Imaging Case of the Month
Sudden Onset Hearing Loss and Vertigo Just Before Posterior Inferior Cerebellar Artery Infarction (Lateral Medulla Syndrome)

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A 49-year-old woman presented with left-sided sudden hearing loss and tinnitus 1 (Day 1). Audiometric testing revealed a downsloping sensorineural hearing loss and 25% speech discrimination scores at 50 dBHL. She was diagnosed with left idiopathic sudden sensorineural hearing loss (SSNHL) and was managed with intravenous prednisolone administration (beginning at 60 mg/d).

On Day 2, she experienced vertigo and, in the emergency department, was found to have a left-beating nystagmus with a torsional component and no other cerebellar signs or symptoms. On Day 6, she reported a worsening left-sided occipital headache. This was accompanied by mild ataxia, numbness of her right upper and lower extremities,
Diffusion (diffusion-weighted imaging) and T2-weighted magnetic resonance imaging (MRI) images revealed a high-signal intensity in the left vertebral and posterior inferior cerebellar artery (PICA) territories of the cerebellum (Fig. 1, A–C). However, magnetic resonance angiography revealed no abnormalities of the cerebral artery. We speculated that vascular reperfusion may occur. Thereafter, both glycerin to reduce brain edema and sodium ozagrel (an antiplatelet agent) were administered. On Day 15, MRI showed a new infarction in the lateral medulla and improvement of ischemic changes in the cerebellum (Fig. 1, D–F). She was placed on aspirin and did not have progression of her condition. After rehabilitation, ataxia of her extremities subsided, but mild numbness remained. After treatment (Day 18), her left-side hearing impairment became limited to only higher frequencies. Otoacoustic emissions showed no responses at 2 kHz or higher. Auditory brainstem responses revealed prolonged latencies of the left ear. Although one would predict that the hearing loss and vertigo in this patient are more likely to be associated with ischemia in the anterior inferior cerebellar artery (AICA) territory (1), the MRI showed ischemic changes in the territory of the left PICA and vertebral artery and was a rare case of SSNHL occurring just before lateral medulla syndrome. Indeed, only 1% of patients experience sudden onset hearing loss because of a non-AICA territory vertebrobasilar ischemic stroke (1). SSNHL occurring before non-AICA territory infarction is mostly associated with infarcts in the territory of the PICA (1). In our patient, we speculate that numerous infarctions might have occurred in the inner ear artery and vertebrobasilar artery territories caused by vertebral artery dissection over several days. Patients should be counseled regarding the rare risk of a PICA territory infarct or early lateral medulla infarction syndrome (Wallenberg syndrome) after the onset of SSNHL symptoms.

**REFERENCE**