THE SUB-PERIOSTEAL TEMPORAL ABSCESS OF OTIC ORIGIN WITHOUT INTRA-OSSEOUS SUPPURATION*.

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The aim of this short paper is to convey to the knowledge of my American colleagues a special complication of the infection of the middle-ear, the first description of which I published in 1900. Other examples of it have been published since then, either by myself or by some of my colleagues (in Belgium, Vues; in France, Pecharmant, Aboulker, Jacob, Jacques and Gault).

Though our distinguished colleague, Thomas J. Harris, recorded the chief features of my own description in his excellent paper on "Atypical Mastoiditis" read before the meeting of the American Otological Society, Atlantic City, 1911, I thought it might not be totally destitute of interest if I summarized before you the few characteristic symptoms which enable us to recognize this particularly benign complication of middle-ear infection and to apply to it the not less benign treatment it requires; thus sparing our patients the useless opening of the bone.

I wish to record the two cases which by opposite routes gave me the clue to a right interpretation of the accidents in question.

Few otologists, I think, may boast, after some years of surgical practice, of never having opened a perfectly normal mastoid. Such had also been my lot perhaps more than once, when in the spring of 1900 I again failed to find the suspected pus in the mastoid of a young girl presenting such an ensemble of general and local symptoms to make the incident unforgettable.

The girl in question, 9 years of age, had been attacked on April 28, by an angina *a frigore*. Six days later, pain in the right ear, but moderate and not interfering with her sleep. After another lapse of three days, while no discharge had been noted from the ear nor any increase of the pain, there developed a diffuse swelling on the temporal region, moderately tender under pressure and accompanied by a slight edema of the upper eye-lid of the same side.

The family doctor consulted me about the meaning of that swelling. I first directed my attention towards the ear, where I noted

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but very slight anatomical and functional modifications; the hearing-power was but little lowered; the tympanic membrane showed some redness, but no bulging, and did not let any discharge escape after being opened. There was no appearance of furuncles in the meatus.

On May 8, the temporal swelling having increased gradually and extending to the mastoid region and as the very distinct fluctuation could not allow any doubt as to the presence of pus under the periost, it was decided to open the abscess under chloroform. The incision of the soft parts made along the insertion of the auricle down to the bone confirmed the diagnosis, while letting a teaspoonful of pus of creamy appearance escape.

Being still under the influence of the generally admitted views, namely, that any sub-periosteal suppuration of otic origin means a coexistent intra-nasal suppuration and convinced that my operation would not have been complete had I not opened the mastoid antrum, I removed the cortical of the apophysis on all its extents, unwittingly denuding the sigmoid sinus that was situated abnormally far forward, but not finding any pus in the antrum nor in the region of the apex. Of course the child made a perfect recovery, which though was only obtained after three weeks of dressings.

This case awakened naturally in my mind the desire of avoiding in further similar circumstances, the bony part of the operation which could and ought to have been spared to the young patient with a more precise diagnosis. In consequence of a lucky coincidence, on May 15, while the child, whose case I have just been relating, was still under treatment, I was consulted by a man, 26 years old, for a swelling, the aspect and seat of which offered the greatest similarity to those noted in my first patient: in fact it was more supra- than retro-auricular and occupied a vast triangular surface of the temporal region, with its basis turned upwards, whilst its apex pointed to the soft parts covering the upper wall of its opening. As in the first case, the edema extended to the superior eyelid; there was hardly any fever, the patient's looks were excellent; no spontaneous pain preventing sleep: little tenderness of the swollen parts under pressure.

The patient gave the following history: a fortnight before, in consequence of a cold in the head, he had felt some pain in the other ear (the right one) which had subsided after the appearance of a moderate and transitory discharge from the meatus. Two days later the same symptoms had been noted on the left side. There the discharge only lasted a single day. After a lapse of four days the

swelling had made its first appearance and had not ceased to increase since. As the swelling at the entrance of the meatus made the inspection of the tympanic membrane utterly impossible, I practiced an insufflation of air through the Eustachian tube by means of the catheter, and could detect some crepitus, which suppressed any doubt regarding the infection of the middle ear. On the other hand, the absence of the characteristic tenderness under pressure of the soft parts of the meatus was anything but favorable to the diagnosis of a furuncular eruption.

In order to settle my opinion in that respect, after duly anesthetizing the skin of that region by means of an injection of cocaine, I performed a deep incision down to the bone, along the upper wall of the meatus, in consequence of which I obtained the spontaneous escape of very fluid pus, whose abundance greatly increased by pressing on the temporal swelling. With the help of a probe introduced through the incision I could feel plainly the bony surface denuded.

In spite of the experience acquired at the expense of the previous case I was still so much under the influence of the prevailing ideas that I hardly dared to expect the complete recovery of this second patient from such a limited incision of the soft parts. I resolved, notwithstanding, to stop there temporarily and to apply on the temporo-auricular region a wet dressing, after keeping the incision open by means of a small drain.

On the following day there was still some pus in the sub-periosteal cavity, which was again evacuated by pressure of the temporal region. The inside of the abscess was then touched with a piece of wadding soaked in iodine-glycerin. On May 19 all traces of the swelling had disappeared, and a few days later the little wound had thoroughly healed up.

