

## Case Report

# Secondary angle closure glaucoma due to posterior scleritis in a case of empty sella syndrome

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## Abstract

**Introduction:** We frequently come upon cases of posterior scleritis with secondary angle closure glaucoma. However, it can pose a diagnostic dilemma in a patient with bilateral disc edema along with unilateral angle closure glaucoma due to posterior scleritis.

**Case:** We report a case of a 25 - year old male, who presented with the complaints of pain, redness and blurring of vision in the left eye for the last 3 days. On ocular examination, unaided visual acuity of the right eye was 6/6 and the best corrected in the left eye was 6/9 with - 6.25 D sphere. Apart from conjunctival congestion and shallow anterior chamber in the left eye, rest of the anterior segment evaluation in both the eyes were normal. On fundus evaluation, there was presence of disc edema in both the eyes. Intraocular pressure was 20 and 32 mm of Hg in the right and left eye respectively. Gonioscopy revealed open angles in the right eye and no visible angle structures in the left eye. B-Scan of the left eye showed a typical “T” sign suggestive of posterior scleritis. MRI brain revealed empty sella turcica.

**Conclusion:** Empty sella turcica has been reported to present with the bilateral disc edema which, when accompanied with other entities such as Posterior scleritis can be misleading and the diagnosis can pose to be a challenge.

**Key words:** Posterior scleritis, Secondary angle closure, Empty sella syndrome, Disc edema.

## Introduction

Posterior scleritis is an ocular inflammatory disease, which affects the posterior segment, causing changes in the retina, choroid, and optic nerve. Incidence of increased intraocular pressure (IOP) after posterior scleritis has

been reported to be 12-46% (Watson and Hayreh,1976).

Its mechanism can be inflammation and clogging of the trabecular meshwork by inflammatory cells, increased aqueous humor viscosity, neovascularization, peripheral anterior synechiae and elevated episcleral venous pressure due to lymphocytic cuffing around episcleral vessels. It can also be associated with choroidal effusion and secondary angle closure without pupillary block (Dodds EM, 1995).

Inflammation and vascular congestion of sclera, ciliary body and choroid can cause secondary angle closure due to accumulation

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of suprachoroidal and supraciliary fluid or due to spasm and swelling of the ciliary body. This results in narrowing of the ciliary ring and anterior rotation of the ciliary body, reducing tension on the zonules and forward movement of the iris -lens diaphragm, causing angle closure.

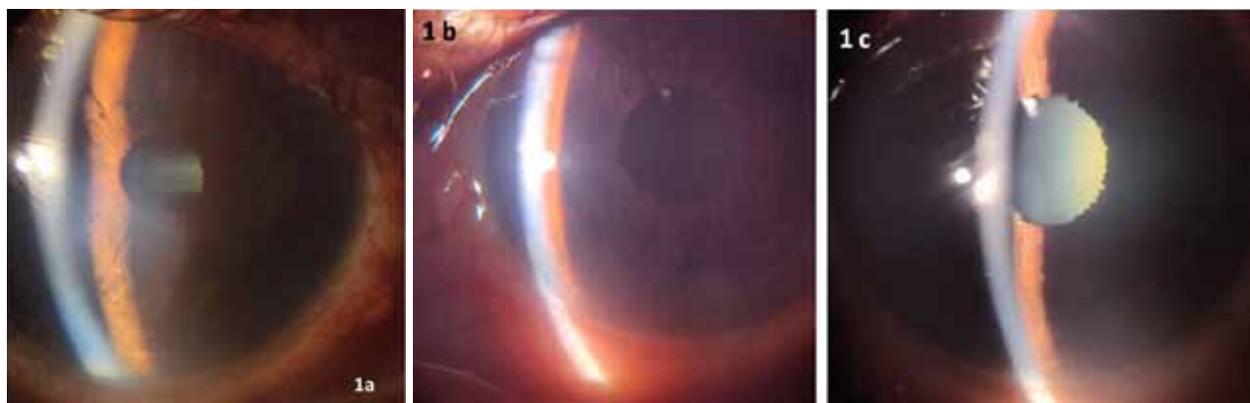
We report the diagnostic dilemma in a patient with bilateral disc edema and unilateral secondary angle-closure glaucoma due to posterior scleritis.

### Case

A 25 - year old male presented to our institute emergency department, with the complaints of pain, redness and blurring of vision in the left eye (LE) for the last 3 days. There was no history of systemic illness, use of spectacles, drug intake or ocular surgery. He was advised Magnetic resonance imaging (MRI) brain and diagnosed as acute angle closure in the LE and was referred to the glaucoma clinic for laser iridotomy.

