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ATTACKS of circumscribed inflammation in the external auditory canal, known as boils or furuncles, are of such frequent occurrence, and cause the sufferer so much pain and inconvenience, that the necessity for a more extended recognition of their existence, and especially a knowledge of the efficient means we have for their relief, has induced me to submit a few practical hints upon their treatment.

Notwithstanding the fact that furuncle of the external meatus is one of the most common ear-affections that the physician is called upon to treat, the condition is, nevertheless, often difficult to recognize and troublesome to combat successfully. Here, as elsewhere, the furunculous inflammation is limited to a small area, and has a strong tendency to the formation of pus, owing probably to the fact that the canal is abundantly supplied with excretory glands, and when inflammation is once inaugurated it usually runs an uninterrupted course to the stage of suppuration.

Inflammatory diseases of the auditory meatus are plainly and properly classified as being either acute



or chronic, circumscribed or diffuse. They may involve simply the integument, or may extend more deeply into the subcutaneous structures, and implicate both the periosteum and bone.

The lining membrane of the external auditory canal is a continuation of the integument covering the auricle, being, however, considerably modified as it reaches the osseous meatus. As the membrana tympani is approached, this same integument undergoes still greater changes, and forms the outer layer of the drum-head. Notwithstanding the striking alterations observed in the appearance of the skin of the auricle and of the auditory canal, as in contrast to that noteworthy modification each undergoes to constitute the outer layer of the membrana tympani, yet neither the drum-head nor the skin of the auditory meatus can be spoken of or treated as a mucous membrane, any more than it would be proper to consider the integument of the auricle as such. Mention of this is made at this time for the reason that some writers have described certain affections of the canal under the head of "catarrhal inflammation;" but, as the word *catarrhal* can only be applied or used in connection with the diseased condition of a *mucous membrane*, it is quite impossible for the external auditory canal to be the seat of such an inflammatory process, inasmuch as the canal is covered with *integument* and not with *mucous membrane*.

It has already been definitely established that the great majority of pathologic conditions are traceable to the destructive action of disease-germs, and that pus-formation does not occur without the pres-

ence of pyogenic microorganisms. The researches and subsequent claims of Löwenberg likewise demonstrate that these microorganisms play an important part in the etiology of furunculosis of the auditory meatus. If then the disease in question is the result of a specific germ-poison, it is reasonable to assume that our failure to treat successfully some of these cases within a reasonable time is due to the fact that the remedies employed for their relief are but feebly germicidal, and, therefore, insufficient to destroy the infecting bacterium.

Those actively engaged in this line of work in a large dispensary and hospital service must at times have been impressed with the thought that boils of the external auditory canal occur epidemically. Usually, of course, these cases are sporadic; but at certain periods of the year (notably in the spring and fall) they are seen in large numbers, and come so often from a particular locality, that we are inclined to believe them not only epidemic, but also infectious and contagious. During the fall of 1890 I saw 117 cases of boils of the meatus, sixty-two of which came from a locality embraced within an area of about one square mile. Forty-six of this number were males and sixteen females. Fifty-one were suffering at the same time from an acute attack of influenza, but without severe constitutional disturbances; while eleven showed no apparent illness whatever. As to the situation of the boils, fifty-two were in the cartilaginous meatus, four in the deep osseous portion, and six at the extreme outer end of the canal.

When the direct cause of an aural furuncle is ob-

scure it has been customary to attribute it to an impairment of the general health, which in many cases is quite evident and conclusive. However, it is interesting to note the large percentage of apparently healthy people we find suffering from boils of the external meatus; furthermore, in these otherwise hardy patients, it is the exception to find any that have been troubled with boils on other parts of their person. Löwenberg, who was the first to point out the parasitic nature of aural boils, has definitely proved that furunculosis can be artificially produced by rubbing sound skin with staphylococci. We have in this demonstration, therefore, a plausible explanation of the cause of aural furuncle in persons who are otherwise enjoying good health, especially when the origin cannot be traced to a chronic suppurative otitis media, the introduction of bacteria into the canal through the use of dirty plugs of cotton-wool, or to direct mechanic or chemic irritation. The initial etiologic element, is, therefore, shown to be infection by the direct entrance of a staphylococcus beneath the skin, through an abrasion or by way of a hair-follicle or ceruminous gland.

In the same manner we have reason to believe that the public phonograph is liable to become a source of aural infection of no small proportions, as it has become quite common for a community to use the phonograph placed in a conspicuous place for their amusement. The hard-rubber ear-pieces are seldom cleansed, and, being passed from one individual to another, it can readily be seen how either the public phonograph, or other similar instruments,

may be the means of conveying infectious material from diseased to healthy ears.

TREATMENT.—Many physicians have doubtless been annoyed with the stubborn resistance of aural boils and their failure to yield to the various therapeutic agents employed for their relief; moreover, the repeated recurrence of this affection has been embarrassing to the physician and vexatious to the suffering patient. Many lines of treatment, both local and general, have been suggested for their relief; but unless such therapeutic measures have as an object the destruction of disease-germs they must in a measure continue to be unreliable and disappointing. The auditory canal, and in fact the entire ear, presents many obstacles to the attainment of strict asepsis in the treatment of its various diseases. Were it possible to overcome these difficulties entirely we could then expect these obstinate affections of the ear to be as amenable to treatment as when located in other organs. Much progress, however, has recently been made in the employment of antisepsis in this locality, and we are now enabled under proper precautions to operate with almost immunity on parts of the ear that heretofore would have been regarded as most hazardous.