The two cases I have just recorded were destined to be epoch-making in my practice, since I felt entitled to draw from them the conclusion, that some forms of sub-periosteal suppuration of otic origin can heal in consequence of the simple incision of the soft parts. The question was only to determine with as much precision as possible the clinical features on which such a diagnosis might be founded.

After personally observing some other similar cases and reading the description of several facts published by other authors, I propose to you the following comparative table, as representing the chief elements of differentiation between the sub-periosteal puru-

lent collection consecutive to intra-mastoid suppuration and the sub-periosteal abscess independent on intra-osseous suppuration:

Sub Periosteal abscess accompanying mastoiditis.

Abundant and persistent otorrhea.

Retro-auricular swelling.

Mastoid region tender under ressure.

Deep spontaneous pain with throbbing sensation, preventing sleep.

More or less high fever. Alteration of the face, with an expression of suffering.

Sub-periosteal abscess independent on intra-osseous suppuration.

Slight and transitory otorrhea, having generally disappeared when the swelling occurs.

Rather supra-auricular swelling covering the greatest part of the temporal region and pointing inferiorly towards the upper wall of the meatus, whose soft parts are raised by the infiltration.

Generally little or no tenderness of the mastoid under pressure.

Little or no spontaneous pain. No sleeplessness.

Little or no fever. Good looks preserved.

I am conscious, of course, that such schemas with their appearance of absolutism are very far from corresponding to the essential variability of clinical facts. Their only pretension must then be to be representative of the majority of cases. Of this I cannot give a more illustrious instance than by recording my last case, which was published in the *Annales des Maladies de l'Oreille*, 1903, No. 10, p. 387; the subject of which had his nights disturbed by pains and a rather high degree of fever (38.9°), while the apex of his mastoid showed a marked tenderness under pressure. If, in that case, I did not proceed at once to opening the mastoid, it was only in order to grant a little respite to the young patient and to his parents, all three feeling most apprehensive of the mastoid operation, but I was fairly decided not to delay the mastoidectomy later than the following day in case the serious symptomatic ensemble had not subsided. I, therefore, limited my intervention to drawing the sub-periosteal pus through a long incision performed, under local anesthesia, along the upper wall of the meatus; and great was my surprise as well as my satisfaction, on the following day, on finding the patient fever- and painless, and on noting the complete disappearance of the tenderness of the mastoid apex.

Of all the elements of differential diagnosis previously enumerated I feel bound to propose, as the most reliable, the scantiness and transient character of the otorrhea and the fact that it has generally completely ceased when the temporal swelling first appears. I must also not omit to mention the fact, that, in the only case where the micro-biological examination of the pus of a very typical similar abscess was performed by my friend Jacques (of Nancy), the cultures showed in it the exclusive presence of the pneumococcus. Such an investigation ought to be renewed on all further occasions, since it might provide us with a new means of diagnosis.

The pathogeny of the sub-periosteal temporal abscess I have just

described has been a subject of discussion among otologists. For my own part, I have always considered as the most probable and natural hypothesis, that the infecting germs, after penetrating into the tympanic cavity, pass directly under the mucous membrane of its roof unto the deep coating of the periost of the upper wall of the meatus, finding their natural way from one region to the other through the Rivinus' fissure, along the vascular elements emanating from the deep auricular artery. The absence of any intra-osseous suppuration and the continuity of the swelling all along the upper wall of the meatus and from there to the temporal region seems to retrace exactly the successive land-marks of the microbial migration. I found, furthermore, an unexpected support of this view in an article published by my two colleagues, Le Marc Hadour (of Paris) and Chauveau (of Geneva) in the July number of the *Annales des Maladies de l'Oreille*, under the title: "Periostites du conduit auditif externe au cours des otites suppurees," in which they show the tendency of the infection, in some cases of acute suppuration of the tympanic cavity, especially in children, to penetrate and progress under the periost of the upper wall of the meatus more or less far towards the temporal region.

Whatever may be the views held as to the mechanism of the development of such accidents, there can be no hesitation as regards the best treatment to oppose to them, which, even in the absence of a complete certitude about the integrity of the bone, ought to be *first* as simple as possible, that is to say, limited to the soft parts, since, in case of an error in that respect, the participation of the bone to the suppuration would soon be revealed to us by the persistence of the local and general symptoms, and we should then have full time to complete our first intervention by extending it to the mastoid cavities.

As regards the seat of the incision, I feel bound to advocate the one I adopted in my various cases: the soft parts covering the upper wall of the meatus, which on all my patients represented the lowest point of the purulent collection. We shall thus realize the best conditions for an uninterrupted escape of the pus, and it is the result of my own experience that, as a rule, patients show themselves less reluctant towards an incision to be dissimulated in the meatus than towards a retro-auricular one. The treatment should be completed by the introduction of a small drain through the opening and by a large and thick wet bandage.

By behaving in the proposed way we shall be conscious of sparing our patients any operative act not absolutely requested; and even if we should be induced later on, by the persistence of the symptoms, to open the bone, they will be much more ready to give us their assent to a more complete operation, since we shall have proved our desire to spare them.