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Neuro-Behçet's Disease Presenting as Isolated Vestibular Syndrome

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Dear Editor,

Behçet's disease (BD) is a chronic relapsing multisystem disease that can involve the skin, mucous membrane, eyes, and central nervous system (CNS). The CNS has been reported to be involved in from 4% to 49% of BD patients, mostly presenting as focal neurologic deficits, cognitive impairments, or psychiatric symptoms.[1] Herein we report a neuro-BD patient who presented with an isolated vestibular syndrome.

A 46-year-old woman presented with spontaneous vertigo and headache that had first appeared 2 days earlier. Her body temperature was 38.1°C. Examination revealed aperiodic alternating nystagmus (aPAN) (Fig. 1A). The left-beating nystagmus changed into right-beating during rightward gaze (Fig. 1B). Head-impulse tests were normal. Persistent geotropic nystagmus was observed after turning the head to either side while supine (Fig. 1C), which did not respond to repeated canalith repositioning maneuvers. Rotatory chair test revealed increased gains of the vestibulo-ocular reflex (VOR) (Fig. 1D), along with diminished tilt suppression of the postrotatory nystagmus. The patient showed leukocytosis of 13,640/μL (66% neutrophils) and elevations of the erythrocyte sedimentation rate (26 mm/h) and C-reactive protein (7.8 mg/dL). Serologic tests for viral and autoimmune antibodies were all negative except for human leukocyte antigen (HLA)-B51 positivity. Brain MRIs showed no responsible lesion, and cerebrospinal fluid (CSF) examination showed pleocytosis [white blood cells (WBCs) at 18/mm^3 and 116 mg/dL protein].

Five days later, the vertigo worsened making her unable to stand unaided in association with visual floaters in her left eye. The aPAN was still evident without visual fixation (Supplementary Video 1 in the online-only Data Supplement). The patient also had a maculopapular rash on her trunk and extremities. A slit-lamp examination revealed WBCs with media opacity in the vitreous body of the left eye, suggesting intermediate uveitis. Under the suspicion of a limited form of neuro-BD involving the brainstem and cerebellum, she was placed on 1 g/day of intravenous methylprednisolone for 5 consecutive days and 20 mg/day of baclofen. Her vertigo, visual disturbance, and headache improved markedly during the following week, along with partial improvement of the aPAN.

Recurrent oral and genital ulcers combined with ocular involvement constitutes the clinical hallmark of BD.[1] Nonparenchymal neuro-BD can present as recurrent rhombencephalitis in association with pleocytosis on CSF analysis:[1] although the diagnosis of neuro-BD requires systemic manifestation, 3% of neuro-BD can herald the systemic mucocutaneous symptoms with a time span of up to 9 years.[2] Moreover, neuro-BD can be diagnosed in those with uveitis and CNS inflammation postmortem without any evidence of a mucocutaneous presentation.[3] Thus, neuro-BD can be suspected in patients presenting with relapsing or progressive ataxia in association with HLA-B51 positivity, CSF pleocytosis, and a dramatic response to steroids.[4]

Periodic alternating nystagmus (PAN) refers to a spontaneous nystagmus that periodically

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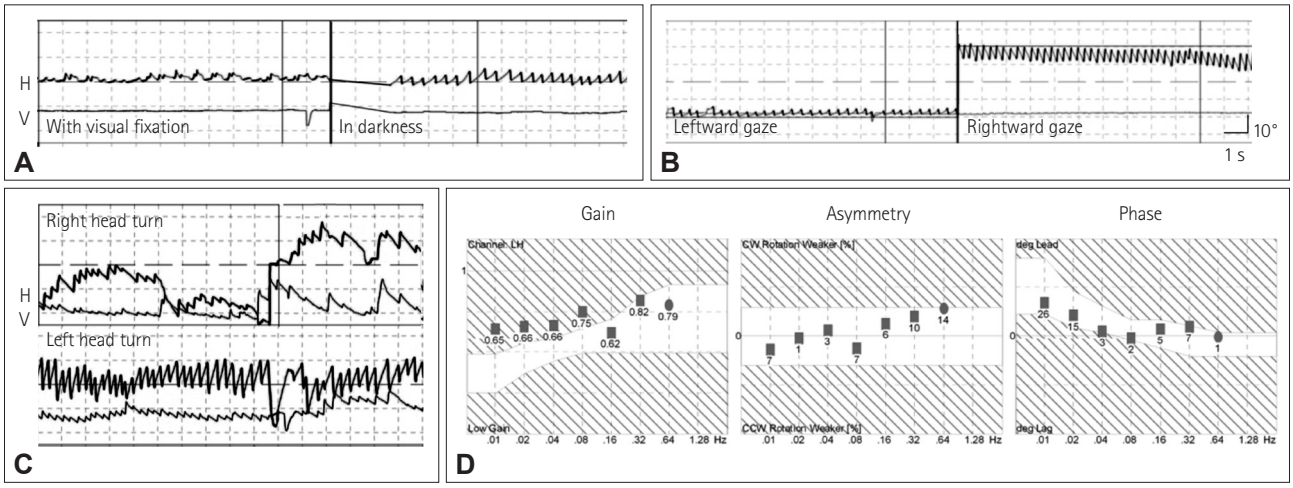

