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Peripapillary Hyperreflective Ovoid Mass-Like Structures in a Patient with Nonarteritic Anterior Ischemic Optic Neuropathy

Shinji Makino (MD, PhD)[1*]

[1]Department of Ophthalmology, Jichi Medical University, Shomotsuke, Tochigi 329-0498, Japan

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***Corresponding author:** Shinji Makino
Department of Ophthalmology, Jichi Medical University, Shomotsuke, Tochigi 329-0498, Japan

Abstract **Case Report**

A 78-year-old woman presented with an upper visual field defect in the left eye. Her best-corrected visual acuity (BCVA) was 1.2 in both eyes. Fundoscopy revealed inferior optic disc swelling. Peripapillary optical coherence tomography (OCT) demonstrated the presence of peripapillary hyperreflective ovoid mass–like structures (PHOMS) that was located in the inferior portion of the left eye. The patient was diagnosed with nonarteritic anterior ischemic optic neuropathy (NAION) of the left eye. One month after the initial visit, her BCVA decreased to 0.15 in the left eye. Fundoscopy revealed superior optic disc swelling. OCT demonstrated the presence of PHOMS that was located in the superior portion of the left eye. She was diagnosed with recurrent NAION. Three months later, her BCVA was maintained at 0.2, however, the optic disc looked diffusely pale. This case highlights the importance for clinicians to be aware of PHOMS with NAION.

Keywords: Peripapillary hyperreflective ovoid mass–like structures (PHOMS), nonarteritic anterior ischemic optic neuropathy (NAION), optical coherence tomography (OCT).

INTRODUCTION

Peripapillary hyperreflective ovoid mass–like structures (PHOMS) can be observed using optical coherence tomography (OCT) of the optic nerve head [1, 2]. The defining morphologic features of PHOMS include (1) a peripapillary location, abutting on the retina, (2) hyperreflectivity on OCT, (3) an ovoid shape on linear OCT scans through the center of the optic disc, and (4) a mass-like, space-filling structural characteristic of displacing the adjacent retina from the disc [1, 2]. Nonarteritic anterior ischemic optic neuropathy (NAION) is an important cause of acute visual loss in middle-aged and elderly populations [3, 4]. As PHOMS was initially described in the setting of optic nerve head drusen, however, it will be recognized by the association with papilledema/pseudopapilledema, AION, tilted disc syndrome, inflammatory demyelinating disorders and other miscellaneous retinal and optic nerve diseases [1, 2, 5-7]. Herein, we report a case of PHOMS in a patient with NAION.

CASE REPORT

A 78-year-old woman presented with an upper visual field defect in the left eye. Her medical history was unremarkable. On ophthalmic examination, her best-corrected visual acuity (BCVA) was 1.2 in both eyes. Fundoscopy revealed inferior optic disc swelling (Figure 1A). Peripapillary OCT demonstrated the presence of PHOMS that was located in the inferior portion of the left eye (Figure 1C). The patient was diagnosed with NAION of the left eye and was followed up without treatment. One month after the initial visit, her BCVA decreased to 0.15 in the left eye. Fundoscopy revealed superior optic disc swelling (Figure 1B). OCT demonstrated the presence of PHOMS that was located in the superior portion of the left eye (Figure 1D). She was diagnosed with recurrent NAION. Three months later, her BCVA was maintained at 0.2, however, the optic disc looked diffusely pale.

