

CASE REPORT

A Rare Case of Open-angle and Closed-angle Glaucoma Coexisting in the Same Patient

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ABSTRACT

Glaucoma is one of the leading causes of blindness and visual impairment. It is defined as a progressive optic neuropathy characterized by optic disk cupping and visual field loss; a major risk factor for progression is the increase in intraocular pressure. Open-angle glaucoma and angle-closure glaucoma are classified on the basis of gonioscopy findings of the iridocorneal angle and anterior segment variation which can lead to an increase in intraocular pressure. The occurrence of both open-angle and angle-closure glaucoma in the same patient is a rare incidence, so careful examination is required to rule out all the patients having primary or secondary causes of glaucoma.

Keywords: Angle-closure glaucoma, Glaucoma, Open-angle glaucoma, Pseudoexfoliation.

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INTRODUCTION

Glaucoma is one of the leading causes of blindness and visual impairment. It is defined as a progressive optic neuropathy characterized by optic disk cupping and visual field loss; a major risk factor for progression is the increase in intraocular pressure.¹ The classification of glaucoma is based on its anterior segment variation which can lead to an increase in intraocular pressure.² Intraocular pressure mainly depends on the outflow of the aqueous humor rather than inflow. The classification is by the appearance of the iridocorneal angle i.e., open-angle glaucoma and closed-angle glaucoma, and further, it is divided into the primary cause and secondary cause.

CASE DESCRIPTION

Sixty-five-year-old man came with a history of painless progressive diminution of vision in the left eye for 6 months; he underwent laser iridotomy of the left eye 4 months back and treated with an anti-glaucoma drug which he stopped using without consulting an ophthalmologist. He had no other medical problem.

EXAMINATION

On left eye ocular examination, his visual acuity was PL⁺ with PR defective in the inferior and nasal quadrant. On slit lamp examination, cornea was cloudy and stromal and endothelial edema; brown pigments were present on the center of endothelium; anterior chamber central depth was shallow about 2–2.5 mm and peripheral Van Herrick depth grade I; pupil was 5 mm, irregular, very sluggishly reacting to light, and swinging flash light showing grade IV RAPD; iris was brown in color, normal pattern; and laser iridotomy was seen at 3 o'clock position which was patent.

Intraocular pressure was 44 mm Hg; gonioscopy findings showing three (sup/temp/nasal) out of four quadrant are closed up to Schwalbe's line (Shaffer's grade 0). Inferior quadrant is open for 2 clock hours, iris insertion steep hyperpigmented trabecular meshwork.

Mydriasis was achieved using tropicamide plus eye drop, lens showing nuclear sclerosis grade III with pseudoexfoliation

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zone were present at mid-periphery of anterior capsule, and pseudoexfoliation central zone was absent. On fundus examination, media was hazy grade III with a reddish hue, and the disk is vertically oval with a well-defined margin with total cupping, nasalization of vessels and bayoneting sign was present, Lamellar dot-oval slit-like opening was seen, and peripapillary alpha zone atrophy was present: These all indicate the presence of glaucomatous optic atrophy.

On right eye ocular examination, his visual acuity was 6/36 with pinhole 6/18, and no abnormality was seen in anterior segment examination.

Intraocular pressure was 30 mm Hg; on gonioscopy, scleral spur was seen in all four quadrants (Shaffer's grade III), with iris root insertion regular and flat.

On fundus examination, media was hazy due to nuclear sclerosis grade II, the disk is round normal size with well-defined margin, with vertically oval cup C:D ratio: vertical—0.9 and horizontal—0.7. With both superior and inferior rim erosion, nasalization and kinking of vessels were present and lamellar dot-oval slit-like opening was seen.

Octopus perimetry (Fig. 1) was done for right eye only because best-corrected visual acuity was 6/18; there was no improvement in left eye, and perimetry showed combination of generalized depression and focal damage. In corrected comparison plot, there is inferior and superior scotomatous damage, superior arcuate,