Fig. 1. Neurotologic findings of the patient. A: Video-oculography shows aperiodic alternating nystagmus in the light. The left-beating nystagmus is prominent in darkness with an exponentially increasing slow-phase velocity. B: The patient shows left-beating nystagmus during leftward gaze, which reverses to right-beating during rightward gaze. C: Persistent geotropic nystagmus is observed after turning the head to either side while supine. D: The rotatory chair test shows increased gain of the vestibulo-ocular reflex on sinusoidal harmonic acceleration. H: horizontal position of the eye, V: vertical position of the eye.

reverses its horizontal direction with a typical periodicity of 90–120 seconds.[5] Meanwhile, aPAN refers to a horizontal nystagmus that reverses direction without periodicity of the cycles, thereby presenting relatively irregular and short cycles of alternating nystagmus.[5] aPAN can be observed in patients with a lesion involving the lateral medulla or vestibulocerebellum.[6,7] The mechanism of aPAN is explained by a hyperactive VOR from disinhibited velocity storage mechanism (VSM), along with partially preserved vestibular repair mechanism that are normally calibrated by visual or otolithic inputs.[5] In contrast, PAN is usually observed in lesions involving the nodulus and ventral uvula,[8,9] and it is explained by damage to the cerebellar inhibitory projection along with an intact vestibular nuclear complex.[6,10] A particularly interesting observation in our patient was that the direction of aPAN changed in relation to the removal of fixation. This implicates the role of visual inputs in calibrating the VSM.[5] Moreover, persistent geotropic nystagmus and diminished tilt suppression also indicate that deranged otolithic modulation on the VSM may have contributed to generation of the aPAN.[9]

While neuro-BD mostly involves the brainstem or cerebellum, only 25% of patients reportedly show abnormal ocular motor findings such as spontaneous horizontal, head-shaking, positional nystagmus, canal paresis, or oculopalatal tremor.[11] Since vestibular deficits may precede or represent the early sign of neuro-BD,[11] a careful neurotologic evaluation can aid in detecting dormant central vestibulopathy in patients with neuro-BD.

This study followed the tenets of the Declaration of Helsinki and was performed according to the guidelines of Institutional Review Board of Korea University Anam Hospital (2019AN0529).

Supplementary Video Legend

Video 1. The patient shows aperiodic alternating nystagmus, with horizontal nystagmus that reverses direction without periodicity of the cycles (varying from 0.5 to 5 Hz).

Supplementary Materials

The online-only Data Supplement is available with this article at https://doi.org/10.3988/jcn.2020.16.3.499.

Author Contributions

Conceptualization: Sun-Uk Lee. Formal analysis: all authors. Funding acquisition: Sun-Uk Lee, Ji-Soo Kim. Visualization: Hyo-Jung Kim. Writing—original draft: Euyhyun Park, Sun-Uk Lee. Writing—review & editing: Sun-Uk Lee, Jeong-Yoon Choi, Ji-Soo Kim.

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Conflicts of Interest

Drs. Park, Lee, H.J. Kim, Choi, Im, and Yu report no disclosures.

Dr. J.S. Kim serves as an associate editor of Frontiers in Neuro-otology and on the editorial boards of the Journal of Clinical Neurology, Frontiers in Neuro-ophthalmology, Journal of Neuro-ophthalmology, Journal of Vestibular Research, Journal of Neurology, and Medicine.

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