In conclusion, together with advancements in the mfERG, ophthalmologists should consider modifying current clinical practices to detect early subclinical macular toxicity in patients on hydroxychloroquine. Larger studies are required to evaluate its sensitivity and to institute recommendations for its routine use. However till then, the use of electrophysiological testing should only be an adjunct to standard annual screening tests including Snellen visual acuity, red-on-black Amsler test,[20] colour tests with HRR, and/or SPP2 plates[21,22] which are more sensitive and automated visual field testing (white target) at least of the central 10°.[22]

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Sir,

Structural and functional recovery in juvenile open angle glaucoma after trabeculectomy

Glaucomatous damage was traditionally regarded as an irreversible condition. We report a case of juvenile open-angle glaucoma which had substantial structural and functional improvement after trabeculectomy.

Case report

A 20-year-old Chinese lady was diagnosed to have ocular hypertension 3 years ago. At presentation, her intraocular pressure (IOP) was 30 mmHg on the right eye

and 22 mmHg on the left. The cup–disc ratios were 0.3 bilaterally with intact neuroretinal rims. Gonioscopy showed wide-open angle on each side and no evidence of peripheral anterior synechiae. Visual field was unremarkable. Despite maximal tolerated topical medications, her IOP gradually surged to a level of 40–50 mmHg after 2 years. Although the right optic disc and visual field remained normal, the cup–disc ratio of her left eye deteriorated to 0.7 with thinning of superonasal neruoretinal rim (Figure 1a). Corresponding inferotemporal defect was also detected by repeated visual field tests. Left filtration surgery was performed and her left IOP was stabilized at a level of 15–21 mmHg after the operation. Using optical coherence tomography, it was found that the mean retinal nerve fibre layer thickness (RNFLT) improve from 72 μm on the day before operation to 117 μm 1 week after the operation (Figure 2). The appearance of the disc morphology also changed substantially with corresponding recovery of the inferotemporal visual field defect (Figure 1b).

Discussion

Reversal of optic disc cupping has been documented previously. Kotecha *et al*[1] found an increase of rim volume present at 2 years after trabeculectomy using

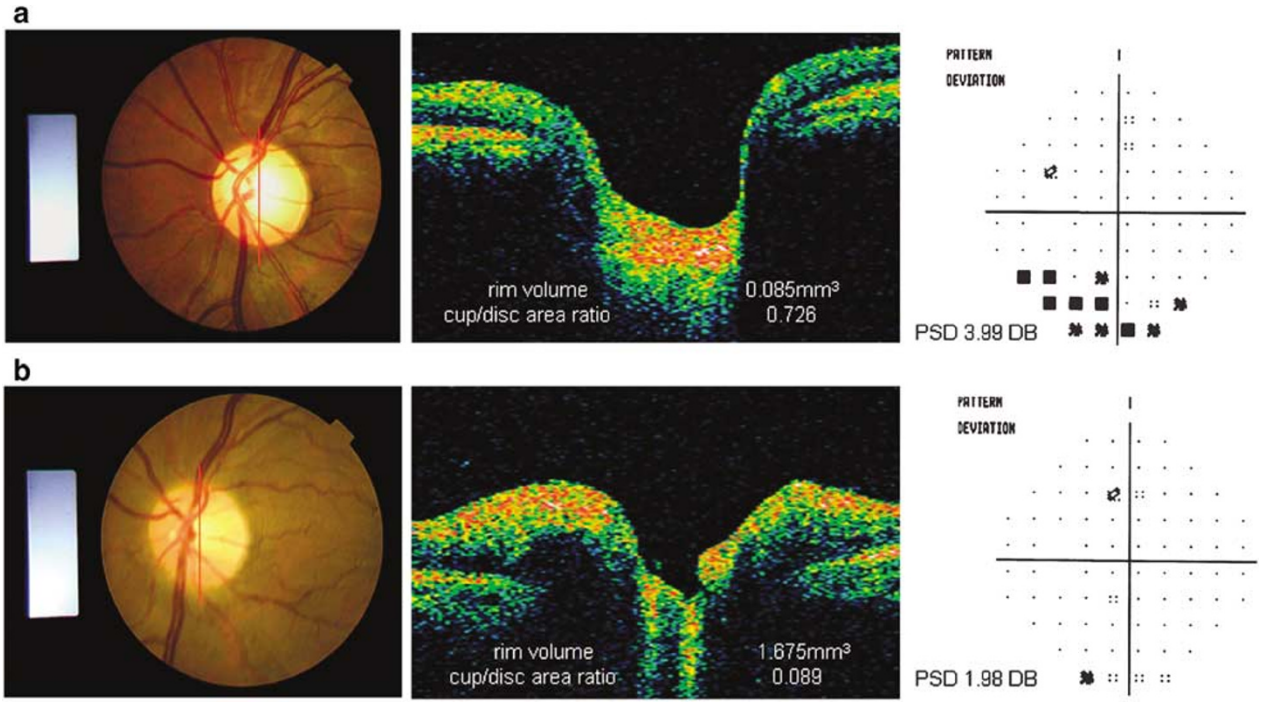

Figure 1 Fundus photographs, OCT optic nerve head scans (vertical cut) and Humphrey visual field pattern deviation plots of the left eye obtained the day before trabeculectomy (a) and 1 week postoperatively (b). The red lines on the fundus photographs indicate the location of the OCT scans in the middle panel.

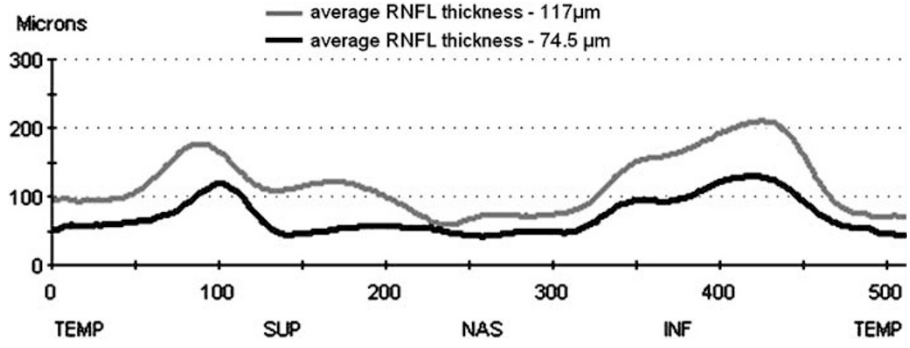

Figure 2 Retinal nerve fibre layer profile measured by OCT the day before trabeculectomy (black line) and 1 week postoperatively (grey line).

confocal laser ophthalmoscopy. A recent study also showed an increase of overall RNFLT from 72.8 to 81.7 μm after filtration surgery.[2] However, corresponding improvements in visual field were not reported in these studies. Tsai *et al*[3] was able to demonstrate reversal of disc cupping together with improvement in visual field global indices when the IOP was lowered by 40%.[3] Our case demonstrated a distinct and simultaneous structural and functional recovery in a patient with juvenile open-angle glaucoma after filtration surgery documented quantitatively by OCT. This case shows the phenomenon of 'buffer-zone', a time interval in which optic nerve damage can be reversed by appropriate interventions. However, the length of such 'buffer-zone' and the underlying mechanism remains obscured. Such reversal is likely to be dependent on the degree of IOP reduction, the age of presentation, and may vary with the compliance of the lamina cribrosa and the composition of supporting tissue of retinal ganglion cells.

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