

## EXPERIENCE WITH CHRONIC DEAFNESS

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The experience referred to in this title extends over a period of twenty years, during each year of which there has been but little change in treatment or in its results. Real progress, however, has been made in the diagnosis of deafness which has resulted from the standardization and improvement in quality of the tuning forks, and of adoption of the audiometer into practical use. The hard of hearing have received much benefit from various hearing aids and increased proficiency in the examination of the labyrinth has led to a better knowledge of its physiology. Because of the intimate relationship of the labyrinth with the brain, a term has been coined, the fitness of which I often question, namely, *neuro-otologist*. There is no question that the otologist knows more about the *ear* than does the neurologist, while the neurologist is better qualified to diagnose and deal with conditions within the brain. But these are two distinct fields and a hyphen does not necessarily bring these two fields closer together. Whether by his examinations alone the otologist is capable of localizing a brain lesion in my opinion is very questionable, and for this reason I think the value of the otologist to the neurological surgeon cannot be compared with that of the ophthalmologist.

My contact with deafened individuals has often made me regret whatever reputation I have had as an aurist. It is hard indeed to have a patient come, sometimes from a considerable distance, happy because he is seeing one more specialist and filled with the hope and desire for benefit, and then to have him leave in tears because it has been necessary to tell him that he has advanced nerve deafness or perhaps otosclerosis and that no local treatment will help him. In such cases the most careful painstaking advice as to the value of lip reading and of hearing aids is usually given a poor reception. One patient who later made a decided success of lip reading told me that she made six trips to the lip reading school, each time passing it by before she could compel herself to enter. Since such patients as a rule are seen only once, the entire consultation is rather unsatisfactory, and makes one inquire with Emerson: "Has science thrown any new light on our understanding of chronic, progressive deafness?" (*Ann. Otol. Rhinol. and Laryngol.*, 40:9 1931.)

By many people hearing aids and lip reading alike are looked upon as a kind of disgrace, or as a beneficial measure for the other fellow but not applicable to one's self. The education of the hard of hearing is indeed far from its goal.

For this report I have analyzed 325 cases of chronic deafness seen during 1930. These were all of the nonsuppurative type and may be classified as follows:

|                                     |     |
|-------------------------------------|-----|
| Chronic catarrhal otitis media..... | 82  |
| Nerve deafness.....                 | 150 |
| Mixed deafness.....                 | 83  |
| Otosclerosis.....                   | 10  |

A careful history was taken in all cases, this being followed by tuning fork tests, tests with conversational and whispered voice, and with the audiometer, which was considered the most satisfactory means of determining the upper tone limits. Finally there was an investigation of the patency of the eustachian tubes and when the history revealed that it was indicated a general physical examination was made.

The term, mixed deafness, was used to designate a group of cases in which the response to these tests did not fall clearly into any one of the other three classes. I believe they are typical of the class referred to by Emerson when he says: "The end result in all cases of chronic, progressive deafness is nerve deafness." In some of these cases of mixed deafness there was eustachian tube obstruction and prolonged bone conduction with a decided failure to hear high tones. In other cases there was short bone conduction with normal hearing of high tones. Certain kinds of acute inflammation within the middle ear will produce symptoms of perception deafness.

Most of the patients with chronic catarrhal otitis media came primarily to the ear department seeking relief from their symptoms referable to the ear; while the majority of patients with nerve deafness came primarily to some other department because of some general physical condition, the ear condition being discovered during routine examination of the ears, nose and throat. Cases in this group — chronic catarrhal otitis media — are worthy of much consideration.

In our enthusiasm in seeking out and removing foci of infection, and for a meticulous examination of the labyrinth, I believe the eustachian tube has been neglected. I recommend to every otolaryngologist the reading of a recent and very excellent article by A. R. Tweedie, in the *Journal of Laryngology and Otology* for

March, 1931, entitled "The Eustachian Tube." Tweedie refers to the original description of Eustachius, in which he regarded the pharyngeal end of the tube and its mucous membrane as a wonderful provision of nature which serves as a janitor by protecting the various parts of the middle ear cleft beyond it.

Tweedie says that "an efficient rhinologist should certainly rob the aural surgeon of much of his work." I heartily agree with this and am an ardent advocate of treatment of the eustachian tube via the nose. In carrying this out, the Holmes nasopharyngoscope has proved to be an invaluable instrument. With it I examine the mouth of the tube in every case. In the acute cases, if they are seen before an effusion has formed in the middle ear, the condition of the nasal mucosa is ascertained and an attempt is made to clear mucus from the mouth of the tube and reduce edema and swelling by the direct application of ephedrine in oil. If there is no bulging of the drum and Weber localizes to the affected side, a bougie is inserted and an attempt is made to restore aeration of the middle ear cavity. In a considerable number of cases the necessity for myringotomy is greatly lessened.

The direct influence of septal spurs and deviations upon chronic involvement of the eustachian tube is probably negligible, but since I never use the Politzer method for inflation, whenever any obstruction impedes free passage of the eustachian catheter I do not hesitate to advise operation.

