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Case report

Pupillary anomaly masquerading as a glaucomatous visual field defect: a case report

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Abstract

Background: Patients are often referred to ophthalmologists with focal visual field defects on routine testing, possibly related to a potential diagnosis of glaucoma. However, examination of the individual patient's ocular characteristics as well as facial characteristics may often reveal a cause of the visual field defect.

Case presentation: We describe a patient who was found to have a superior visual field defect on routine testing by the optician. Repeat perimetry with pharmacological dilatation of the pupil revealed that the cause of the field defect was related to an eccentric inferiorly displaced pupil, secondary to trauma some years previously.

Discussion: Individual patient characteristics, including both ocular, as well as facial, need to be considered, when interpreting any visual field defect.

Background

Ophthalmologists are commonly referred patients with visual field defects, possibly related to a potential diagnosis of glaucoma [1]. However, other causes for visual field defects need to be considered. We report a case of a patient with a superior visual field defect referred to a glaucoma clinic. A pupillary cause for the field defect was suspected. Repeat perimetry with pharmacogical manipulation of the pupil resulting in a normal visual field confirmed this.

Case presentation

A 72 year old lady was referred to the glaucoma clinic by her optometrist after routine Humphrey SITA fast perimetry in both eyes revealed a superior visual field defect in her right eye. The patient was asymptomatic and was visiting the optometrist for a routine annual visit. There was no known family history of glaucoma. Past ocular history included a penetrating injury to the right eye with closure of an inferior limbal wound over 10 years ago. This had resulted in loss of iris tissue inferiorly, and an inferiorly-displaced pupil. On examination, visual acuity was 6/9 corrected in each eye. Intraocular pressure was 16 mmHg OD, and 15 mmHg OS. Examination of the anterior segment and gonioscopy of the left eye was unremarkable. Examination of the right eye revealed an inferior limbal scar due to the previous penetrating eye injury, with loss of iris tissue inferiorly and an inferiorly-displaced pupil (figure 1). Gonioscopy showed an abnormal angle over the inferior 90° but the remainder of the angle was normal. Examination of both fundi revealed healthy optic discs with a cup: disc ratio of 0.2 and a healthy neuroretinal rim. In addition, there was no evidence of ptosis or a prominent brow. Humphrey visual field perimetry using SITA standard algorithm in the right eye confirmed the superior field defect (Figure 2), as well as a more generalised depression more prominent in the right superior

field. Visual field in the left eye was full. Repeat perimetry (Humphrey visual field – SITA standard algorithm) was performed two weeks later, but the pupil was dilated twenty minutes beforehand with 1% tropicamide. After pharmacological dilatation of the pupil, the visual field defect was no longer evident (figure 3). In view of the normal intraocular pressures, normal optic disc appearances and normal visual fields, the patient was reassured and discharged to the care of the referring optometrist for routine follow-up, as there was no clinical evidence of glaucoma.

Discussion

Artefactual causes of visual field defects include physical factors of individual patients' facial contours, such as ptosis, prominent eyelashes or prominent brows with deeply set eyes [2]. Other causes of artefactual superior visual field defects may be produced by poor perimetry technique, such as a spectacle frame or a trial lens which sits too low [3]. Medial opacities may also lead to this visual field defect. [4,5]. In our case, the superior visual field defect was attributed to the inferiorly displaced pupil, occurring as a result of previous trauma. This is shown by the fact that the field defect disappeared when the pupil was pharmacologically dilated. Whilst pharmacological pupillary dilatation in healthy subjects produces a decreased sensitivity to perimetry testing [6] the rationale in this case was to confirm the superior focal defect as being purely related to the pupillary anomaly, and not reflecting a focal glaucomatous field defect.

In conclusion, this case highlights the importance of other possible causes of a superior visual field defect not attributable to glaucoma. Attention must be paid to individual ocular as well as facial characteristics when interpreting visual fields, in order to ascertain the likely cause of any individual field defect.

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