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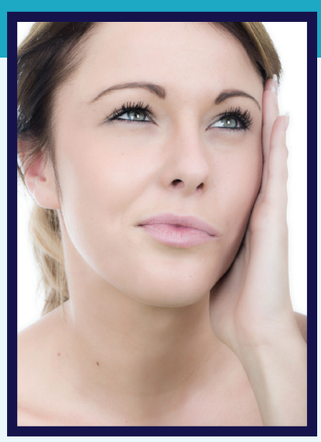
Physician's Update
Spring 2014



The Relationship of Ear Infections and Hearing Loss

Terry R. DeGroot, MD

It has long been clear that otitis media (OM) leads to hearing loss (HL) during the actual episode. Ongoing research and monitoring is now revealing that this HL may have ramifications well beyond the time frame of the acute episode. Of course, OM occurs in both childhood and adulthood and may be acute, recurrent or chronic.

Hearing loss is also a hallmark of acute or chronic external otitis but this conductive HL is generally transient and resolves completely upon cure of the ear canal skin infection.

Otitis media affects almost every child at some point in time. During any episode of acute OM, accumulation of pus and mucus in the middle ear space with associated tissue inflammation and edema leads to conductive HL. Untreated, these factors may lead to permanent HL of both conductive and sensorineural types. Otitis media may cause structural damage such as tympanic membrane perforation and/or scarring or destruction of the middle ear bone structure.

These effects are also present in OM with effusion (OME). This may be present with or without concurrent infection. This mucoid fluid diminishes and distorts the transfer of sound to the cochlea.

Acute viral infections of the middle ear space or within the cochlea itself may lead to notable hearing loss. Fortunately, this loss is typically temporary in nature.

A more recent and interesting finding is that, in particular, the asymmetrical HL caused by unilateral OM may lead to longer term baseline audiological deficits within the central nervous system. Therefore, a misunderstanding of speech may trigger a more permanent misinterpretation of the speech message.

The level of HL associated with acute OM is typically 24dB (ear plug level). If this proceeds to a more mucoid effusion, the loss increases to 45dB (soft conversational speech level).

Adults may also develop acute and/or chronic OM with less frequency but with similar HL acuity issues.

Studies of chronic OM are now clearly identifying associated sensorineural (nerve type) HL. The mechanism is that of damage caused to the auditory nerve cells of the basalar turn of the cochlea. These changes are irreversible. This cellular destruction leads to high frequency HL similar to that caused by significant noise exposure.

Less frequent infectious etiologies of HL include measles, chickenpox, influenza, mumps and both bacterial and viral meningitis. Certain antibiotic therapies utilized for infectious diseases such as OM may also be significantly ototoxic.

In conclusion, it is critically important to treat OM in its various forms seriously and aggressively. Any child or adult who presents with a history of recurrent OM warrants a thorough audiometric evaluation.

Dr. Terry DeGroot has expanded his availability at all three Comprehensive Ear & Hearing locations for medical ear & hearing care including cerumen management.

Terry DeGroot, M.D.

If you have a patient with any of the following symptoms an appointment with Dr. DeGroot is recommended:

- **Sudden hearing loss or noticeable change in hearing**
- **Ringing in the ears**
- **Ear pain or pressure**
- **History of ear wax accumulation**

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Please refer any patients you suspect may have a hearing loss to one of our offices for a complete audiological evaluation!

Cari Marzolf, MA, CCC-A, Audiologist | **Carli Van Harken, HIS, Owner** | **Terry DeGroot, M.D.** | **Kristin Johnston, BA, BC-HIS, Owner**