JCN Open Access LETTER TO THE EDITOR
pISSN 1738-6586 / eISSN 2005-5013 / J Clin Neurol 2021;17(3):476-477 / https://doi.org/10.3988/jcn.2021.17.3.476

Cerebral Venous Sinus Thrombosis Presenting as Ménière's-Disease-Mimicking Symptoms

Sungjoon Yoon
Han Sang Lee
Matthew Jung
Seol Ah Lee
Keun-Hwa Jung

Department of Neurology,
Seoul National University Hospital,
Seoul, Korea

Dear Editor,

Cerebral venous thrombosis (CVT) is a rare cause of stroke with various clinical presentations, generally starting with severe headache, papilledema, or seizure.[1] We are aware of only a few published reports of CVT with unilateral vestibulocochlear symptoms.[2,3] Here we describe one such rare case.

A 47-year-old female visited the emergency department with a 1-hour history of vertigo and a 2-day history of ear fullness, hearing difficulty in the left ear, and left temporal headache. She denied other neurologic symptoms. She had myoma uteri with menorrhagia, had taken estradiol for 3 weeks, and had no vascular risk factors. Videonystagmography revealed right-beating spontaneous nystagmus after head shaking, and catch-up saccades when thrusting the head to the left side. Pure-tone audiometry (PTA) showed mild left sensorineural hearing loss (Fig. 1A). However, cranial nerve, motor, sensory, and cerebellar function tests, and opthalmoscope and otoscope examinations were unremarkable. Although her symptoms were suspicious of left labyrinthitis, the possibility of vascular etiology was considered. Brain CT showed hyperattenuation in the left transverse sinus. Brain magnetic resonance imaging with angiography and venography revealed a susceptibility artifact and poor visualization of the left transverse sinus to the distal internal jugular vein (IJV) (Fig. 1C–E). No parenchymal lesion or significant stenosis of the intracranial and neck arteries was noted. The thrombosis panel were unremarkable.

Estradiol, which is a risk factor for CVT, was immediately discontinued, and uterine myomectomy was recommended and performed. Since her hemoglobin level was 8.5 g/dL due to menorrhagia, an iron supplement was prescribed whereas an antithrombotic agent was not. Nonetheless, her symptoms improved, the PTA was normalized at a 1-month follow-up (Fig. 1B), and the thrombus burden was decreased in CT venography at a 3-month follow-up (Fig. 1F). No neurologic symptoms or menorrhagia was observed during the 6-month follow-up period.

This case mimicked an acute attack of Ménière's disease (MD). Disruption of the endolymphatic drainage increases the endolymphatic volume and pressure in the membranous labyrinth, which manifests as endolymphatic hydrops (a key feature of MD).[4-6]

Venous insufficiency mimics this process by increasing the pressure of the cerebrospinal fluid transmitted to the perilymphatic and endolymphatic spaces via the cochlear aqueduct and Reissner's membrane.[4,7] Therefore, the IJV draining the inner ear suggests a causal relationship between the CVT in the IJV and ipsilesional vestibulocochlear symptoms in this case.

There are some reported cases of transverse sinus thrombosis with either cochlear or vestibular symptoms.[2,3] These cases are similar to the present case in showing discrepancy between cochlear and vestibular involvement, which can be explained by differences in the tolerability of the inner ear to venous insufficiency.

This case report has documented unilateral vestibulocochlear involvement with objective

Received February 19, 2021
Revised April 27, 2021
Accepted April 27, 2021

Correspondence
Keun-Hwa Jung, MD, PhD
Department of Neurology,
Seoul National University Hospital,
Seoul National University
College of Medicine,
101 Daehak-ro, Jongno-gu,
Seoul 03080, Korea
Tel +82-2-2072-2278
Fax +82-2-2072-7553
E-mail jungkh@gmail.com

