



High Tension Glaucoma Post Ventriculoperitoneal Shunt for Normal Pressure Hydrocephalus (NPH) in a Patient with Occludable Angles

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Abstract

We report an interesting case of unilateral high tension glaucoma in a patient following insertion of a ventriculoperitoneal shunt on the same side that to our knowledge has not been reported earlier.

Keywords: Glaucoma; Ventriculoperitoneal Shunt; Hydrocephalus; Occludable Angles

Case Report

A 38 years old female presented with pain right eye and headache for the last 6 months.

On examination her visual acuity was log mar 0.7 in the right eye and log mar 0.1 in the left eye. Intra ocular pressure (iop) was 34 in the right eye (on topical medications which included travoprost 0.004% HS and dorzolamide, timolol combination started in some other center) and 14 in the left eye. Anterior segment was normal with anterior chamber depth grade 1 in both eyes (von herick grading). Gonioscopy showed occludable angles in both the eyes. Her optic disc evaluation showed a cup disc ratio of 0.7 in the right eye with inferior rim thinning (Figure 2) and 0.3 in the left eye. Right eye OCT done on the Topcon 3D oct -1 Maestro showed inferior RNFL thinning (Figure 3) Visual fields 24-2 full threshold analysis done on the Humphry's field analyser demonstrated a superior arcuate scotoma in the right eye which corresponded with the disc findings. She had a past history of surgery which in-

cluded insertion of a ventriculoperitoneal shunt for hydrocephalus inserted 1 year back. CT scan showed vp shunt *in situ* with residual hydrocephalus (Figure 1), for which she was on regular follow up with the operating neurosurgeon.

She was continued on topical antiglaucoma medications and oral acetazolamide 250 mg TID was added and laser iridotomy both eyes was done.

On follow up after 1 week, her IOP was 24 in the right eye and 12 in the left eye, however she was intolerant to acetazolamide and was not willing to take it. Trabeculectomy with mitomycin C 0.02% was done in the right eye on the subsequent follow up. On post op day 1 the iop was 12, with a diffuse well formed bleb (Figure 4). At 6 months post op, the iop was 10 off drugs with a well formed diffuse bleb with microcysts, minimum vascularity and no leakage (Figure 3).