In this, as well as in other similar ailments, the important object of treatment is the immediate relief of suffering, together with the limitation, modification, or abortion of the inflammatory process. Our ability to accomplish one or more of these purposes will largely depend on the stage the disease has reached before treatment is begun, as well

as the efficiency of the remedies employed for its relief.

The treatment generally accepted for furuncle is very simple, and consists in an incision through the boil, dividing the periosteum down to the bone. This procedure, however, is usually more applicable to boils that are well advanced. Our treatment will serve a much better purpose if the case is diagnosed at an early period, when an attempt can be made to abort the incipient boil. We know that many inflammatory processes might be aborted or limited in their destructive action if they could be subjected to local antiseptics that were not only powerful germicides, but at the same time non-poisonous and non-irritant. In the compound known as camphor-phenol, which is composed of fifty-five per cent. of camphor and forty-five per cent. of carbolic acid, we have a preparation that meets the requirements, and hence becomes at once a valuable addition to our local therapeutics. In compounding this preparation we must insist that the drugs be chemically pure; otherwise the crude elements of the carbolic acid, or the impurities present, will be markedly irritating. It has been my custom to employ this combination in its full strength.

The use of this preparation, when applied locally for the alleviation or cure of furunculosis of the external auditory meatus, is founded upon its inhibitory action on the development of the staphylococcus pyogenes aureus, and incidentally on its marked anesthetic properties. Granting this hypothesis to be correct, it is only proper to expect that

this solution of camphor and carbolic acid will not only shorten the disease in question if seen early, but should also lessen the suffering and limit the course of a case well advanced.

From a practical knowledge obtained by an experience of more than eight years in the employment of this preparation I feel justified in offering the claims stated as reasonably correct. Many cases of incipient furunculosis can be successfully aborted by introducing a cotton tampon saturated with carbolized camphor into the meatus. Even when the furuncle has so far advanced that an incision becomes necessary, the pain incident thereto can be greatly lessened by previously introducing a similar tampon, a few minutes only being required for more or less complete anesthesia to take place. Likewise, after the boil has been opened, the pain will be almost immediately relieved by the introduction of a piece of cotton-wool saturated with this solution. In the latter case, however, the tampon should be large enough to fill the circumference of the meatus, and extend well beyond the boil, as the pressure exerted by the cotton assists in promoting rapid absorption, and thereby facilitates quick recovery. Before each tampon is introduced, the canal should be carefully mopped out with alcohol, as this is our most efficient means of clearing the meatus of all débris, and the alcohol, moreover, is an excellent antiseptic. It may be necessary to apply a fresh tampon of camphor-phenol every day until five or six have been introduced, but two or three are usually quite sufficient to destroy all disease-germs. An ointment of yellow mercurous oxid

(gr. $\frac{1}{2}$ to \mathfrak{zj}) can be substituted for the camphorated phenol as soon as the inflammation begins to show marked signs of subsiding.

In advocating this line of treatment it should not be understood that by so doing we would exclude other therapeutic measures of more or less value. In selected cases blood-letting or blistering in front of the tragus is of undoubted service, and hot antiseptic irrigation of the meatus should be employed when indicated. I should like also to mention the value of dry cold in the treatment of inflammatory conditions of the external and middle ear. This, however, will be treated of more at length in a future communication. The use of poultices is mentioned here only for the purpose of discouraging their use. The single benefit that could arise from the employment of hot poultices is the questionable good that may result by promoting suppuration. In so doing, however, one creates a populous hot-bed for the rapid multiplication of bacteria, and frequently excites an inflammation of the auricle. Moreover, the few cases of middle-ear disease that I have seen occur as an extension from the inflamed meatus have invariably resulted after frequent poulticing had been practised.

In debilitated subjects the general health should receive due consideration. The administration of selected tonics, and those drugs known as alteratives, in conjunction with proper hygienic surroundings, will do much to effect the cure of an existing boil, and especially to prevent its recurrence. For this purpose I would strongly urge the use of arsenic in the form of Fowler's solution, given in increasing

doses until the physiologic effects are produced. The administration of calcium sulphid, although popular for a time, has on the whole been disappointing in my experience.

In conclusion, I may state my belief that aural furuncle is both infectious and contagious, with a tendency to recurrence from auto-inoculation, and that it occasionally manifests itself epidemically. I can only add that I do not recall a single instance in which there was a recurrence of the furuncle in any portion of the canal, providing strict antisepsis was maintained, and all these important therapeutic measures were applied to the case.

To summarize briefly the treatment of furunculosis of the external auditory canal :

1. As antiphlogistic measures, use the leech or blister in front of the tragus, and hot antiseptic irrigation, when indicated. Avoid the use of poultices.

2. As local applications, cleanse the canal with alcohol and insert an ample tampon of cotton wool saturated with camphor-phenol, renewing this every twenty-four hours, or oftener if required. This is at once antiseptic and analgesic.

3. As constitutional remedies, give tonics and alteratives, with the especial recommendation of arsenic in the form of Fowler's solution. This should be administered in increasing doses until its physiologic action is obtained.

4. As an operative procedure, make a free incision through the boil, and divide the periosteum down to the bone. This will prove necessary in well-advanced and chronic cases, especially when pus has already formed.

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