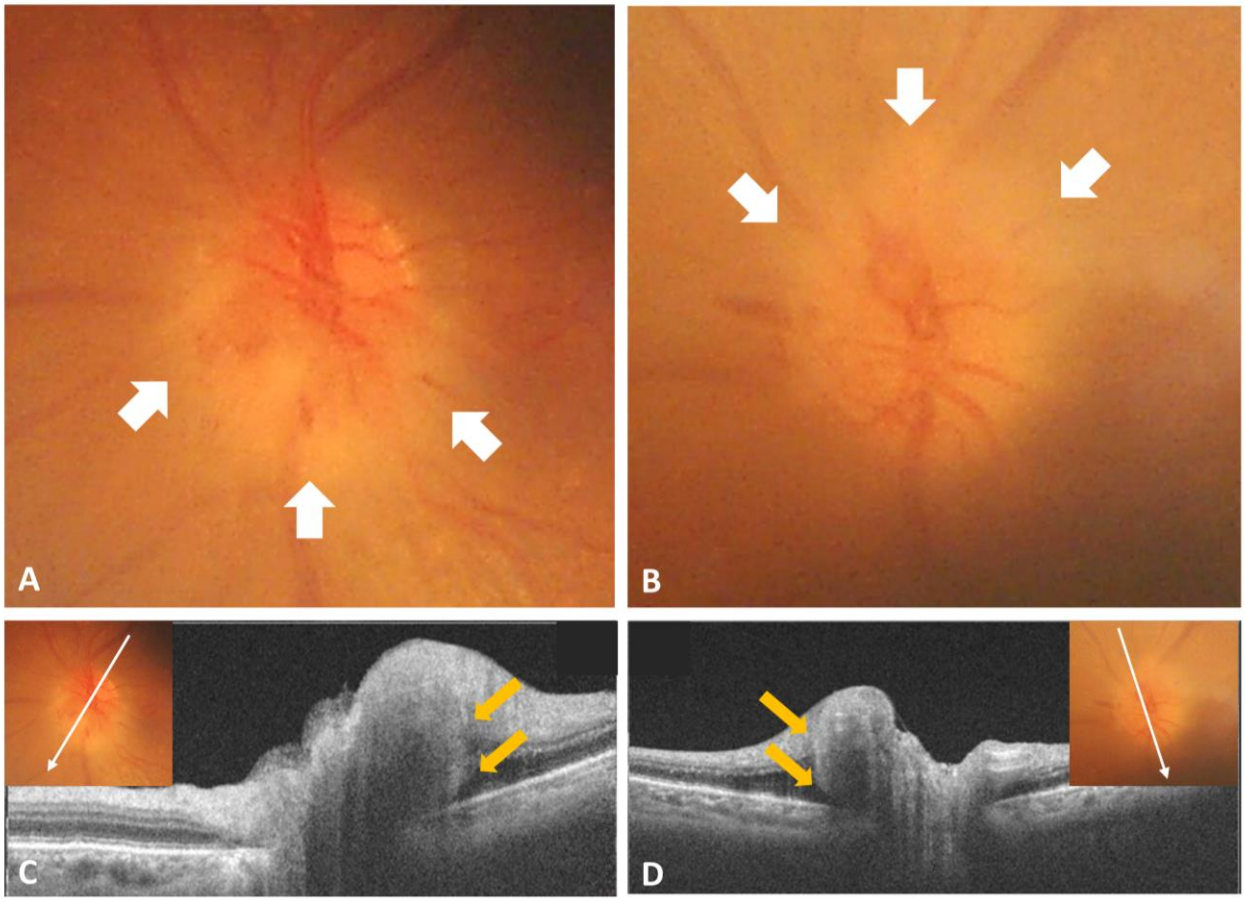

Figure 1: Fundus photographs (A, C) and optical coherence tomography (C, D) of the left eye.
(A, C) At the initial visit, inferior optic disc swelling is evident (white arrows). Note the presence of hyperreflective ovoid mass-like structures (PHOMS) that was located in the inferior portion of the disc (yellow arrows).
(B, D) One month after the initial visit, superior optic disc swelling is evident (white arrows). Note the presence of PHOMS that was located in the superior portion of the disc (yellow arrows).

DISCUSSION

Axoplasmic stasis could be the pathophysiological mechanism implicated in PHOMS formation [1, 2].

NAION most commonly arises in an eye with a small crowded disc with or without optic nerve head drusen [1]. Systemic risk factors of NAION include hypertension and diabetes mellitus. In younger NAION patients, systemic risk factors are often absent and optic disc crowding due to optic nerve head drusen is frequently observed.

Hamann *et al.*, [8] reported optic nerve head drusen present in 51% of NAION eyes in patients 50 years or younger. Just over half of these young NAION patients had optic nerve head drusen in one (29%) or both (71%) eyes. Among the 74 eyes with NAION, 23 (31%) had PHOMS. The prevalence was higher if optic nerve head drusen was also present. Dai *et al.*, [9] reported 5 of 9 (56%) patients with NAION were found to have PHOMS but most of these (6 of 9) had co-existing optic nerve head drusen. There are no data on the frequency of PHOMS in older patients with NAION.

We speculated that the abnormal morphology caused by the circulatory disturbance leads to chronic axial plasmatic stasis, resulting in disc edema, which in turn forms PHOMS.

CONCLUSION

This case highlights the importance for clinicians to be aware of PHOMS with NAION.

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