Dr. William Detar:

Hello and welcome to the On-call Consults in Less Than 10 Minutes series on ENT in a Nutshell, a compliment to Headmirror's online survival guide. I'm your host, Will Detar, and today we are joined by Dr. Matt Carlson, a board certified neurotologist. In this episode, we will cover sudden hearing loss. Let's jump right in.

So sudden hearing loss is a symptom of acute or rapidly progressive hearing loss, generally over the course of days, hours, or even more abruptly. Broadly, this is caused by any condition that can lead to conductive, sensorineural, or mixed hearing loss. The chief goal of the acute evaluation is to distinguish conductive causes from sensorineural loss so that timely therapy can be initiated as appropriate.

While this episode will broadly discuss sudden hearing loss, much of the treatment and follow-up will be focused on idiopathic sudden sensorineural hearing loss. Dr. Carlson, can you tell us about the differential diagnosis, including some of the "can't miss" diagnoses?

Dr. Matthew Carlson:

Absolutely. So, as you alluded to, the primary goal when evaluating a patient with sudden hearing loss is to distinguish middle ear effusion from sudden idiopathic sensineural hearing loss. That's really the main goal for most situations, but the differential diagnosis for sudden hearing loss is broad, and that includes idiopathic sudden sensorineural hearing loss, which in many ways, is a diagnosis of exclusion that we'll talk about more.

Vestibular schwannoma, or other retrocochlear lesions, which you won't generally make the diagnosis in the emergency department, but you will send them on a pathway to ultimately get this diagnosis in follow-up. Labyrinthitis, meningitis, auto immune disorders, which may... Both autoimmune disorders and meningitis are more likely to present with bilateral hearing loss. Stroke.

Patients with inner ear malformation may have an initial presentation with sudden hearing loss. Although rare, it might occur in somebody with enlarged vestibular aqueduct. For example, patients with a history of ear trauma, either mechanical, baro, or acoustic. And other conditions that cause conductive hearing loss including otitis externa, otitis media, et cetera. The red flag symptoms that you should look for include bilateral hearing loss or other concomitant neurological symptoms.

Dr. William Detar:

And how do patients with sudden hearing loss typically present?

Dr. Matthew Carlson:

So, most commonly, their main complaint is, not surprisingly, sudden hearing loss, but some patients will also have associated symptoms. And less commonly, but definitely occurring, is the situation where they present with a chief complaint of something else and don't even recognize the hearing loss itself.

So sudden distortion of sound, or a reduced ability to decipher speech. Just ear fullness or pressure. Otalgia may be related depending on the etiology. Tinnitus often associates with a development of hearing loss. Dizziness and vertigo is suggestive of labyrinthitis. The concomitant facial paralysis or other cranial nerve involvement suggests zoster oticus, Ramsey Hunt syndrome, or other skull-base or brain stem processes.

Dr. William Detar:

And what history should we take for these patients?

Dr. Matthew Carlson:

So you'll want to assess if it's unilateral or bilateral, the exact timing and rate of progression, and whether or not there's a fluctuating component to it. You should ask about a history of similar events in the past, notable history of ear surgery or ear problems, including infection. Any antecedent events including trauma, mechanical or baro. Loud noise exposures, viral URI, recent travel to unusual places, new medications, and in particular ask about phosphodiesterase inhibitors, narcotics, NSAIDS, aminoglycosides, and, less commonly, chemotherapeutics, including cisplatin.

You can ask about a history of auto-immune disease or suggestive history that might point you in that direction, including rash, joint pain or ocular symptoms. You should ask about associated symptoms including dizziness, otalgia, otorrhea or cranial neuropathy. Then you should ask about more concerning symptoms including fever, photophobia, altered mental status, diplopia, signs of stroke such as aphasia, dysarthria, headache and lethargy or other symptoms that might suggest a more severe or aggressive neurological process. It's also prudent to ask about diabetes, peripheral vascular disease and smoking, as all these conditions are associated with microvascular disease and an increased risk of developing sudden sensorineural hearing loss

Dr. William Detar:

And what physical exam should we do?

Dr. Matthew Carlson:

So you'll want to perform a full cranial nerve examination with particular attention to the facial nerve. You'll want to examine the eye for redness, scleritis, episcleritis or any gross examinable features on a ophthalmologic evaluation. An otoscopy, you're going to want to examine the ear canal, the tympanic membrane in the middle ear. Again, the primary goal of the examination is to determine if there's an obvious cause for conductive hearing loss, such as cerumen, otitis externa, gross signs of trauma or middle ear fluid and a normal orthoscopic examination is expected in cases of idiopathic sudden sensorineural hearing loss.

