Symptoms: Plugged Up Ears

By Hamid R. Djalilian, MD

A 58-year-old woman comes into the office complaining about plugged up ears, which started a few months ago and has not changed in intensity. She reported no upper respiratory infection or allergies, and described a popping sound when pinching her nose.

An otolaryngologist told her she has allergies, and started her on a nasal spray. She continues to have symptoms despite the treatment.

She states that she is getting ready for a lapband procedure to help with her weight, which is 300 pounds.

Tympanosclerosis on the tympanic membrane and an air-fluid level was seen after examining her. (Figure 1.) The audiogram showed a mild conductive hearing loss.

What is your diagnosis? See p. 6.

Figure 1. *Otoscopy image of the patient's left ear canal.*

Diagnosis: Fluid in the Ear

By Hamid R. Djalilian, MD

Continued from p. 4

Fluid in the ear is a frequent problem that occurs primarily because of Eustachian tube dysfunction. This can happen during or after an upper respiratory infection and concurrent with allergic rhinitis or nasal allergies. Another under-recognized cause for Eustachian tube dysfunction is acid reflux. Stomach contents can come up to the pharynx and into the nasopharynx, causing irritation of the Eustachian tube's nasal opening. This can cause edema of the Eustachian tube opening and lead to dysfunction and possibly middle ear fluid.

A patient with fluid in the ear should be asked about risk factors of Eustachian tube dysfunction, including a recent upper respiratory infection, symptoms of nasal allergies (e.g., sneezing, postnasal drainage, itching of nose), and reflux symptoms (e.g., heartburn, frequent throat clearing). Obese patients, especially women, may have idiopathic intracranial hypertension and resultant spontaneous cerebrospinal fluid leakage.

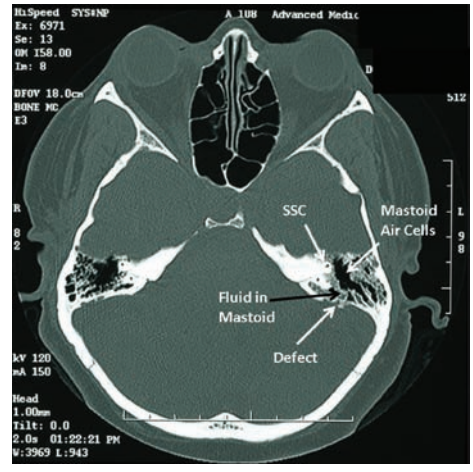

Figure 2. *Axial CT image of the patient at the superior semicircular canal (SSC) level. The defect is of the bone separating the posterior fossa dura from the mastoid, which has caused cerebrospinal fluid to enter the mastoid.*

The cerebrospinal fluid (CSF) is continuously produced in the brain and reabsorbed. Humans have an average 150 cc of CSF surrounding the brain and spinal cord, and produce approximately 450 cc of CSF that has to be resorbed. An abnormally high intracranial pressure can develop if this reabsorption does not occur or any abnormality leads to a disturbance of this system.

Obese patients tend to have a higher venous pressure in the brain, which leads to an increased intracranial pressure. This problem, called intracranial hypertension, can lead to many consequences, including vision loss and headaches. Some patients will develop an increase in CSF pressure to the point where a leakage of the CSF occurs into the mastoid spaces; the processes that cause this are poorly understood. This generally occurs because of erosion of the thin bone separating the mastoid from the dura, which is the brain's covering. This phenomenon is called spontaneous CSF leakage and can occur around the paranasal sinuses, most commonly into the ethmoid and sphenoid sinuses, or the temporal bone. The more aerated the mastoid air cells, the more places leakage can occur.

Patients with spontaneous CSF leakage are generally overweight. A patient with middle ear fluid who does not have a previous history of Eustachian tube dysfunction, upper respiratory infection, or allergic rhinitis should be considered at risk of spontaneous CSF leak. A patient with CSF leakage into the temporal bone may only complain of ear plugging or Eustachian tube dysfunction symptoms. Rarely, patients with a high-flow CSF leak (a large opening in the mastoid and dura) can experience a salty taste in their mouth. This occurs because the CSF drains into the Eustachian tube and is swallowed. The fluid can accumulate in the middle ear and have the appearance of clear fluid in the middle ear space.

A CSF leak creates a corridor through which bacteria can get into the CSF space and lead to meningitis. The longer the patient has had the CSF leak, the higher the chance of meningitis. Recurrent bouts of meningitis are the second most common presenting sign of a spontaneous CSF leakage.

It is not uncommon for patients with spontaneous CSF leakage to have a pressure equalization tube placed in the ear by an unsuspecting otolaryngologist, leading to continued drainage from the ear. The patient is often treated with multiple sets of ear drops, which do not reduce the drainage. Patients with clear middle ear fluid in the absence of allergic rhinitis or an upper respiratory infection need a consultation with an otolaryngologist or neurotologist. Imaging will be required, most commonly a CT of temporal bones and an MRI of internal auditory canals. (Figure 2.)

CT imaging will show a defect in the bone separating the mastoid from the dura, called tegmen. The MRI will confirm the location by showing changes in the adjacent dura. A surgical procedure is needed for closure once the location of the leak is localized. Defects in the mastoid generally can be treated with a postauricular approach. The location of the leak is localized, and the area is sealed using a combination of fascia and fat grafts. Bone defects overlying the middle ear (tegmen tympani) or petrous apex require a middle cranial fossa approach for closure. The repair is successful in more than 90 percent of patients, but may require placement of a drain into the CSF space to reduce the pressure during the healing phase of the surgery.

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