Sudden hearing loss can be frightening for patients—and challenging for clinicians. One of the many causes is sensorineural hearing loss (SNHL); early recognition and treatment may improve the likelihood of hearing recovery.

Recently, the American Academy of Otolaryngology–Head and Neck Surgery Foundation published new guidelines on the diagnosis and management of sudden hearing loss in adults; the focus of the recommendations is on sudden SNHL.1 Highlights of these guidelines are presented here.

BACKGROUND

Working definition. The guideline panel defined sudden SNHL as a hearing loss of at least 30 dB that affects at least 3 contiguous frequencies and occurs over a 72-hour period.1 An abnormality of the cochlea, auditory nerve, or higher aspects of central auditory perception or processing is involved.

Causes. Up to 90% of cases of sudden SNHL are idiopathic at initial presentation (Table); however, vascular, viral, or multiple causes are typically implicated.2 Among the causes of sudden SNHL that need to be recognized and addressed early are vestibular schwannoma (acoustic neuroma), stroke, and malignancy.3

Epidemiology. The incidence of sudden SNHL is reported to be from 5 to 20 per 100,000 population; some estimates are as high as 160 per 100,000.4,5 In the United States, about 4000 cases occur each year.

EVALUATION

History. The first step is to distinguish SNHL from conductive hearing loss (CHL) in a patient who presents with sudden hearing loss. Ask the patient about recent trauma, external ear and canal pain, ear drainage, fever, and other systemic symptoms.1 Patients with sudden SNHL often report tinnitus, ear fullness or pressure, and vertigo; however, these symptoms may also be associated with CHL.

Physical examination. Inspect the ear canals and visualize the tympanic membranes. Causes of CHL include cerumen impaction, middle ear fluid, otitis media, foreign bodies, perforated tympanic membrane, canal edema from otitis externa, otosclerosis, trauma, and cholesteatoma.1 The otoscopic examination typically reveals abnormalities in patients with CHL, while otoscopic findings are usually normal in those with SNHL. Traditionally, the Weber and Rinne tuning fork tests have been used to distinguish SNHL from CHL. Although the results of these tests can be misleading,6,7 the guideline panel recommends that tuning fork tests be used to confirm audiometric findings.

A Weber test is performed by placing the fork on the patient’s forehead; look for lateralization of sound to one side. If the sound lateralizes to the affected side, it is likely that the hearing loss is conductive. If the sound lateralizes to the opposite ear, the loss is probably sensorineural.

The Rinne test is done to compare bone conduction with air conduction for both ears. An abnormal result of a Rinne test indicates a conductive hearing loss of at least 20 dB.

Patients with presumptive sudden SNHL should be assessed for bilateral hearing loss, recurrent episodes of sudden hearing loss, and focal neurologic findings. These clinical features can point to an underlying cause of the hearing loss, such as autoimmune conditions, metabolic disorders, bilateral Meniere disease, and certain neurological disorders.

Diagnostic studies. A CT scan of the head is not warranted during the initial evaluation of patients with sudden SNHL. The scan provides no useful information that would affect initial management, and it poses significant risks, including radiation exposure and adverse effects of intravenous contrast. Reserve CT for patients with focal neurological find-

### Table – Causes of sensorineural hearing loss

<table>
<thead>
<tr>
<th>Cause</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Infectious</td>
<td>Viral and bacterial infections (including Lyme disease)</td>
</tr>
<tr>
<td>Vascular</td>
<td>Stroke, other thromboembolic phenomena, hypercoagulable states</td>
</tr>
<tr>
<td>Neoplastic</td>
<td>Vestibular schwannoma, malignancy</td>
</tr>
<tr>
<td>Inflammatory</td>
<td>Immune-mediated or in conjunction with other factors</td>
</tr>
<tr>
<td>Idiopathic</td>
<td>–</td>
</tr>
</tbody>
</table>

Data from Stachler RJ et al. Otolaryngol Head Neck Surg. 2012.1
ings, a history of trauma, or chronic ear disease.

