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Case report

Usefulness of B-scan ocular ultrasound images for diagnosis of optic perineuritis

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ABSTRACT

Purpose: This study was performed to examine the usefulness of B-scan ocular ultrasound images for the diagnosis of optic perineuritis.

Observations: A 72-year-old woman developed nonpainful blurred vision in her left eye. At the first ophthalmological consultation, she had optic disc swelling and choroidal folds in both eyes and subretinal fluid in the left eye. She was referred to our clinic 1 month after symptom onset. At the first visit to our clinic, she still complained of blurred vision. She was found to have mild vitreous cells in the left eye and optic disc swelling in both eyes. However, the choroidal folds had already resolved in both eyes. B-scan ultrasound images displayed the optic nerve sheath as a highly reflective circle with shadowing around the optic disc in both eyes and scleral thickening in the left eye with fluid in sub-Tenon's space. Bilateral optic perineuritis with posterior scleritis seemed highly plausible. Magnetic resonance imaging with intravenous contrast revealed increased signal intensity around the optic nerve (i.e., the "tram track sign") in both eyes, which was consistent with optic perineuritis.

Conclusion and importance: Optic perineuritis is a rare inflammatory disorder involving the optic nerve sheath. Although magnetic resonance imaging is reportedly useful for diagnosis of this disease, no previous reports have described B-scan ultrasound imaging for this purpose. We herein provide the first report of a patient suspected to have optic perineuritis based on B-scan images. B-scan ultrasound may be useful for diagnosis of optic perineuritis, especially with inflammation surrounding the optic nerve.

1. Introduction

Optic perineuritis (OPN) is a rare orbital inflammatory disease in which the specific target tissue is the optic nerve sheath. Patients typically experience acute or subacute visual loss, eye pain, and a paracentral scotoma or an arcuate defect. If the inflammation spreads to the extraocular muscles and sclera, patients develop pain with eye movement, diplopia, and conjunctival injection. Diagnosis of OPN is usually dependent on magnetic resonance imaging (MRI) features.^{1–3} Enhancement surrounding the intraorbital optic nerve in fat-suppressed, contrast-enhanced MRI is definitive for a diagnosis.⁴ In contrast, no reports have described the characteristics of OPN by other imaging techniques, including computed tomography or ultrasound. We herein report a case in which OPN was suspected by B-scan ultrasound images and confirmed by MRI.

2. Case report

A 72-year-old woman developed nonpainful blurred vision in her left eye. The patient had a history of angina pectoris and well-controlled diabetes mellitus. She also had a history of liver enzyme elevation secondary to systemic corticosteroids; the patient did not remember the reason for which she was taking the corticosteroids and had not been on systemic steroids since then. She had no history of ophthalmologic disease. At the first ophthalmological consultation, she had optic disc swelling and choroidal folds in both eyes and subretinal fluid in the left eye (Fig. 1). Her best-corrected visual acuity (BCVA) was 20/16 in the right eye and 20/29 in the left eye. The critical flicker-fusion frequency (CFF), which is impaired in patients with optic nerve damage or retinal damage, was low at 24 Hz in the right eye and 22 Hz in the left eye (reference range, 52.5 ± 4.4 Hz).⁵ She was followed up by the same doctor for 1 month with steroid eye drops, but she was not treated with systemic therapy. Her symptom did not improve, and she was referred to Hiroshima University Hospital 1 month after symptom onset.

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Fig. 1. Fundus photographs and OCT images at the time of disease onset. Fundus photography of both eyes shows optic disc swelling with disc hemorrhage and choroidal folds. OCT images show choroidal folds in both eyes and serous retinal detachment in the left eye.

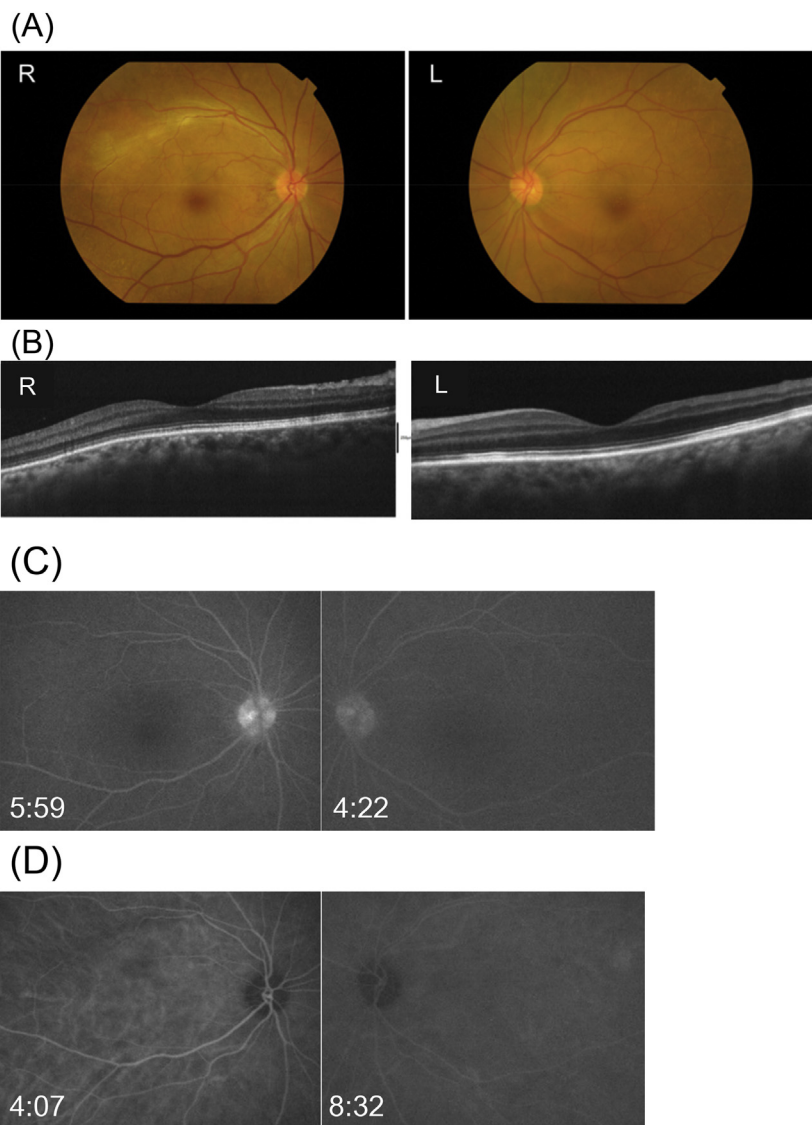


Fig. 2. Fundus photographs and OCT images, FA, and indocyanine green (ICG) angiography at the time of presentation to our hospital. (A) Fundus photography of both eyes shows optic disc swelling with disc hemorrhage, which had improved compared with the findings of the previous doctor. (B) The OCT image shows disappearance of the choroidal folds in both eyes and serous retinal detachment in the left eye. (C) FA shows slight hyperfluorescence of both optic nerves but no leakage or pooling. (D) ICG angiography shows no leakage or dark spots characteristic for VKH. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

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