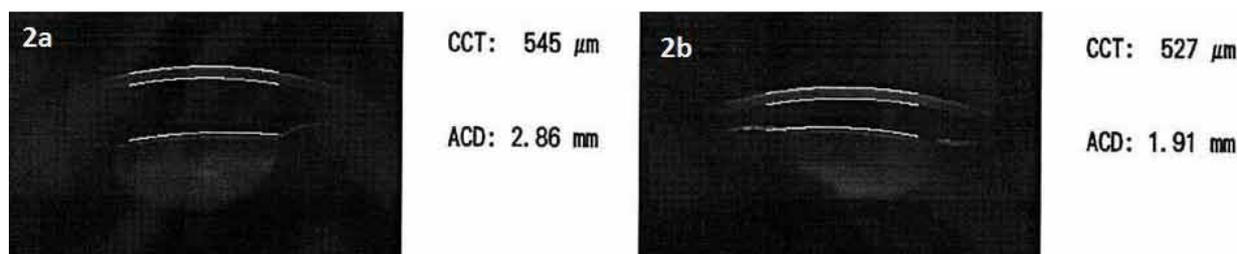
On examination, the right eye (RE) unaided visual acuity was 20/20, N6, anterior segment was essentially normal and anterior chamber (AC) was deep both peripherally [Van Herrick (VH) grade 3] and centrally. (Figure 1a) LE had distant visual acuity of counting fingers 3 meters, which improved to 20/30 with - 6.25 Diopter sphere. Slit lamp examination of the LE showed circumcorneal ciliary congestion, clear cornea, shallow AC peripherally (VH grade 1) (Figure 1b) as well as centrally (Figure 1c), round, regular, reacting pupil and clear lens. IOP with Goldmann applanation tonometry was 20 mmHg in the RE and 32 mmHg in the LE.

Central AC depth (ACD) was 2.86 mm in the RE (Figure 2a) and 1.91 mm in the LE (Figure 2b), as noted on Scheimpflug image of AL-Scan optical biometer (Nidek Co., Ltd., version V1.07.02 Gamagori, Japan).



**Figure 1a:** Slit lamp examination of the right eye shows deep AC centrally.

**Figure 1b, 1c:** Slit lamp examination of the left eye shows shallow AC at periphery (1b) and centrally (1c).



**Figure 2a, 2b:** Central AC depth of RE (2a) and LE (2b) on Scheimpflug imaging of AL-scan optical biometer.

Gonioscopy showed open angles till scleral spur in the RE and no angle structures were seen in the LE, even on significant indentation with the 4 mirror Sussman gonioscopes and “Volcano” sign (iris appeared to drape over the anterior surface of the lens, giving rise to a “volcano-like configuration”) was noted. In both eyes (BE), fundus examination showed clear media, disc edema, small size, hyperemic disc and obliteration of the cup (Figure 3a, 3b) Rest of the fundus examination was essentially normal.

B- scan ultrasound showed disc oedema in BE (Figure 4a, 4b), fluid in the subtenon’s space (arrow) and “T” sign in the LE. (Figure 4b)

Imaging with Sirius Scheimpflug – Placido disc topographer (Schwind eye-tech-solutions, Kleinostheim, Germany) showed iridocorneal angle (ICA) of 69° and AC volume (ACV) of 104 mm<sup>3</sup> in the RE and ICA was 39° and ACV was 69 mm<sup>3</sup> in the LE. MRI of Brain revealed