The guideline panel also advises against routine laboratory tests in patients with idiopathic sudden SNHL. A specific test may be considered if the history indicates it might be useful in identifying a potential cause of the hearing loss, such as drawing Lyme titers in endemic regions.

Further workup. For patients with idiopathic sudden SNHL, order an MRI scan, auditory brainstem response (ABR), or audiometric follow-up to detect retrocochlear pathology. A small but significant percentage of these patients have an underlying lesion, most often a vestibular schwannoma.1 In addition, MRI can help identify other causes of sudden SNHL, such as cochlear inflammation or multiple sclerosis, or it may reveal evidence of an underlying cause of the sudden SNHL, such as small vessel cerebral ischemia. The overall percentage of MRI abnormalities directly related to sudden SNHL ranges from 7% to 14%.8,9 Thus, MRI has the highest yield of any diagnostic test in the setting of sudden SNHL.1 If MRI is contraindicated (eg, in patients with pacemakers or other metallic implants), an alternative is a fine-cut CT scan of the temporal bones with contrast.

The ABR test is highly sensitive for vestibular schwannomas that are larger than 1 cm; however, its reported sensitivity for smaller schwannomas varies from 8% to 42%.10,12 Consider the ABR test for the initial evaluation of older patients in whom the consequences of a missed diagnosis of a small tumor may be less worrisome than in younger patients.

While the guideline panel generally recommends MRI and ABR to detect any underlying retrocochlear pathology in patients with sudden SNHL, serial audiometry is an option in selected patients. For those who have some residual hearing after the initial episode of sudden SNHL, progression of hearing loss detected on repeated hearing tests is suggestive of retrocochlear pathology.

MANAGEMENT

Spontaneous recovery. Some patients recover completely without medical intervention, often within the first 3 days; others regain their hearing slowly over a 1- to 2-week period. The greatest spontaneous improvement in hearing occurs during the first 2 weeks; late recovery is rare.

Corticosteroids. For patients with idiopathic sudden SNHL, corticosteroids may be offered as initial therapy. These agents have sites of action in the inner ear, and they are effective in the treatment of viral, vascular, syphilitic, autoimmune, endolymphatic hydrops (Meniere disease), and other causes of hearing loss. The recommended regimen consists of oral prednisone given at 1 mg/kg/d in a single (not divided) dose, with the usual maximum dose of 60 mg/d, and treatment duration of 10 to 14 days. Corticosteroid therapy seems to be most effective during the first 2 weeks after the episode of sudden hearing loss; little benefit is seen after 4 to 6 weeks.

Consider intratympanic corticosteroid perfusion for patients in whom systemic corticosteroids are ineffective. The corticosteroid may be delivered by a needle through the tympanic membrane, or it may be placed into the middle ear through a tympanostomy tube or a myringotomy. The intratympanic route avoids the significant adverse effects of additional systemic corticosteroid therapy.

Other treatments. Hyperbaric oxygen therapy may be beneficial as an adjuvant intervention if this treatment is started within 3 months of the onset of idiopathic sudden SNHL. The greatest benefit has been seen in patients with severe to profound hearing loss.1

Antivirals, thrombolytics, vaso-dilators, vasoactive substances, and antioxidants have no role in the treatment of idiopathic sudden SNHL because their effectiveness has not been demonstrated in this setting.1

FOLLOW-UP

Within 6 months of the diagnosis of idiopathic sudden SNHL, order follow-up audiometric evaluation. If the patient’s hearing loss is permanent, auditory rehabilitation may be required. Counsel patients who have residual hearing loss about the potential benefits of hearing aids and assistive listening devices.

A list of organizations that provide information and support for patients with hearing loss can be found on the web site of the NIH National Institute on Deafness and Other Communication Disorders: http://www.nidcd.nih.gov/ directory/.

REFERENCES: