, a slight stinging pain in right ear. Watch, left, 8 inches. Left membrana tympani clean; vessels of manubrium still injected. Right membrana tympani posteriorly whitish, smooth and dull; vessels of manubrium injected. By the strong injection of warm water, several white membranous substances removed, which by microscope showed filaments of the *Aspergillus* mixed with epithelium and *débris*; none of the fructifying heads were found.

July 3d.—Both membranæ tympani apparently clean; injection of vessels remains, most marked in right. Watch, left, 13 inches; right, on contact.

10th.—Lower half of left membrana tympani covered with a white membrane; right membrana tympani appears clean. By Valsalva's plan, air enters both freely. By the syringe, a white membrane, forming a cast of the lower half of membrana tympani and the angle with the meatus, removed from left ear; this consisted of epithelium, fat, *débris* and many filaments of parasite, with an occasional sporangium. To instil, three times a day, instead of soda, hydrarg. chlorid. corros. gr. ij., aquæ ʒij.

28th.—Hearing as on 3d. Ears syringed, and a few flakes of epithelium obtained, but no traces of parasite. No irritation from drops.

Aug. 4th.—Slight redness and inflammation of meatus. No signs of the parasitic growth. To omit drops, and rub croton oil behind ears.

11th.—Both membranes easily and fully inflated by Valsalva's plan; both generally thickened, but show no other abnormal condition; light reflex normal; injection of hammers and inflammation of passages entirely disappeared; no pain, itching, or disagreeable sensation in ears, except the noises. Watch, right, on contact; left, 13 inches. My ordinary voice well heard at four feet.

The treatment directed to remove the thickening, remained without effect on the hearing, although it was impossible to follow it as I wished, and on Sept. 19th the

condition was the same; no return of the parasite.

On first seeing the case, I was led to suppose that I had to deal only with a simple chronic inflammation of the middle ear, and regarded the collections in the external ear merely as accidental masses of cerumen and not connected with the deafness, as they wanted entirely the firm, compressed look that cerumen has when impacted in the meatus. As soon as the parasitic growth was diagnosticated, all treatment was stopped, in order to watch the course of the disease and to decide what part of the symptoms were due to it. The preceding description of the case shows the result.

That parasitic growths were found occasionally in the external auditory meatus has been known for a long time, but it is only within the last two years that the attention of aurists has been called to them. Mayer, in 1844,* described a vegetable growth found in the meatus of a girl with serofulous otorrhœa, to which he gave the name fungus meatus auditorii externi. Again, in 1851, Pacini† described a growth removed from the auditory meatus, which he considered due to the instilled oil, which had become rancid. In 1857, John Grove, M.R.C.S.,‡ communicated to the Microscopical Society an account of a "Fungus Parasitic in the Human Ear." In '65, Schwartze§ described a parasitic growth in the meatus, which, after returning several times, he succeeded in destroying. He seems to have been the first to consider the parasite in its practical relation to diseases of the ear, and says:—"It appears very probable that the development of fungus will be found more frequent as the cause of the well-known, often annoying and obstinately recurring chronic inflammation of the external meatus, with abundant collection and discharge of epidermis." He accounts for the presence of the fungus, however, as follows:—"Since for the development of the fungus from the many germinating spores found everywhere in the atmospheric air an adapted soil is very necessary, it is at all events to be supposed that before its existence an exudative inflammation in the external meatus, or at least a loosening and softening of the epidermis, has taken place. The fungus itself now acts as an irritant, produces new hyperæmia and exudation, hinders the discharge of the secretion and

* Maller's Archiv., p. 401.

† Kachenmeister's Manual of Parasites.

‡ Ibid.

§ Archiv für Ohrenheilkunde, vol. II. p. 5.

leads to closure of the meatus." Tröltsch,* in a note to the third edition of his work on the ear, says that he once found a fungus (*Aspergillus penicillatus*) on a small spot of the meatus in a patient with chronic tympanic catarrh; its presence had given rise to no symptoms, and the discovery was accidental. Wreden,† of St. Petersburg, gives by far the most complete description and drawings which I have been able to find. He has here observed and recorded six cases, and gives a description, with illustrations, of the different parts of the plant; he places it, as has already been done by the above authors, among the *Aspergilli*, considering it an *Aspergillus glaucus Leuckhartii*, and believes that it bears the same pathogenic relation to some inflammations of the meatus and membrana tympani that the parasite of favus or herpes tonsurans does to those diseases. In his cases, he watched the development of the fungus eight times, and convinced himself that the membrana tympani had not been abraded by an immediately preceding inflammation or purulent process; but, on the contrary, that an obstinate injection of the vessels of the manubrium was the only objective symptom. He observed the membrana tympani to become covered gradually with a white membrane, which increased the subjective symptoms (deafness, ringing and prickling), and in two cases induced the symptoms of acute inflammation of the membrana tympani (myringitis acutissima). As the chief subjective and objective symptoms seem to point to a myringitis, he suggests the name mycomyringitis, or myringitis parasitica.

What special preparation is necessary to furnish the proper soil for the development of the parasite cannot be determined. In four of Wreden's cases there had been some time before inflammatory processes in the ear, and like Schwartz he advances the hypothesis that a swelling and loosening of the cutis on some small spot had furnished the necessary condition for the generation of the sporules. All ages are liable to be affected; in four of the six cases both ears were affected, and these six cases were found in the examination of one thousand, showing that the affection, apparently, is not so exceedingly rare. The inoculation from one patient to another has not been successful. All but one of the cases were accompanied by a great degree of deafness; loud noises were complained of in all; four

complained of a prickling and pain on pressure of the ear, while the other two had severe pain running to the temple, teeth and nape of the neck, as in myringitis acutissima. The presence of the parasitic growth does not act merely as a mechanical hindrance to the transmission of sounds, as, for example, a collection of cerumen when generally the removal effects a cure, but after the entire parasite has been removed the immediate improvement is slight, as it requires time to reduce the swelling and hyperæmia, and often the injection of the vessels along the manubrium only disappears after several weeks. In all cases there has been a marked tendency to recurrence, only checked by parasitocides, the best of which Wreden considers to be alcoholic solutions of tannin (gr. x. ad. 3i.). The irritability of the membrana tympani and the meatus, however, renders the selection of the parasiticide a difficult question, as we must have a medicament strong enough to destroy the sporules which are endowed with great vitality, and yet must avoid exciting a painful inflammation and causing still further damage. Wreden found that the development of the parasite was quite rapid, five to eight days being sufficient to cover the entire membrana tympani with a thin white coating of the plant.

Robin* has recently communicated to the French Academy of Sciences a description of two forms of *Aspergillus* from the auditory meatus; in the ten cases in which he found it, there existed no other disease. Highly diluted solutions of the hydrochloride of lime and of arsenite of potassa, he affirms at once destroy the cells.

Although I cannot regard my case entirely uncomplicated by other disease, still by the most careful examination I was unable to discover the least abrasion of the epidermis or the least discharge. The previous disease, as the history and appearances seem to show, was Tröltsch's chronic simple catarrh, an insidious chronic inflammation leading to thickening of the lining membrane of the tympanum, the deafness from this cause, however, much greater, especially in the left ear on account of the irritation of the parasite which increased the thickening and congestion. Our present knowledge of these growths is too slight for us to say whether they alone could produce such permanent thickening of the middle ear as was present in this case, but from a review of the cases it does not seem probable.

* Ohrenheilkunde, p. 90, note, and Archiv f. Ohrenheilkunde, vol. iii. p. 2.

† Archiv. f. Ohr., vol. iii.

* New York Medical Record, July 1, 1868.