Unusual presentation of more common disease/injury

An unusual case of acute angle closure glaucoma following argon laser pan retinal photocoagulation

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Summary

Acute angle closure glaucoma (AACG) is a painful, potentially blinding condition with patients frequently presenting within hours of onset with ocular pain, nausea and vomiting. Argon laser pan-retinal photocoagulation (PRP) is one of the commonest ophthalmic outpatient procedures. It is used in the treatment of vascular disorders of the retina; most commonly diabetic retinopathy. AACG following PRP is a recognised, but rarely occurring, complication. Prompt treatment alleviates pain and improves visual prognosis. The authors report a case of AACG following PRP treatment which was initially mistaken for a viral illness.

BACKGROUND

This is a rare complication of panretinal photocoagulation treatment.

Initially this was mistaken for a viral illness, due to predominant non ocular symptoms during the initial stages of the condition. The significant delay in initiating treatment lead to less than satisfactory visual outcome.

This case was written up to remind clinicians to this complication, which although rare should be considered following peripheral pan retinal photocoagulation treatment and the need to educate patients to report to the casualty department if there are symptoms suggestive of acute glaucoma.

CASE PRESENTATION

A 70-year-old diabetic patient presented to Ophthalmic A & E department complaining of worsening vision in the right eye, accompanied by right sided headache. These symptoms had started 24 h following pan-retinal photocoagulation (PRP) treatment for proliferative diabetic retinopathy. The symptom of severe headache was accompanied by vomiting and mildly elevated body temperature. The patient contacted his GP Surgery and was given medication to stop vomiting with an assumption of Flu like illness. Patient had a history of treatment with laser on four occasions in the preceding 6 months. There was a delay of nearly 1 week in presenting to the ophthalmic A/E from onset of symptoms.

On presentation, his visual acuity was reduced to hand movements in the right eye, while the snellen acuity in the left measured 6/9. Slit lamp examination of the right eye demonstrated corneal oedema, a shallow anterior chamber and raised intraocular pressure (IOP) of 42 mm Hg by applanation tonometry. The pupil was irregular, semi-dilated and fixed. There was afferent pupillary defect of the right side. The view to the fundus was poor due to corneal oedema. Examination of the left eye was normal with the IOP measuring 20 mm Hg. Gonioscopy of the right eye was not possible due to corneal oedema, but the left eye showed narrow angles (Grade 2 Becker-Schaffer). The raised IOP

was relieved partly following administration of intra venous acetazolamide 250 mg, and topical administration of 4% pilocarpine. This was accompanied by relief of the pain, nausea and vomiting. Once the IOP had stabilised and corneal clarity restored, YAG-laser peripheral Iridotomy was performed in both eyes the following day. At his last follow up visit, 9 months later his best corrected visual acuity was 6/18 in the right eye and 6/6 in the left eye. His IOP was 16 mm Hg in both eyes without anti glaucoma medication. Fundus examination of the left eye showed a healthy optic nerve head (cup: disc ratio 0.3) whereas the right fundus examination showed pallor of the optic nerve head (cup: disc ratio 0.7) due to glaucomatous optic neuropathy. Subsequent biometry revealed axial length measurement of 22.60 mm and 22.63 mm in the right and left eye respectively.

TREATMENT

The raised IOP was relieved partly following administration of intra venous acetazolamide 250 mg, and topical administration of 4% pilocarpine. This was accompanied by relief of the pain, nausea and vomiting. Once the IOP had stabilised and corneal clarity restored, YAG-laser peripheral Iridotomy was performed in both eyes the following day.

OUTCOME AND FOLLOW-UP

At his last follow up visit, 9 months later his best corrected visual acuity was 6/18 in the right eye and 6/6 in the left eye. His intra ocular pressure was 16 mm Hg in both eyes without antiglaucoma medication. Fundus examination of the left eye showed a healthy optic nerve head whereas the right fundus examination showed pallor of the optic nerve head due to glaucomatous optic neuropathy.

DISCUSSION

Acute angle closure glaucoma (AACG) occurs when the outflow of aqueous is obstructed in its pathway resulting in significantly raised IOP. Pain, one of the important symptomatology in acute glaucoma may be falsely localised.

