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11.1

Keynote Lecture

A clinical perspective on non-middle ear causes of an air-bone gap

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Purpose: The majority of cases of an air-bone gap (as determined by audiometry) are the result of various middle ear pathologies that affect the tympanic membrane or the ossicular chain. However, there are a number of disorders affecting the inner ear that can present with an air-bone gap. The air-bone gap in such cases can be quite large, up to 40 to 50 dB. Furthermore, such a patient typically has otoscopic findings of a normal tympanic membrane and an aerated middle ear. Therefore, such a patient is often mistaken to have stapes fixation due to otosclerosis, resulting in unnecessary middle ear surgery on many occasions. In addition to their clinical importance, these disorders can be considered as experiments of nature, and investigation of their mechanics can provide unique insight into transmission of sound by air and bone within the middle and inner ear.

Material and Methods: This presentation will review our clinical experience with a number of inner ear disorders, all presenting with an air-bone gap (an apparent conductive hearing loss) without vestibular symptoms. These include dehiscence of the superior semicircular canal, enlarged vestibular aqueduct, Paget's disease, intralabyrinthine schwannoma, and occlusion of the round window (by a high jugular bulb, for example).

Results: The presentation will review clinical features of these conditions, possible mechanisms leading to the observed air-bone gap, methods that might permit an accurate diagnosis, and promising areas for future research.

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