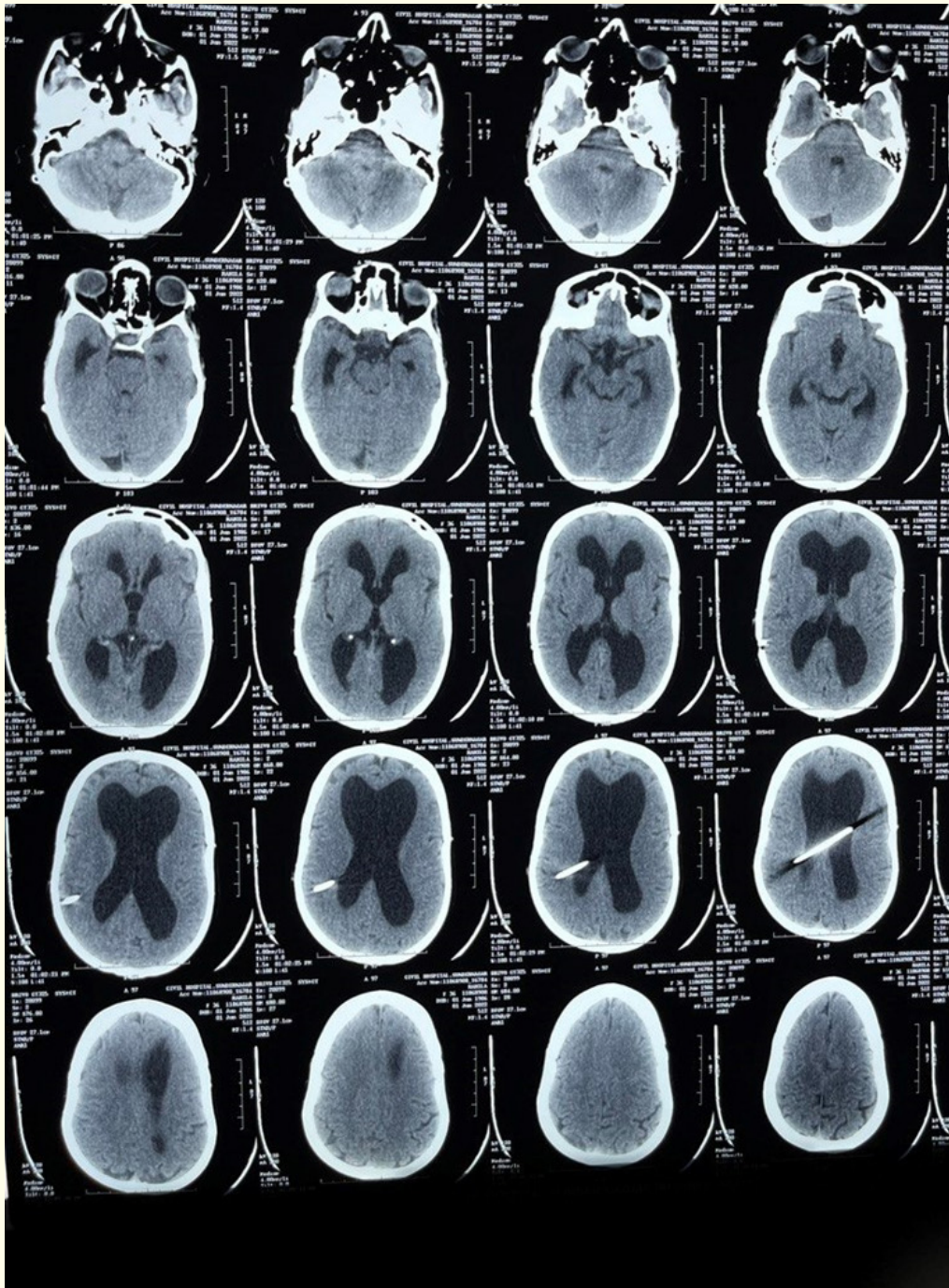


Figure 1: NCCT head of the patient showing placement of the ventriculoperitoneal shunt

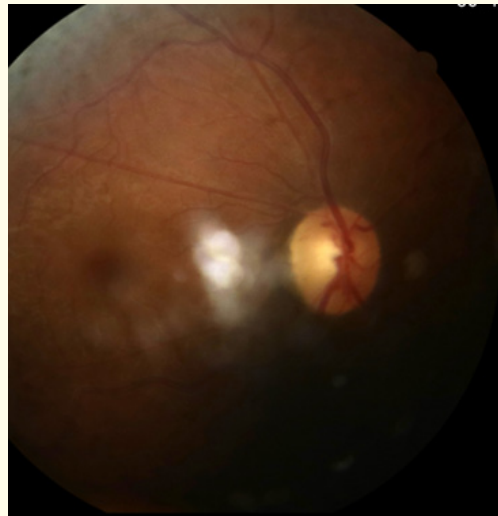


Figure 2: Disc picture of the right eye showing cup disc ratio 0.7.

