

HEAD NOISES OF MUSCULAR ORIGIN*

AUDIBLE OR OBJECTIVE TINNITUS

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A MALE, aged 32, was admitted to the Medical Service of the Victoria General Hospital, under Dr. K. A. MacKenzie, July 13th, 1945, complaining of headaches and a sound like "the tick of an alarm clock" in both ears. Although the patient had noticed the "tick" on and off for three years, lasting for periods of days or weeks, it had not caused him actual annoyance until three months before admittance. The "tick" did not interfere with sleep unless an ear was on the pillow. In the presence of noise, and as an operator of a compressed air drill, he claimed he suffered a great deal of distress from the headaches.

The observations made at this time were that a bilateral clicking-grating like noise, 108 per minute (my own note was 78), easily audible at a distance of two or more feet from either ear. Up and down movements of the tongue and soft palate were noted as well as rhythmical contractions of the masseter and temporalis muscles on clenching the jaws; all were in time with the clicking noise. The rate could not be influenced by activity and was unrelated to the pulse.

No movement of the ear-drums could be detected. He was able to chew, bite, swallow and extend the tongue normally. My interne was assigned the special duty of making observations when the patient was sleeping and reported that the ticking did not cease. On the whole it was felt that the impulse, whatever its origin, was distributed for the most part by the motor division of the Vth nerve and we were thinking in terms of a growth. (As to the tick itself it was thought that probably the tensor tympani might be the explanation.) One of those interested remembered seeing a case when in London of a young girl with rhythmical contractions of one side of the tongue leading to hypertrophy of that organ which was believed to be secondary to an encephalitis.

The patient realizing that he was more or less of a curiosity and that none of the physicians were any too well informed about the matter departed for his home before we had time to consult the journals. The textbooks made no mention of the condition.

Two months later, September 10th, he was admitted to the Montreal Neurological Institute and Dr. MacKenzie was sent the following report :

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Objective Findings on Physical Examination

1. On auscultation over the head, there is a rhythmic noise, about 87/sec.
2. Rhythmic contraction of temporal and masseter muscles with gritting of teeth.
3. Rhythmic contraction of orbicularis oculi when eyes are shut.
4. Rhythmic movements of palate and tongue when the mouth is open.

Laboratory Data

Consultation with Dr. McNally, September 11th: "Nasopharynx: Both eustachian tube orifices are open. There is a continuous tremor-like movement of the anterior wall of the eustachian orifices, which is made up chiefly of the levator palati muscles. This tremor or spontaneous movement appears to extend into the soft palate and the movement of the soft palate consists in a constriction with an elevation just over the base of the uvula, which can be seen with the nasopharyngoscope.

Impression: This is probably in the nature of a habit spasm.

Recommendation: I would suggest a consultation with psychiatrist.

Consultation with A. W. Young, M.D., September 12th and September 17th: "After several interviews, I agree the clicking in the ears is made voluntarily by the patient. He has controlled it for short intervals. It disappears when he is asleep. The basis is simply a desire to leave his job of coal mining because of the fear which is constantly present when he descends into the mine. He is frozen to the job, and can only be released if ill and not fit for the job. He has feigned disability by making this clicking sound and complaining of headache. He has been told very definitely that he will receive no letter from us about his illness until the clicking ceases."

Therapeutic Procedures

Suggestion was used on the patient in the form of pennies placed over both mastoids. It was explained to the patient that copper would make the clicking cease. By the next morning the clicking had ceased entirely.

Condition on Discharge

Cured.

Discharge Diagnosis

Tic of the levator palati muscles of psychogenic origin.

On April 16th, 1947, the writer and Dr. R. L. Saunders, the anatomist, had the opportunity of re-examining this man in my consulting room. He stated that he was relieved of headaches for about two months after leaving Montreal—but they return if exposed to noise. As for the "tick" he had never been relieved although the doctors

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claimed they were unable to hear it. On his return from Montreal his sister told me she had listened carefully and could not hear anything. On returning to work he was given a surface job. The patient's story is that he had only been back at work a short time when a stranger sitting next to him commented on the ticking noise he was hearing.

At this examination we found the rate was 100 and the loudness of the tick varied in intensity—at one time it could be heard at a distance of eight feet, then again only if the examiner placed his ear a few inches from that of the patient. This variation did not appear to follow any particular pattern. The only muscles not noticed before, either in Montreal or Halifax, was the obicularis oris. I was unable to confirm a fleeting impression that the ear drum shared in the movements. If the absence of nystagmus, using the ophthalmoscope as a refinement, can be interpreted as non-involvement then the IIIrd, IVth, and VIth cranial nerves can be ruled out.

The sister and brother-in-law helped by listening when they believed the patient to be sound asleep. During one night the brother-in-law tiptoed in to listen on three occasions and had no difficulty in hearing the tick at a distance of several feet. The sister listened on two other occasions and was able to hear it one time but not at the other.

We now have three examinations—July 1945, September 1945, and April 1947. The VIIth (facial) nerve had been passed as normal in July. Having the masseter and temporalis behaving as they did it is doubtful that any musculature supplied by the VIIth would have been missed.

In September the obicularis oculi was added and it is again doubtful that the obicularis oris would have been missed. In April the obicularis oris could be added as will be demonstrated in the moving picture. So it would appear that there is an element of progressiveness unless all concerned are unbelievably careless in making their observations.

