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Optical Coherence Tomography Findings in a Patient with Leber's Idiopathic Stellate Neuroretinitis

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Abstract: We report optical coherence tomography (OCT) findings in a 48 years old man with Leber's idiopathic stellate neuroretinitis. Ophthalmoscopy of the right eye revealed serous retinal detachment (SRD) and marked hard exudates in the papillomacular region. Imaging with OCT revealed an accumulation of fluid in the outer nuclear layer (ONL), the outer plexiform layer (OPL) and the inner nuclear layer (INL) space. In addition, hyper-reflective deposits, corresponding to hard exudates, were also detected in the ONL and OPL. In this patient with Leber's idiopathic stellate neuroretinitis, OCT was useful for visualizing SRD and localizing hard exudates in the ONL and OPL.
Keywords: Leber's idiopathic stellate neuroretinitis (LISNR), Optical coherence tomography (OCT).

INTRODUCTION

Leber's idiopathic stellate neuroretinitis (LISNR) is a relatively uncommon macular disease that presents with unilateral vision loss in the presence of a macular star and optic disc edema [1-5]. Ophthalmoscopically, this condition is characterized by peripapillary and macular hard exudates, serous retinal detachment (SRD) and optic disc edema [1-5]. Several recent reports have described the use of optical coherence tomography (OCT) for examining eyes with LISNR [4, 5]. However, few OCT studies have focused on localizing hard exudates in eyes with LISNR [5]. Here, we describe OCT findings in a patient with LISNR.

CASE REPORT

A 48 years old Japanese man was referred to our clinic because of right fundus abnormalities and a two year history of a paracentral visual disturbance. He had no significant medical history. Visual acuity was 1.2 in both eyes. The anterior segment and intraocular pressure were normal in both eyes. Ophthalmoscopy of the right eye revealed an SRD and marked hard exudates in the papillomacular region (Fig. 1A). In contrast, no abnormalities were observed in the left eye (Fig. 1B).

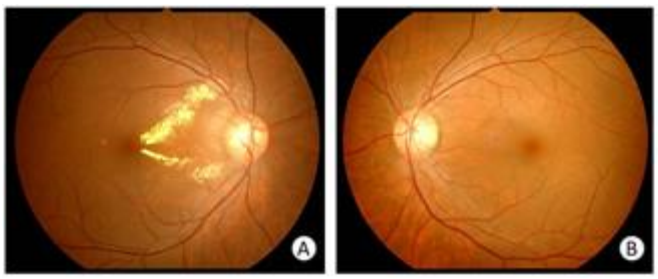

Fig. 1: Fundus photographs of the right (A) and (B) left eyes. Marked hard exudates are apparent in the papillomacular region of the right eye.

The OCT images of the right eye revealed perifoveal and peripapillary accumulation of fluid in the outer nuclear layer (ONL), the outer plexiform layer (OPL; Fig. 2A, white arrow), and the inner nuclear layer (INL; Fig. 2A, yellow arrow). An SRD was present temporal to the optic disc and an intraretinal fluid space was observed between the OPL and the ONL at the optic disc margin. In addition, hyper-reflective deposits, corresponding to hard exudates, were also detected in the ONL and OPL (Fig. 2A arrow heads).Moreover, an increase in retinal thickness was detected from the upper optic disc margin to the papillomacular region (Fig. 3).

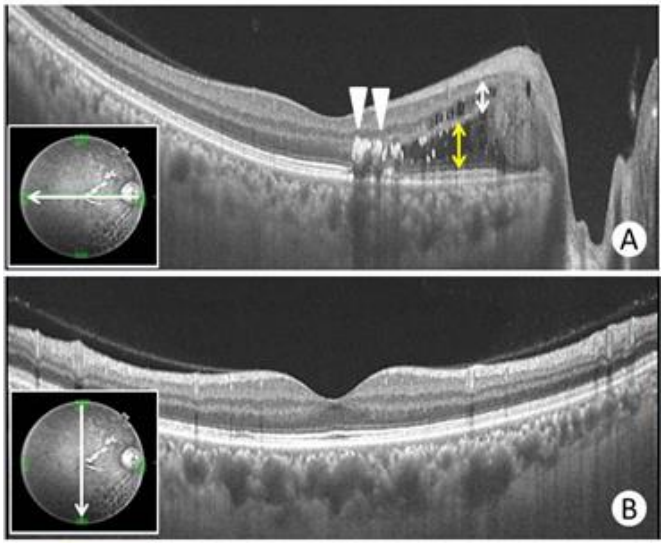

Fig. 2: Horizontally (A) and vertically (B) oriented optical coherence tomography (OCT) images of the right eye. The horizontal image shows intraretinal fluid in the outer plexiform and nuclear layers (white arrow) and in the inner nuclear layer (yellow arrow). Hyper-reflective deposits in the outer plexiform and nuclear layers (arrowheads) are also apparent.

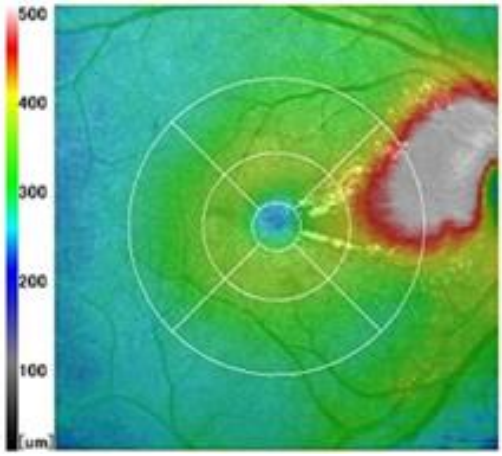

Fig. 3: Optical coherence tomography retinal thickness map of the right eye. Retinal thickness was markedly increased from the temporal upper optic disc margin to the papillomacular region.

These findings were typical of LISNR, which was the diagnosis given to the patient. Because steroid therapy was not an option, we elected to closely monitor the patient. The eye remained stable over the next year, with no changes in fundoscopic findings at any point.

DISCUSSION

Patients with LISNR generally present with unilateral vision loss, macular star, and optic disc edema. Ophthalmoscopic investigations in our patient showed an SRD and marked hard exudates that did not involve the fovea (Fig. 2B). Therefore, visual acuity was stable and remained 1.2 during the follow-up period.

A stellate figure in the macular region (macular star) is found in many conditions [6]. Wheel spokes of the exudates extend from the macular hub, may be sparse or numerous, and consist of thin lines or broad elevated exudates. All exudate lines become fine dots before completely being absorbed [6, 7]. Few reports have focused on using OCT imaging to localize hard exudates in patients with LISNR [5]. Kitamei *et al*. [5] described retinal microstructural findings. According to their report, fluid accumulation and hard exudates were detected in the ONL and OPL space. The serous component of the fluid had seeped through the external limiting membrane from the ONL and OPL, and had accumulated beneath the neurosensory retina. In contrast, hard exudates remained in the ONL and OPL space. Their findings were very similar to those observed in our patient. Furthermore, retinal thickness was increased from the temporal upper optic disc margin to the papillomacular region.

CONCLUSION

Thus, we postulate that SRD in this patient occurred primarily because of fluid movement from the optic disc into the ONL, OPL, and INL. Although our findings are based on a single case, OCT was useful in visualizing SRD and localizing hard exudates in the ONL and OPL in a patient with LISNR.

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