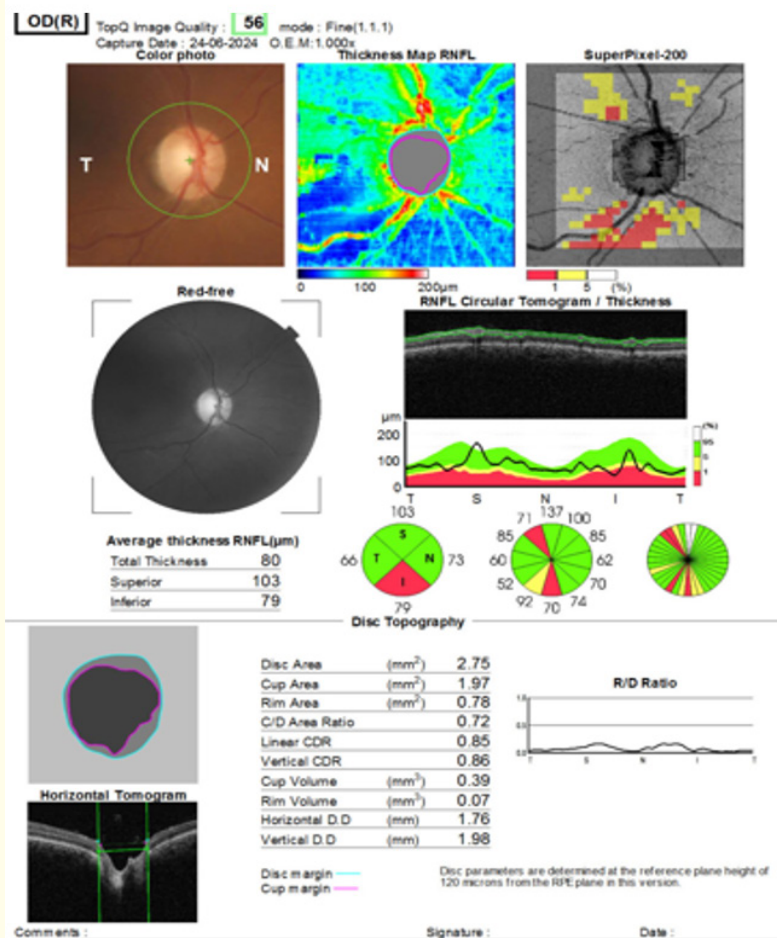


Figure 3: OCT of the right eye done on the Topcon 3D OCT showing inferior RNFL thinning.

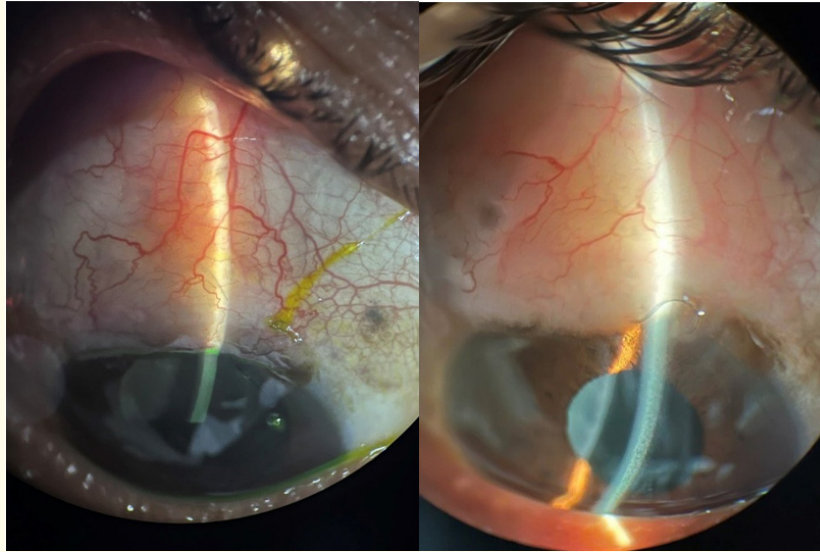


Figure 4: A (left side) Slit lamp image showing diffuse well formed bleb on day 1 post surgery; 4B (right side) diffuse bleb with microcysts 6 months post surgery.

Discussion

Normal pressure hydrocephalus (NPH) is the dilatation of cerebral ventricles leading to gait dysfunction and often other cortical and subcortical deficits. It may be idiopathic or due to secondary causes like aqueductal stenosis, trauma, infection, haemorrhage and mass lesions [1]. The most common treatment of NPH is the permanent diversion of cerebrospinal fluid (CSF) with a Ventriculoperitoneal Shunt (VPS) [2].

There have been previous reports of onset or progression of normal tension glaucoma post VP shunt for NPH, however high tension glaucoma has rarely been documented.

Volkov in 1976, put forward the hypothesis that a low Intracranial pressure (ICP) may be a factor in the pathogenesis of glaucomatous optic neuropathy as the optic nerve is surrounded by CSF just outside the lamina cribrosa [3,4].

In our case it could be preexisting primary angle closure glaucoma which was undiagnosed and was aggravated by lowering of intracranial pressure or the glaucoma onset occurred after the treatment of NPH. However, this opens a debate on the role

of Trans Lamellar Pressure Difference (TLPD) in high tension glaucoma as well. The case also highlights the role of early diagnosis and management of glaucoma in these patients so as to prevent the progression of this potentially blinding disease.

Declaration of Patient Consent

The authors declare that the patient consent has been taken for to use her data and images.

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