It would then appear that the impulses are reaching their destinations *via* the motor division of the trigeminus, the facial and the hypoglossus beyond question. The traditional innervation of the Eustachian tube and soft palate is the vagus or the accessorius through the vagus with the exception of the tensor palati (dilator tubae) said to be supplied by the motor element of the 3rd division of the trigeminus. Some are of the opinion that the tensor is supplied by the facial. In addition it is not unlikely that the other palatal muscles are supplied by the glossopharyngeus (although predominately sensory) and the hypoglossus.

Our second point is that the audible element varies in loudness and this may have some bearing on the differences of opinion as to its cessation during sleep.

His sister thought that some idea of his history, character and disposition might help in arriving at a diagnosis. She said her brother was

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subject to convulsions as a child. He is steady, kind and generous. A favourite with those with whom he plays baseball, football, hockey, etc.—as he is always able to smile—never gets cross—enjoys winning but never lets defeat worry him. With him the game is the thing. In short he is a good loser. His school record is good but might have been better had he not always kept “tomorrow” in reserve—in fact “tomorrow” was and is his favourite day. His unbounded faith in this day makes him quite irresponsible as regards the keeping of appointments. She stressed that he was a person who was more or less free from fear and as a boy would readily take a “dare”. Earning well he never had the urge to “get on” materially speaking as the other members of his family. He will play by the hour with his nephews and nieces whereas with most uncles a little goes a long way. The onset and development of the disorder seem more or less to have paralleled the period of courtship and marriage. He is happily married, is a good provider and never touches liquor. Their philosophical outlook on life is somewhat different. His is strictly scriptural, “Take therefore no thought for the morrow: for the morrow shall take thought for the things of itself. Sufficient unto the day is the evil thereof.” Her’s is less scriptural and more worldly.

The number of cases reported of audible or objective tinnitus not associated with the circulation appear to be few and far between. Those authors cited by Bredlau in bringing the subject up to date in 1934, when he himself reported a case of his own in a child aged 9, made no mention of any other muscle involvement than that of the soft palate and Eustachian tube. Some had inferred that the musculature of the tube shared in the same rhythmic movements as the palate.

Bredlau in his comments says “It is generally agreed that objective tinnitus may be produced in either of two ways, namely, by disturbances of the vascular system about the head and neck or by contractions of the muscles around the Eustachian tube. The muscular type of tinnitus always produces a noise characteristically regular and rhythmic, either clicking or ticking, at the rate of about 100 per minute.

The origin of the sounds heard in the muscular type of objective tinnitus has been explained in a number of ways. The suggestion that the noise may be the result of friction of the ossicles or of vibration of the drum membrane does not appear to be tenable. Contractions of the stapedius or of the tensor tympani muscle seems to be too delicate an action to produce noises audible to an observer. The only explanation of the origin of these sounds for which definite evidence has been offered ascribes it to the clonic contractions of the muscles about the eustachian tube and the soft palate; the opening and closing of the eustachian tube, with the accompanying alternate separation and contact of the two moist surfaces, best explains the peculiar clicking sound. Hysteria

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and neurasthenia have been hypothecated as predisposing or contributing factors. Since such conditions are uncommon in children and since it is in children that this type of tinnitus has always occurred, this explanation is not plausible. Some cases of this type of tinnitus have been reported in which the symptoms disappeared and reappeared, but in case 1 the ticking has been constant on repeated examinations and the patient is unable to control it. So far as I have been able to determine, no case has been reported in which it was possible to arrest the noise permanently, but the absence of instances of the muscular type of tinnitus in adults shows that a spontaneous cure probably occurs as the child grows up."

The case now being reported is unusual among an unusual group in having muscles involved besides those of the Eustachian tube and soft palate. It might also be repeated that the age is 34, that the tinnitus gives rise to no inconvenience, that it has not remained "cured", and change of occupation has made no difference. The evidence that it ceases during sleep is by no means convincing, and there is reason to suspect progression.

During the preparation of this paper I learned that Dr. Hugh C. Wolfe of Greensboro, N.C., had a case of audible tinnitus. I made a direct enquiry and received a prompt reply in which he stated he had presented his case before the staff of the Piedmont Memorial Hospital in March 1938. Dr. Wolfe made the interesting observation that "In my case the muscles of the tube and palate are involved in making the ticking sound. The clonic contractions of the muscles are synchronous with the ticking. By actual count these were 164 ticks per minute with mouth closed, 140 ticks with lips open, and 70 ticks with mouth wide open".

Assuming that an organic cause can be dismissed then an emotional basis must be searched for and the functional character of the phenomenon established. If functional is it symbolic representing in a condensed form some underlying emotional difficulties and conflicts or is it a disturbance of the autonomic nervous system and expressed in focal tension? The one a psychologic response, the other a physiologic response to a disturbed emotional state.

In functional cases one may imagine he understands the loss or disturbance of a part of function with which the patient is familiar—such as the paralysis of an arm, a disorder of sensation, aphonia or amblyopia. The involvement of a part, the very existence of which is probably unknown, such as the Eustachian tube—makes the functional more difficult to even imagine. At this point perhaps it had better be left to the neurologist and the psychiatrist.

I wish to thank Dr. K. A. MacKenzie for permitting me to report his case.

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Kodachrome, silent, 16mm., 5 minutes.