

Headache due to Eustachian Tube Obstruction

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Submission: October 07, 2015; Published: October 08, 2015

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Introduction

Headache caused by Eustachian tube obstruction (ETO) is a distinct clinical entity. Although Eustachian tube obstruction as one of the principal causes of 'hearing loss', and/or 'ear fullness', and/or 'tinnitus', and/or 'headache (including otalgia)', and/or 'vertigo', has already been recognized by many well-respected senior doctors for a long time, it has still received only scant attention both in the literature and in practice [1,2]. Some researchers mention that Blocked Eustachian tubes can cause several symptoms, including ears that hurt and feel full, ringing or popping noises, hearing problems, feeling a little dizzy [3]. There's one point which claims our attention. Instead of headache, otalgia is usually mentioned more frequently in the literature related to ETO. However, we should keep in mind that 'otalgia' can be included in wider sense of the term 'headache'.

When the acute onset of ETO or acute otitis media, is sudden and severe, the patients tend to complain of only an otalgia more commonly than a headache. The cases of insidious onset are the ones most likely to be overlooked. In these instances, because headache is predominant than otalgia, the patients are likely to be subjected to various types of treatment over long periods for any other several types of headache. They usually complain as follows; "I suffer from a headache around the ear.", "I have got no pain of ear, but just pain of head", "I have a headache with an ear ache.", "Which part of head around ear I have a pain on, but I am not quite be sure."

An example of dizziness induced by middle ear pressure fluctuation is 'alternobaric vertigo' -- such as occurs in people who can "clear" one ear, but not the other [4-8]. This is mainly a problem in scuba divers and airplane pilots. It seems likely that this syndrome is either caused by asymmetry in inner ear pressure accompanying changes in middle ear pressure, or due to displacement of otolithic membranes associated with displacement of the ossicular chain accompanying an inequity between middle ear and external ear pressure. A related group, but not quite identical, are persons who are sensitive to the ups/downs of barometric pressure. It seems most likely that this pattern reflects an interaction between barometric pressure, migraine, and inner ear disturbance. Barometric pressure (and weather fluctuations) is a powerful trigger for migraine, and

migraine is a powerful modifier of sensory input. People with migraine are often very sensitive to light (photophobia), sound (photophobia), smell, motion (if they have a vestibular system -- 5 times more motion sensitive), medications, sensation (called allodynia). This is due to a pervasive increase in central sensitivity to sensory input [4-8].

Anyway, it seems obvious that a headache can be originated from ETO. And, we can realize that it is necessary to check on the normal state of middle ear space pressure before confirming a definite diagnosis of any type of the headache. Like this, for all its importance of ETO as a crucial variable, it is not easy once I actually tried to find out the reference that 'Headache due to ETO' can be regard as one of headache.

Some researchers mention that Migraine headaches are often misdiagnosed by patients themselves as sinus headaches. Schreiber suggested that 88% of 2991 patients who had diagnosed themselves as having sinus headache, actually had migraine [9]. Ideally normal middle ear cavity pressure with perfectly equal balance between both ears is the core prerequisite before diagnosis and treatment for any symptom and disease [2]. At this point in time, like the preceding, it is the prerequisite before making a right diagnosis of migraine or sinus headache, etc., though it has not been mentioned actually in a concrete form. In this way of differentiating migraine from sinus headache, it is necessary to rule out the possibility of 'headache due to ETO' first. It is true, of course, that there are many other conditions which may cause headache, but since obstruction of the Eustachian tube is one of the most obvious, and also the most easily corrected, every patient with symptoms of headache should be subjected to the therapeutic test of inflation of the tubes as a first step in a thorough clinical investigation [10].

The middle ear is very much like a specialized paranasal sinus, called the tympanic cavity; it, like the paranasal sinuses, is a hollow mucosa-lined cavity in the skull that is ventilated through the nose [11]. Tympanic cavity and mastoid cavity are named on the basis of anatomy. However, if we view things from a different angle, we can regard them as one of 'paranasal sinuses', called 'tympanic sinuses or 'mastoid sinus' like maxillary or frontal or ethmoid or sphenoid sinus in a view of physiology and function [1]. This point is the reason why I support the theory of 'sinus

headache' when I need to explain the cause of headache from Eustachian tube obstruction [1].

Acute sinus headache: poorly studied, commonly diagnosed. The International Headache Society (IHS) diagnostic criteria for acute sinus headache (diagnosis code 11.5.1) include (a) purulent nasal discharge, (b) pathologic sinus findings in tests including X-ray, CT or MRI, and/or trans illumination, (c) simultaneous onset of headache and sinusitis, and (d) headache localized to specific facial and cranial areas near the sinuses [12,13]. Chronic sinusitis is not validated as a cause of headache (IHS 11.5.3). Sinus pain caused by inflammation induced by allergens (i.e., allergic rhinosinusitis) or by infection (i.e., bacterial or viral sinusitis) occurs when exudate in inflamed, blocked sinuses exerts pressure that stimulates local trigeminal nerve fibers [14-16]. Mechanical obstruction of the Eustachian tube may be either intrinsic or extrinsic. Intrinsic mechanical obstruction is usually caused by inflammation of the mucous membrane lining of the Eustachian tube or an allergic diathesis causing edema of the tubal mucosa. Extrinsic mechanical obstruction is caused by obstructing masses such as hypertrophic adenoid tissue or nasopharyngeal tumors [17].

If it is natural to regard 'tympanic cavity' as 'tympanic sinus', isn't it too obvious to regard 'otitis media' as 'sinusitis'? If the headache due to ETO was removed, after normalizing the pressure of middle ear space with Eustachian tube catheterization. What more definite 'sinus headache' than 'headache due to ETO'? I do not have the slightest doubt that it is obvious to regard 'headache due to ETO' as 'sinus headache'. Now, it is reasonable to ask some questions. Which looks more reasonable theoretically between sinus headache and migraine in order to explain the mechanism of headache originated from ETO?

Conclusion

As a clinician who inherited Eustachian tube catheterization through the apprenticeship, and should preserve it, I would like to present you this clear proposition at least as follows: With a view to 'ideally normal middle ear cavity pressure with perfectly equal balance between both ears', Eustachian tube catheterization may be of both diagnostic and therapeutic value [1-2].

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