In cases of chronic catarrhal otitis media, no matter how often the eustachian catheter is inserted, it is always done under direct guidance with the pharyngoscope in the opposite nostril, as by this method there is no uncertainty about the location of the tube, or whether or not mucus is over the mouth of the tube. It should be born in mind that there are conditions in the presence of which it would be poor treatment to inflate the tube even though the symptoms indicated it. Often aspiration should be the treatment instead of inflation. The presence of hypertrophy of the posterior ends of the turbinates and their relation to the mouth of the tube and of adhesions around the lateral walls of the nasopharynx can be determined.

If the air does not pass through the tube readily, a bougie is inserted. I prefer a small olive-tipped whale bone bougie, and rely entirely upon the sense of touch rather than upon any graduations on the bougie as to the distance it is inserted within the tube. I do not attempt to use large bougies. Any manipulation that might injure the epithelium is avoided.

I have long since given up the application of silver nitrate to the interior of the tube as I believe it has a deleterious effect on the ciliated epithelium of the mucous lining. Instead, I use a solution of resublimed iodine in liquid paraffin, this being inserted into the catheter with a medicine dropper and forced into the tube with gentle air pressure.

I emphasize this treatment because I believe in it and see good results from its use, although there is opposition to it. Thus Tweedie states: "As to any additional effect by bougies and the introduction or attempted introduction of medicated oils and vapors, I must confess that I am a heretic, although I know that skilled aurists of repute still use the same."

One condition that is not often mentioned is spasm of the eustachian tube. This is often encountered in nervous, high-strung women and when present prevents the entrance of air on inflation and sometimes resists the entrance of the bougie. In some of my cases the tube had closed upon a bougie after it was inserted and it has been difficult to release it.

Every patient with chronic deafness, irrespective of its type, is entitled to open functioning tubes if this can be accomplished. In every case of vertigo of undetermined cause the tubes should be made patent. I have some cases in which closed tubes are the sole cause of this annoying symptom.

All patients with chronic deafness who are not getting worse are improving, and every patient who still retains serviceable hearing but has closed tubes should have them treated. We are invariably asked, "Doctor, why do my ears close?" Would that we could give the correct answer. Certainly the cause of closed tubes is not entirely local. A chronic nasal discharge is too prevalent for it to be considered a cause. Atrophic rhinitis with its wide open nostrils, profuse crusting and dry glazed pharynx is not intimately connected with tubal and middle ear disease. Infection cannot be the sole basis for this condition as is evidenced by the return to normal function following severe purulent infections in the middle ear and mastoid. It would appear that we must conclude that closed tubes are a constitutional condition, since these patients are affected by such physical factors as heat, cold, barometric and temperature changes, nervous exhaustion and fatigue, intestinal disorder, the kinetic neuromuscular system bearing the brunt of such an overload. With all of these conditions must we concern ourselves in the examination and treatment of such cases.

An analysis of the 150 cases of 8th-nerve-deafness gives rather

depressing findings. Only the very deaf and the congenitally deaf came directly to the otological department. In early cases the deafness had been disregarded entirely, the condition being discovered in the routine general examination. In every case some other condition such as a chronic focal infection seemed to be present, and yet after the foci had been removed, improvement was not noted in any case. It would seem that once the 8th nerve is involved it is irreparably damaged.

It is interesting to note that there was a noticeable relationship between the presence of malignancy in some part of the body and nerve deafness.

In this group of cases of nerve deafness there were 85 males and 65 females. The average age was 46 years or more. The right ear was involved in 16 cases, the left ear in 18, while in 116 the deafness was bilateral. A positive Wassermann was found in only 4 per cent of the cases, a spinal Wassermann test being made in any case in which the symptoms indicated it. Certainly it would appear that the toxin of lues was but a minor factor in the production of nerve deafness. In several cases in which there was vertigo and nystagmus the presence of multiple sclerosis was suspected.

Eighty-three may be too large a number of cases to be included in the mixed deafness group as there may have been errors in the diagnosis. Perhaps some of these cases should have been added to the "8th-nerve-deafness" group. In some otosclerosis may have been present. But in any case, the outlook of the cases included in this group was as hopeless as in either of the other two groups.

The ten cases of otosclerosis were rather true to form. Nine of these cases were in women. The average age in the ten cases was  $32\frac{1}{3}$  years. In the majority of cases a familial history of deafness was elicited. Six of the women were married and the deafness became worse after pregnancy. Several of these patients declared they had been helped by treatment. Are we justified in trying to convince them that this apparent improvement is but a delusion? Each case was carefully studied to determine whether or not there was any endocrine dysfunction but none was found.

What, then, does this analysis show? Of 325 cases of chronic deafness seen in one year, in only 25 per cent could any kind of relief be offered by treatment, and of this 25 per cent improvement in some cases would be doubtful. Of the other 75 per cent in which advice as to lip reading and hearing aids was given or an institution for the congenitally deaf children recommended, the advice was not well received, and in the majority of instances was not followed.

The hard of hearing are deserving of especial consideration and need treatment of some kind — especially psychological. The otologist has to compete with the charlatans throughout the country who are popular because they offer these unfortunates false hopes even though at a high price.

Apology should be made for the pessimistic tone of this paper, but it expresses my feeling. I hope it may excite more interest in this problem. An earnest campaign must be carried on for the purpose of educating the public in regard to deafness, while as otologists, we ourselves should create and maintain greater interest in the eustachian tube.