You'll perform a 512 hertz tuning fork examination. For patients with middle ear effusion, typically the Weber will lateralize to the affected ear and bone may be greater than air conduction, particularly if there's at least a 20 dB air-bone gap. In cases of sudden sensorineural hearing loss, the Weber will lateralize to the contralateral ear, and typically air will be greater than bone conduction.

Dr. William Detar:

And what diagnostic work-up do you order in the acute setting?

Dr. Matthew Carlson:

So your diagnostic work-up is going to be directed by your prioritized differential diagnosis. A temporal bone CT scan may be indicated for evaluation of trauma, or complicated otitis media, or complicated otitis externa. A head CT may be ordered if you're worried about acute stroke or some other central process. In most cases, an audiogram cannot be readily obtained in the ER setting, so patients will generally follow up shortly after discharge from the emergency department for an audiogram to evaluate for sensorineural hearing loss or other types of hearing loss.

And an important point, although there are exceptions in most cases that MRI is not obtained in the very acute setting. If the diagnosis of asymmetrical or sensorineural hearing loss is established from

the audiogram, an MRI will be electively ordered to evaluate for retrocochlear pattern hearing loss and namely, specifically, vestibular schwannoma later on.

An LP may be considered in cases where meningitis is suspected and generally a shotgun laboratory workup is discouraged in cases of presumed sudden sensorineural hearing loss, and rather, laboratory testing should be obtained based on directing history, such as symptoms suggestive of Lyme disease, or a history is that's concerning for syphilis, HIV, or other autoimmune conditions.

Dr. William Detar:

So Dr. Carlson, can you tell us about the acute treatment for this patient?

Dr. Matthew Carlson:

So for this podcast, we're going to focus on idiopathic sudden sensorineural hearing loss. Of course, all the other conditions that result in sudden hearing loss would be managed differently based on the underlying etiology. But for idiopathic sudden sensorineural hearing loss, there's three mainstream treatments. The first is oral steroid therapy. The second is intratympanic steroid therapy. And the third is hyperbaric oxygen therapy.

The latter two, intratympanic and hyperbaric oxygen therapy, are not usually started in the emergency department setting, but are more commonly started in the outpatient clinic after they have their initial follow-up. But if you have a case of presumed idiopathic sensorineural hearing loss, there is a therapeutic window and the earlier you initiate therapy, probably the better the outcome is, so you could start oral steroid therapy in the emergency department alongside a PPI for GI prophylaxis.

A typical dosing is depending on weight, but common dosing would be 60 milligrams of prednisone for an average weight adult for seven to 14 days, peak dose, and then a subsequent taper. In the outpatient clinic, you may do one to three injections with steroid therapy, intratympanic steroid therapy, and less commonly, only a small fraction of patients will actually pursue a hyperbaric oxygen therapy.

There generally isn't any surgical or procedural therapies. You may consider a neurology consult if you're worried about some other more severe or involved neurological process, but for idiopathic sudden sensorineural hearing loss, this wouldn't be indicated.

Dr. William Detar:

And what disposition and follow up do you advise?

Dr. Matthew Carlson:

So patients who are presenting with presumed idiopathic sudden sensorineural hearing loss are generally managed in the outpatient setting. Patients should follow up acutely to obtain an outpatient audiogram. And then if asymmetrical sensorineural hearing loss is found, an MRI should be ordered to look for retrocochlear pathology. In the outpatient setting, they can also undergo additional oral steroid therapy or intratympanic, and less commonly, hyperbaric oxygen therapy.

It's an important point, I think, to drive home that an MRI should be obtained if sensorineural hearing loss improves spontaneously or with steroid therapy. Sometimes patients will have a natural improvement in their hearing, even without treatment of sensorineural hearing loss, and they'll intuitively believe that... Of course, they don't have a tumor as a cause, but in fact, some tumors are steroid responsive also. So regardless of their improvement, you should get an MRI if they have asymmetrical sensorineural hearing loss.

Generally, admission is reserved for people with more concerning symptoms suggestive of stroke or meningitis, or a more aggressive neurological process. For patient counseling, early followup is important, even if their symptoms spontaneously improve, and they should be instructed to seek medical attention if other neurological symptoms develop before the regularly scheduled follow-up.

Dr. William Detar:

So that concludes our sudden hearing loss episode for On-call Consults in Less Than 10 Minutes. As always, we appreciate you joining us, and thank you, Dr. Carlson.