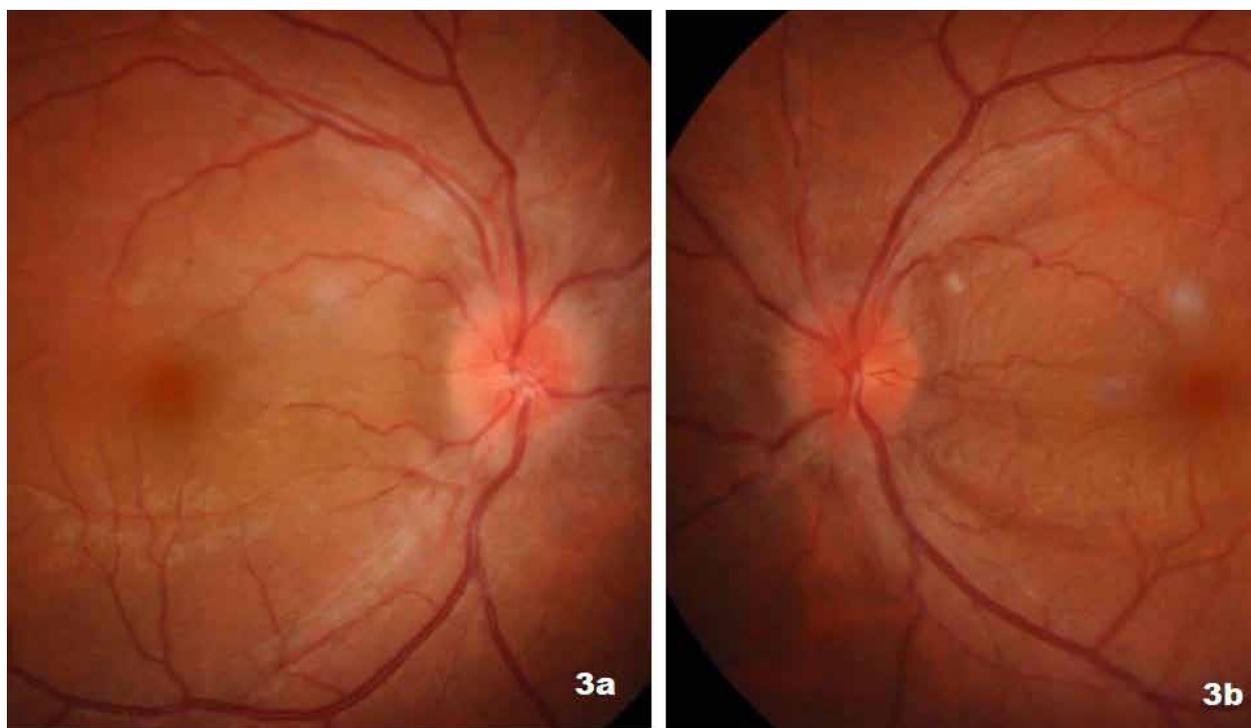
empty sella syndrome.

Patient was diagnosed with Bilateral disc oedema, secondary to empty sella syndrome and posterior scleritis, secondary angle closure glaucoma, induced myopia, in the LE. He was prescribed topical and oral steroids, cycloplegic and topical Dorzolamide HCl 2 % / Timolol maleate 0.5% in the LE. He was asked to see a Neuro Physician and review after a week.

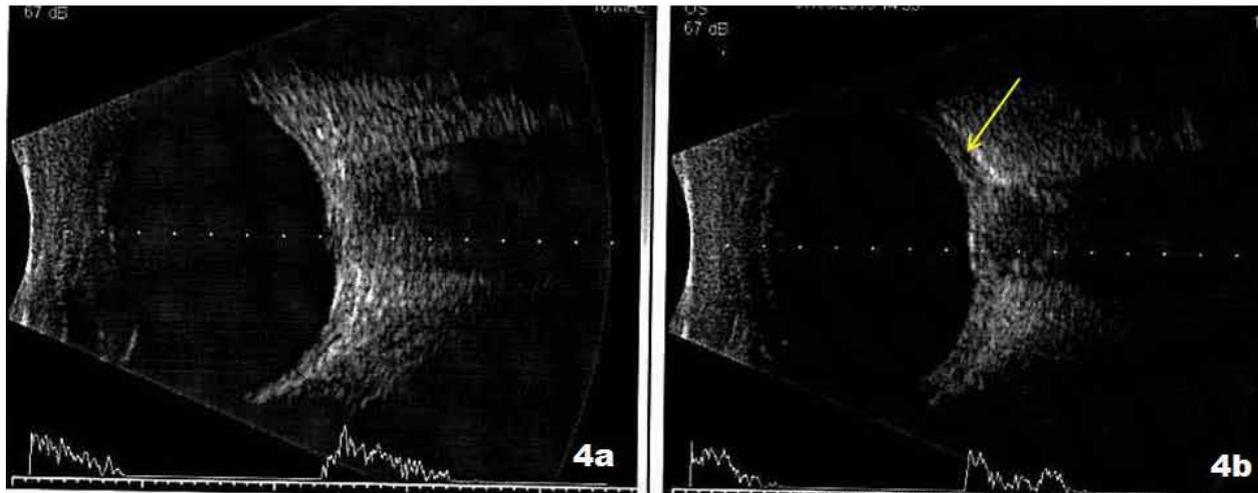
### Discussion

Posterior scleritis is a condition which can cause angle closure glaucoma, choroidal folds, disc edema, circumscribed fundus mass, choroidal and exudative retinal detachment.

We present an interesting case of unilateral secondary angle-closure glaucoma due to posterior scleritis, accompanied by sudden myopia and shallowing of the central and peripheral AC. This patient had co-incidental empty sella syndrome.



