

## From the Desk of Editor in Chief



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### **Hearing About Hearing (Impaired) in Maintenance Hemodialysis Patients!**

Some medical problems, such as impaired hearing, have a high prevalence but are rarely discussed. There may be many contributing factors to this finding. First, the incidence of sensorineural hearing loss is reported to be much higher in patients with chronic kidney disease (CKD) than in the general population. Some have reported mild to moderate hearing loss in up to 77 % of CKD population,<sup>1</sup> while severe hearing loss in 46%.<sup>2</sup> Thus, it is advisable for any patient on maintenance hemodialysis to be checked for type and degree of hearing loss. The degree of hearing loss may indicate the extent of damage to auditory function, whereas the type of hearing loss may distinguish between lesions in the outer and middle ear (conductive hearing loss) or the cochlea and neural pathways (sensorineural hearing loss). The most common methods used for assessment are detailed history, otoscopic examination, pure tone and extended high-frequency audiometry, along with some laboratory tests, which can help determine the cause of hearing impairment in this particular population.

A meticulous history can provide a clue for Alport's syndrome, Menier's disease, Cogan's syndrome, Costen's syndrome, Diabetes mellitus, trauma (acoustic), recurrent upper respiratory infections, recurrent ear discharge, intra cranial pathology, use of some ototoxic drugs, some recent malignancy and use of chemotherapeutic agents, use of antibiotics like aminoglycosides, erythromycin, vancomycin, use of high doses of furosemide etc. all can be found with a good history. The duration of hemodialysis and frequency of angio-access-related infection are also important points to be registered with specific interest, as many patients with prolonged/multiple temporary angio-access tend to develop recurrent central line-associated infections and are prone to exposure to vancomycin and amikacin combination on multiple occasions, as this is a common practice to cover both types of bacterial organisms simultaneously.

Otoscopy can be used to assess middle ear and tympanic membrane pathology. This simple examination can rule out very common and often overlooked findings of impacted wax. Audiometry can assess the type and degree of hearing loss ( mild, moderate, or severe). A pure-tone hearing test was performed in a quiet room where the audiometer produced sounds at different frequencies, and the patients recorded their responses. The bone conduction test assesses the inner ear by placing a vibrating device behind the ear and on the forehead, and the results are compared with pure tone tests. Auditory brain stem response was assessed by placing electrodes on the head and attaching them to a computer that recorded the

response of sound frequency; the patient only sat silently during the test. In an auto-acoustic emission test, a probe is placed in the middle ear, which records the response of the inner ear (the inner ear responds to sounds produced in the middle ear). Tympanometry is another test, as the eardrum is a flexible barrier separating the outer ear from the middle ear, which vibrates when sounds from the outer ear hit the eardrum. Tympanometry shows if the eardrum responds well to air pushed in the ear, a small probe placed in the external ear, and a device is attached to the probe, which pushes air into the ear and records a graph on the tympanogram when the eardrum vibrates.

Hearing is an important part of life, and its impairment can affect the quality of life. By performing a proper assessment and addressing the issue, maintenance dialysis patients can be helped. It is also important to avoid unnecessary or irrational use of ototoxic medicines in this population.

### **References:**

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