Selvam, Panner, 1/1/1955 (65y), Patient ID : 042596

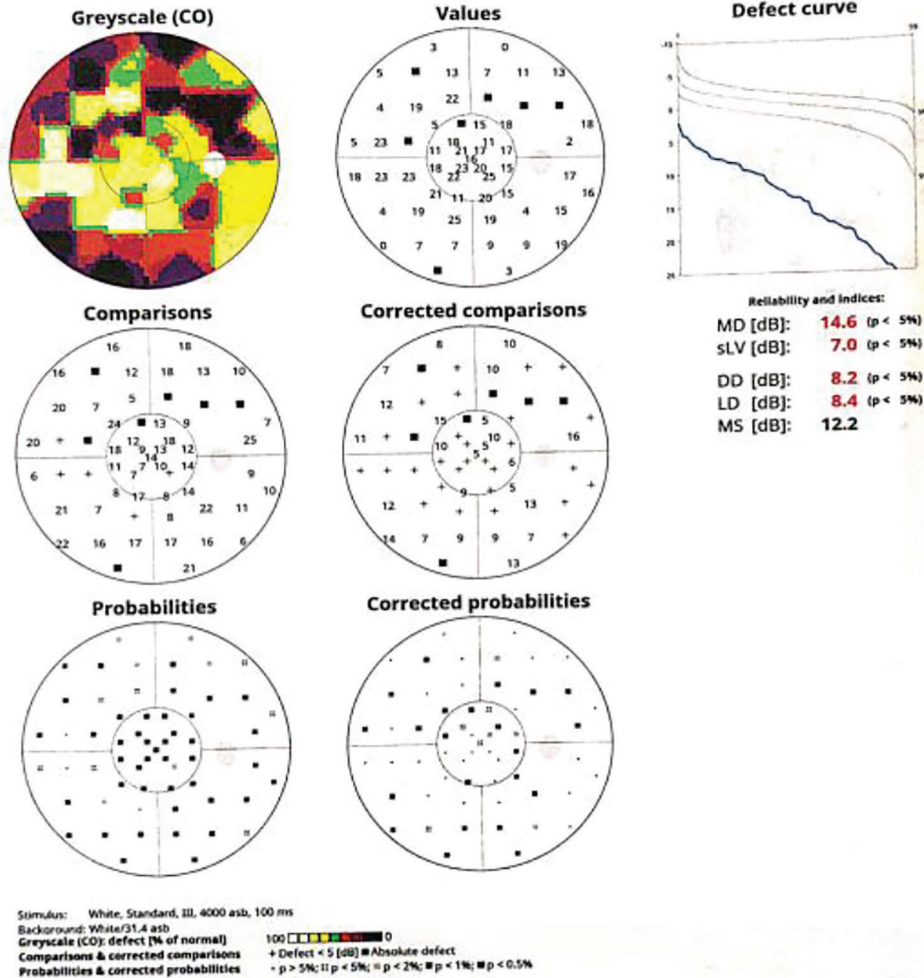
OD 12/29/2020 / 04:06

Examination parameters:
Refraction, lens (S/C/A), pupil:

G, Dynamic, SAP, White/White, III
0.0/0.0/-, -, 2.6 mm

False positives/negatives:
Duration, questions/repetitions:
Fixation control:

0% (0/7), 22% (2/9)
05:57, 159/13
Med



OCTOPUS 600

SN: 765
Software: 4.1.0

EyeSuite 19.1.0.0
Norm value table: T53 V2.1 (2013-07-30)
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HAAG-STREIT
DIAGNOSTICS

Fig. 1: Perimetry showing combination of generalized depression and focal damage. In corrected comparison plot, there is inferior and superior scotomatous damage, superior arcuate, and inferior paracentral scotomas. Bebie's curve shows generalized depression due to cataract and focal damage due to glaucoma

and inferior paracentral scotomas. Mean deviation is 14.6, standard loss variance is 7.0 indicative of severe glaucomatous damage, and Bebie's curve shows generalized depression due to cataract and focal damage due to glaucoma.

DISCUSSION

The diagnosis of right eye nuclear sclerosis grade II cataract with POAG with moderate cupping and left eye nuclear sclerosis

grade III cataract with ACG due to pseudoexfoliation with glaucomatous optic atrophy was made on the basis of historical and clinical findings.

This is a rare case of coexistence of both POAG and ACG in same patient. Cause of secondary angle-closure probably be pseudoexfoliation causing zonular laxity causing occlusion of angle structure.

Pseudoexfoliation is a systemic condition where deposition of white dandruff-like material called exfoliation material in

the anterior segment of eye mainly on the anterior capsule is noticeable; other organs such as the heart, lungs, and kidney can also get involved.³ Histochemically, these pseudoexfoliative material is protein core surrounded by glycoconjugates,⁴ and they are synthesized in different cells of the anterior segment like nonpigmented ciliary epithelial cells, trabecular endothelial cells, equatorial lens, and epithelial cells. They aggregate due to oxidative stress; then, the material gets released from intracellular to extracellular space which then get deposited in different structures like zonules, pupillary margins, and anterior lens structure.

Pseudoexfoliative glaucoma is seen in up to 50% of the eyes with pseudoexfoliation⁵ mainly associated with primary open-angle glaucoma, but rarely few cases have been reported to cause angle-closure glaucoma. Patients with pseudoexfoliation glaucoma tend to have advanced visual field loss and cupping.⁶

CONCLUSION

Coexistence of primary open-angle glaucoma and angle-closure glaucoma can exist in the same patient, so careful examination should be done to rule out all the patients having primary or secondary causes of glaucoma. Pseudoexfoliation commonly

presents with open-angle glaucoma; rarely, it can present with angle-closure so it can be missed because of its rare occurrence so careful gonioscopy evaluation is a must for all patients.

REFERENCES

1. Kwon YH, Fingert JH, Kuehn MH, Alward WL. Primary open-angle glaucoma. *NEJM* 2009;360(11):1113–1124. DOI: 10.1056/NEJMra0804630.
2. Huang G, Gonzalez E, Peng PH, Lee R, Leeungurasatien T, He M, et al. Anterior chamber depth, iridocorneal angle width, and intraocular pressure changes after phacoemulsification: narrow vs open iridocorneal angles. *JAMA* 2011;129(10):1283–1290. DOI: 10.1001/archophthalmol.2011.272.
3. Ritch R, Schlötzer-Schrehardt U. Exfoliation syndrome. *Surv Ophthalmol* 2001;45(4):265–315. DOI: 10.1016/s0039-6257(00)00196-x.
4. Ritch R, Schlötzer-Schrehardt U, Konstas AG. Why is glaucoma associated with exfoliation syndrome? *Prog. Retin. Eye Res* 2003;22(3):253–275. DOI: 10.1016/s1350-9462(02)00014-9.
5. Rai VG, Angmo D. Pseudoexfoliation glaucoma. In: *Ophthalmology clinics for postgraduates*. 2017. p. 203.
6. O'Brien C, Schwartz B, Takamoto T. Intraocular pressure and the rate of visual field loss in chronic open-angle glaucoma. *AJO* 1991;111(4):491–500. DOI: 10.1016/s0002-9394(14)72386-4.