**Figure 3a, 3b:** Fundus photographs of both the eyes show hyperemic, edematous and small size disc.



**Figure 4a:** B- scan of the right eye shows disc edema.

**Figure 4b:** B-scan of the Left eye shows disc edema, thickened choroid, fluid in the retrobulbar tenon space (arrow) and ‘T’ –sign.

In posterior scleritis, inflammation of the sclera and choroid adjacent to the optic disc may cause disc edema, but in our case bilateral disc edema was attributed to be secondary to the empty sella syndrome (Wang J et al, 2008). Important diagnostic features of posterior scleritis in this case are : unilateral condition, marked myopia, shallow AC with no iris bombé, ‘T’ sign on B-scan due to the retrobulbar edema surrounding the optic nerve and squaring off of the rounded optic nerve shadow and deep AC in the uninvolved fellow eye. The cause of induced myopia in this case was the forward shift of iris -lens diaphragm and the cause for shallow AC appears to be anterior rotation of the ciliary body at the scleral spur probably due to ciliary body spasm and swelling.

Secondary angle closure with induced myopic shift can be caused by miotics, aqueous misdirection and uveal effusion syndrome. We ruled out all these conditions as there was no history of drug usage and spontaneous occurrence of unilateral aqueous misdirection, without a history of ocular surgery is unlikely. Uveal effusion syndrome is a rare, often bilateral entity, which causes exudative choroidal,

ciliary body and retinal detachment, secondary to an impaired posterior segment drainage and on involvement of the ciliary body and can cause a sudden myopic shift.

Posterior scleritis causes an anterior rotation of ciliary body due to the ciliochoroidal effusion, and a subsequent anterior shift of the lens-iris diaphragm, accompanied by a dramatic shallowing of the peripheral as well as central AC, and angle closure, resulting in an increase in the IOP (Quinlan and Hitchings, 1978, Benson WE et al, 1979).

It can be treated with topical cycloplegic, corticosteroids and aqueous suppressants. B-scan ultrasonography shows characteristic flattening and thickening of posterior coats of the eye, retrobulbar oedema and the classical ‘T’ sign, which helps to confirm the diagnosis (Biswas J et al,1998).

Recognition of this entity of secondary angle-closure glaucoma is important for two reasons. First, it should be differentiated from angle closure due to pupillary block, as the management strategy for both the ocular conditions is different. The former is treated by



cycloplegic drugs, corticosteroids and miotics are contraindicated as they can cause further shallowing of AC and make the condition worse. Second, laser peripheral iridectomy would not be of any benefit as the mechanism of angle closure is different, as described before. Hence, we emphasize the significance of good clinical examination, which, with the help of ancillary test can clinch the diagnosis and also the importance of differentiating this condition from angle closure due to pupillary block.

This case posed a diagnostic challenge, as the patient presented with sudden onset of blurred vision in the left eye due to induced myopia and painful eye due to raised IOP, closed angles and disc edema, which mimicked the presentation of acute angle closure, prompting the primary ophthalmologist to refer the patient for laser iridotomy. In the glaucoma clinic, suspecting posterior scleritis, B scan was advised (though the media was clear) which showed a typical "T"- sign, confirming the diagnosis and reason for secondary angle closure. The dilemma of disc edema in the other eye was solved with MRI brain, which revealed empty sella turcica, which was responsible for the bilateral disc edema.

## References

- Benson WE, Shields JA, Tasman W, Crandall AS (1979). Posterior scleritis. A cause of diagnostic confusion. *Arch Ophthalmol*;97(8):1482-6.
- Biswas J, Mittal S, Ganesh SK, Shetty NS, Gopal L (1998). Posterior scleritis: clinical profile and imaging characteristics. *Indian J Ophthalmol*; 46(4):195-202.
- Quinlan MP, Hitchings RA (1978). Angle-closure glaucoma secondary to posterior scleritis. *Br J Ophthalmol*;62(5):330-5.
- Wang J, Hui N, Fan Y, Li X, Sun N. (2008) A case of papilloedema caused by primary empty sella turcica syndrome]. *Yan Ke Xue Bao*;24(1):71-4.
- Watson PG, Hayreh SS (1976). Scleritis and episcleritis. *Br J Ophthalmol* ; 60 (3) :163-91.
- Dodds EM, Lowder CY, Barnhorst DA, Lavertu P, Caravella LP, White DE (1995). Posterior scleritis with annular ciliochoroidal detachment. *Am J Ophthalmol*;120 (5): 677-9.
- Wang J, Hui N, Fan Y, Li X, Sun N. (2008) A case of papilloedema caused by primary empty sella turcica syndrome]. *Yan Ke Xue Bao*;24(1):71-4.