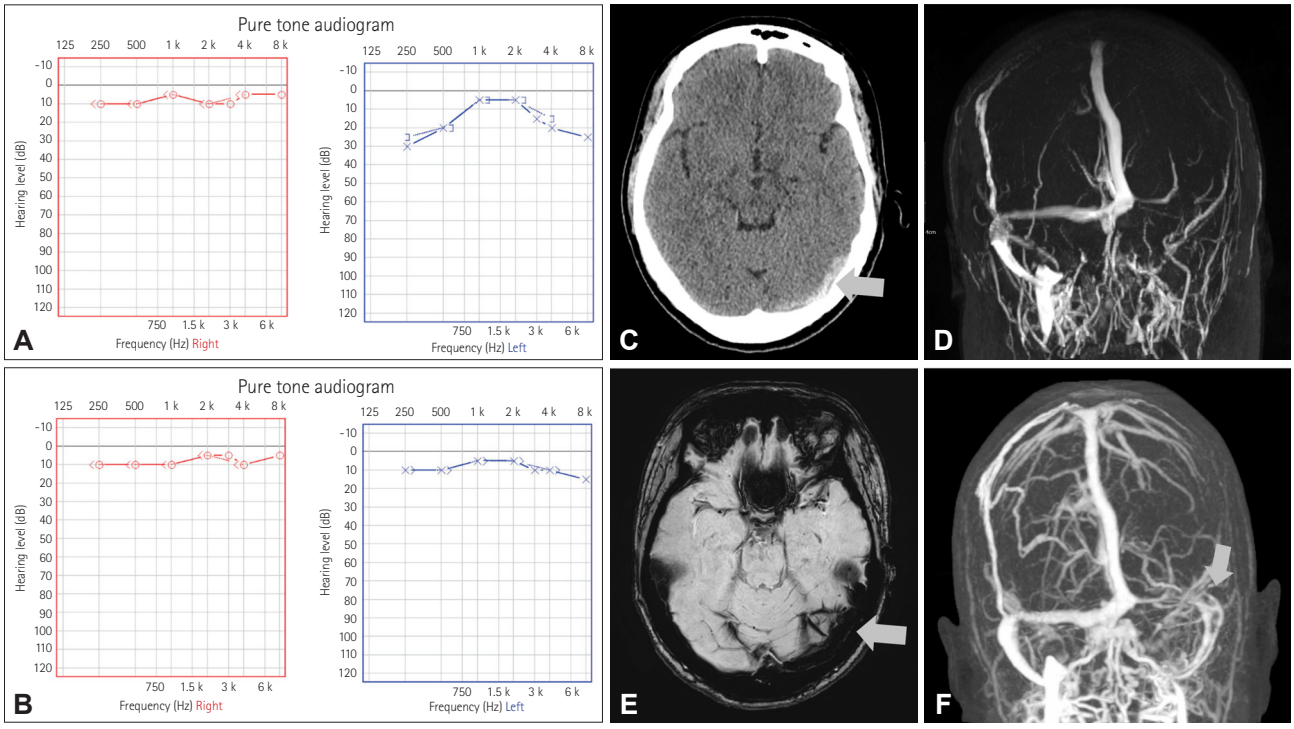

Fig. 1. No visualization of left transverse sinus, sigmoid sinus, or distal internal jugular vein, indicating probable dural venous sinus thrombosis. A, B : Pure-tone audiometry was conducted during the ictal period (A) and after the resolution of vestibulocochlear symptoms (B). C : Hyperattenuation in the left transverse sinus (arrow) in nonenhanced brain CT. D: Probable dural venous sinus thrombosis in time-of-flight MR venography. E: Blooming artifact in the left transverse sinus (arrow) in susceptibility-weighted MRI. F: Decreased burden of cerebral venous thrombosis in the left transverse sinus is re- vealed (arrow) in the CT venography performed 3 months after discharge.

measurements and clarification of the risk factor of CVT. Therefore, physicians encountering patients with MD-mimicking symptoms should not overlook the possibility of CVT.

Author Contributions

Conceptualization: Keun-Hwa Jung. Writing—original draft: all authors. Writing—review & editing: Han Sang Lee, Keun-Hwa Jung.

ORCID iDs

Sungjoon Yoon	https://orcid.org/0000-0002-5815-8842
Han Sang Lee	https://orcid.org/0000-0003-2881-0366
Matthew Jung	https://orcid.org/0000-0002-5893-3685
Seol Ah Lee	https://orcid.org/0000-0002-1285-1334
Keun-Hwa Jung	https://orcid.org/0000-0003-1433-8005

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

Acknowledgements

None

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