Patient may have headache, which may be generalised and sometimes systemic symptoms and signs like nausea and vomiting and even abdominal pain may predominate which may lead to a false diagnosis of viral illness or even acute abdomen.¹ The non ophthalmic origin of symptoms, coupled with a history of previous uncomplicated Argon laser PRP treatments may lead to the delay in the diagnosis as we see in our patient. Lack of ophthalmic cover, in district general hospitals may further delay proper management.

Argon laser PRP is a common ophthalmic procedure performed in eyes with vaso-proliferative retinopathy. Treatment is aimed at ablating peripheral retinal tissue in order to reduce the retinal oxygen supply to demand ratio. This in turn reduces the hypoxic vaso-proliferative drive which if left unchecked can result in a blind and painful eye.

The mechanism of IOP following PRP laser procedure is still unclear.

Blondeau *et al*² observed angle closure in 44% of patients within hours after PRP. It is postulated to be due to anterior displacement of the iris caused by elevation of the ciliary body which is continuous with the iris root posteriorly. This results in narrowing of the drainage angle and obstruction of aqueous humour outflow. Ultrasound studies have shown the incidence of ciliochoroidal effusion following PRP to be as high as 90%.³ This effusion rotates the ciliary body and iris root anteriorly to trigger this cascade. Mensher *et al*⁴ have hypothesized that PRP damaged veins returning blood from the ciliary body to the choroidal venous system leading to oedema and hyperemia of the ciliary process. Another theory is that PRP caused a temporary breakdown in the blood retinal barrier leading to outpouring of fluid from the choroid into vitreous and an annular choroidal detachment.⁵ However, in the majority of cases, the angle closure and resultant IOP rise is transient and asymptomatic.

The hypermetropic refraction (+2.75D Sph both eyes) and age of our patient could have been significant contributory factors in our patient. Hypermetropes, have shorter axial lengths of the eye ball with narrow angle of the anterior chamber. With aging, the natural crystalline lens of the eye thickens leading to further compromise of the drainage angle. Furthermore, previous PRP applications may have

already compromised his choroidal circulation, predisposing to ciliochoroidal effusion. Additionally choroidal effusions tend to occur more frequently in older patients due to stiffening of the sclera.

In summary, this case highlights important diagnostic aspects of AACG. Thorough, ocular examination is important in patients presenting with headache and vague systemic symptoms particularly of gastrointestinal origin in the elderly. A recent history of Argon laser PRP should increase the index of suspicion. Checking the refractive status, could further aid recognition of this rare, but serious complication of PRP. This will enable prompt treatment to alleviate patient discomfort and improve visual prognosis.

Learning points

- ▶ Acute glaucoma should be considered as a potential complication after laser panretinal photocoagulation treatment.
- ▶ Acute glaucoma can present with vague non ocular symptoms like an acute abdomen or as a viral illness.
- ▶ Checking refractive status of patients undergoing panretinal photocoagulation treatment is important as they may be predisposed to acute glaucoma following treatment.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **William T**, Edward J. *Duane's clinical ophthalmology*. Revised edition 1999. Chapter 53. Vol 3. Philadelphia, Pennsylvania, USA: Lippincott, Williams & Wilkins, 13–15.
2. **Blondeau P**, Pavan PR, Phelps CD. Acute pressure elevation following panretinal photocoagulation. *Arch Ophthalmol* 1981;**99**:1239–41.
3. **Yuki T**, Kimura Y, Nanbu S, *et al*. Ciliary body and choroidal detachment after laser photocoagulation for diabetic retinopathy. A high-frequency ultrasound study. *Ophthalmology* 1997;**104**:1259–64.
4. **Mensher JH**. Anterior chamber depth alteration after retinal photocoagulation. *Arch Ophthalmol* 1977;**95**:113–6.
5. **Boulton PE**. A study of mechanism of transient myopia following extensive xenon arc photocoagulation. *Trans Ophthalmol Soc UK* 1974;**93**: 287–300.

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