

An Short note on Sudden Hearing Loss

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ABSTRACT -

Progressive bilateral hearing loss. Her history is notable for breast cancer treated with chemotherapy over the past year, and she has no history of previous ear problems. Initially, she did not seek treatment for her hearing issue as it was considered to be a side effect of her ongoing chemotherapy treatment and Vigilance tasks.

Keywords: Tinnitus; Audiology; Hearing Disorders; Bibliometrics.

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Short Note

Sudden bilateral hearing loss is commonly due to a systemic process such as a metabolic or an auto-immune disorder. It is necessary to perform a metabolic workup and to obtain imaging in any patient presenting with sudden bilateral hearing loss, particularly in the context of known malignancy. The metabolic workup includes looking at blood sugar, cholesterol, red blood cells, platelets, and markers of autoimmunity. The type of MRI ordered in these clinical scenarios has important implications for the resolution of anatomic detail that will be visible. With a standard MRI of the brain, 5-mm tissue slices are used in various sequences to produce a single image. In these relatively large slices, small abnormalities in the IACs, cochlea, and vestibule may be missed, and a standard brain MRI may even fail to visualize the IACs altogether. If a non-contrast brain MRI is all that is available, then the T2 sequence is the best set of images to evaluate the IACs for a tumor. Normally, the IACs are mostly filled with cerebrospinal fluid (CSF). In the T2 sequence, an IAC tumor will appear dark, while CSF appears white. With contrast, the mass lesion will appear white due to its high vascularity and uptake of the contrast material (gadolinium). On IAC screening MRI protocol, the T1 post-contrast MRI is performed with 3-mm slices, which provide more details than a brain MRI. While newer brain MRI protocols utilize even thinner imaging slices (e.g., 1-mm with multiplanar reformation sequence [MPR]) to reveal more structural detail, the temporal bone region can sometimes appear indistinctly. For these reasons, another option for evaluating tumors of the inner ear is through an MRI of the IAC using the T2-weighted fast spin-echo (FSE) protocol. The T2-weighted FSE MRI, also referred to as three-dimensional constructive interference in steady-state (CISS) MRI or 3D MPR/FIESTA, has the ability to show high-resolution details of cranial nerves and spaces involving or adjacent to the inner ear structures. On CISS MRI, potential tumors appear dark, and CSF and inner ear fluids appear bright.

The majority of IAC and cerebellopontine angle (CPA) lesions are benign tumors, such as meningioma and vestibular schwannoma. Less than one percent of CPA lesions involve metastases to the IAC, with the most common sources being breast cancer, lung cancer, gastric cancer, and melanoma. The possible routes of temporal bone metastasis are hematogenous dissemination, direct extension from local preexisting lesions, and leptomeningeal carcinomatosis through CSF spread. Although leptomeningeal carcinomatosis occurs in only five percent of cancer patients, it is being diagnosed with increasing frequency as both patient life expectancy and quality of neuroimaging studies have improved over the years. For metastases involving the IAC, neoplastic spread into the meninges and CSF is generally considered the primary mechanism of bilateral tumor deposits.