A 59-year-old woman was referred to our clinic for a glaucoma evaluation. The visual acuity and intraocular pressure were normal in both eyes. However, red-free fundus photography in the left eye showed a superotemporal wedge-shaped retinal nerve fiber layer defect, and visual field testing showed a corresponding partial arcuate scotoma. In an optical coherence tomography examination, the macula was flat, but an arcuate-shaped peripapillary retinoschisis was found. Further, the retinoschisis seemed to be connected with a superotemporal optic pit shown in a disc photograph. After 3 months of a topical prostaglandin analogue medication, the intraocular pressure in the retinoschisis eye was lowered from 14 to 10 mmHg and the peripapillary retinoschisis was almost resolved. We report a rare case of an optic disc pit with peripapillary retinoschisis presenting as a localized retinal nerve fiber layer defect.

Key Words: Glaucoma, Optic disc, Retinoschisis
After 3 months of medication, the intraocular pressure in the retinoschisis eye was lowered to 10 mmHg, and the peripapillary retinoschisis was partially resolved (Figs. 3C and 3D; 4E-4G). The RNFL defect seemed to decrease in red-free fundus photography (Fig. 1D), but the visual field testing showed no change (Fig. 2B).
Fig. 3. (A) An optical coherence tomography retinal nerve fiber layer scan in the left eye demonstrated retinal nerve fiber layer (RNFL) thickening of the superotemporal region (arrow) rather than RNFL thinning. (B) Optical coherence tomography (OCT) 3-D reconstruction imaging shows superotemporal peripapillary retinoschisis as a 3-D (arrow). (C) After 3 months of topical prostaglandin analogue medication, an OCT RNFL scan revealed a decrease in RNFL (arrow). (D) OCT 3-D reconstruction imaging shows the decreased peripapillary retinoschisis (arrow). TEMP = temporal; SUP = superior; NAS = nasal; INF = inferior.

Fig. 4. (A) Fundus photography. (B) Optical coherence tomography (OCT) slice at the superotemporal region from the optic disc (upper white line in A) shows inner retinal schisis cavities. (C) OCT slice at the level of the superior part of the optic disc and some part of the macula (middle white line in A) shows the peripapillary retinoschisis, not extending to the macula. (D) OCT slice at the level of the inferior part of the optic disc and the fovea (lower white line in A) shows that there is no retinoschisis in the papillomacular retinal region. (E,F,G) After 3 months of topical prostaglandin analogue medication, the OCT scan shows that the peripapillary retinoschisis is partially resolved.
Discussion

Optic disc pits are congenital excavations of the optic nerve head usually seen in association with other abnormalities of the optic nerve and peripapillary retina, including large optic nerve head size, large inferior coloboma of the optic disc, and retinal coloboma [5]. Histologically, optic disc pits are defects in the lamina cribrosa and have been reported to be associated with a variety of retinal abnormalities including aberrant nerve fibers and pigmented tissues, resemble retinal pigment epithelium, and are supported by a framework of glial tissue [1].

Visual acuity is usually unaffected unless the pit is complicated by subretinal fluid, but serous macular retinal detachment eventually complicates 25% to 75% of optic disc pits [6]. The pathophysiology of optic disc pit maculopathy remains unclear. Lincoff et al. suggested that the primary communication from the optic disc pit is to the retina temporal to the optic disc, in which fluid slips under the inner retina, lifting it and the nerve fiber layer up and away from the outer retina [7,8]. This has been corroborated by OCT and extended to show both retinal schisis and an outer retinal detachment connected by a hole in the outer retinal layer [3].

There are some reports about optic disc pits and their relationship to glaucoma. Radius et al. described incident pits of the optic disc in open-angle glaucoma, both clinically and histologically, demonstrating an association with glaucoma progression [9]. In addition, a number of authors have confirmed these findings in clinic-based case-control studies [10-12]. Also, Healey and Mitchell [13] reported that optic disc pits are associated with glaucoma and the related signs of optic disc hemorrhage and β-peripapillary atrophy.

In the present case, the initial examination seemed to be an RNFL defect whose base did not reach the horizontal fundus raphe and a corresponding visual field defect. However, an OCT scan and disc photography showed an optic disc pit with an arcuate-shaped peripapillary retinoschisis, not involving the macula. This is an unusual type of optic disc pit and is apt to be confused with a peripapillary retinoschisis with an RNFL defect. When an RNFL defect is found by red-free fundus photography, the possibility of optic disc pit with peripapillary retinoschisis should be considered. To our knowledge, this is a rare case of optic disc pit with peripapillary retinoschisis presenting as a localized RNFL defect, and the peripapillary retinoschisis was partially resolved after the administration of antiglaucoma medication.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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