Assessment of eustachian tube function in nasopharyngeal disorders

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Variations in the barometric environment experienced by aviators and marine divers in the early 1940s lead to recognition of otitic barotrauma and drew attention to the complications of disorders of the auditory tube. The introduction of middle ear surgery in the early 1950s also increased the demand for accurate and detailed knowledge of auditory tubal function under normal and pathological conditions.Ventilation of the middle ear cavity is necessary to main-tain the appropriate relative ambient pressure within the middle ear for the maximal conduction of sound. When the Eustachian tube is functioning normally, it opens intermittently to maintain near ambient pressures in the middle ear cavity. Opening of the tube is also mediated by the pressure gradient between the middle ear cavity and the nasopharynx.Eustachian tube dysfunction could be in the form of a patulous tube or obstruction. Two types of obstruction may be manifested, functional obstruction and mechanical obstruction.Functional obstruction results from persistant collapseof the Eustachian tube due to increase tubal compliance, an abnor-mal active opening mechanism or both. All unrepaired cleft palate show this type of obstruction.Mechanical obstruction of the Eustachian tube may be intrinsic or extrinsic. Intrinsic obstruction could be the result of abnormal intraluminal geometry or mural factors that compro-mise the lumen of the Eustachian tube.The most common cause of intrinsic obstruction is inflamma-tion. Extrinsic mechanical obstruction of the Eustachian tube may be the result of extrinsic compression by adenoid or nasopha-ryngeal tumours. The aims of this research work were essentially to provide insights on the function of the Eustachian tube under varied pathological conditions of the nasopharynx. Subjects were classified into 3 main categories: inflammatory, velopharyngealinsufficiency and tumours groups. The effect of treatment ofthese conditions on auditory tube function was included. Alsothe Eustachian tube of subjects with diseased nasopharynx was correlated with control subjects who had normal nasopharynx and Eustachian tube.Subjects of each group were examined before any treatment was presented. Nasal obstruction was the commonest symptomof the inflammatory and tumour groups. Facial and palatal dis- figurement was the most common of velopharyngeal group. Hearingloss was the commonest aural symptom in the velopharyngeal and tumours group. Tinnitus was the main symptom of the inflammatory group.Hearing affection in the tumour group was most severe (either conductive hearing loss only or combined hearing loss). Also Eustachian tube affection in group of tumours was the most frequent (88

%) then velopharyngeal group (86 %) the inflammatory group (53.3 %).However, the treatment of these disorders varied in its effect on the dysfunction of the Eustachian tube.Treatment of the respiratory tract infection cured the tube malfunction in adults, while in children the treatment did not. This is because children have severe functional dysfunction which was not entirely related to the infection.Cleft palate repair cured the Eustachian tube dysfunction in 50 % of patients especially in younger children.In the tumour group complete surgical -removal of benignnasopharyngeal tumours cured the tubal malfunction. But malig nant nasopharyngeal tumours treated by radiotherapy did not improve or cure the affected tubes.Inflation and deflation tests, used nowadays to estimate the Eustachian tube function, need modification and research to reflect the actual physiology.