Steroid induced glaucoma

Patient profile:

A 16 year old male presented to the clinic with complaints of dimness of vision in right eye for 3 months. He was using topical steroid eye drops for his allergic eye disease on & off for last 2 years.

Past history: Positive for allergic rhinitis

Personal /Family history:

Family history was significant as his forty-one year old is known case of allergic bronchitis and steroid responder.

General and systemic examination findings: Within normal limits

Local examination findings:

Visual acuity: 6/12, N10 in right eye and 6/6 N6 in left eye

Procedural investigations

Applanation tonometry:

IOP: OD = 35 mm Hg; IOP: OS = 24 mm hg

Gonisoscopy: Open angles

Fundoscopy of the optic disc: The optic disc was moderately sized in the both eyes. The rim in the right eye showed superior and inferior notch with a cup to disc ration of 0.9:1. There was superior and inferior peri-papillary atrophy in this eye too and diffuse Retinal Nerve fiber Layer loss. (fig 1). The left eye has a moderate sized optic disc with a cup to disc ratio of 0.6:1 with mild thinning of the inferior rim. Inferior poles had large areas of peri—papillary atrophy.

Visual field examination: Right eye showed advanced visual field defect with bi-arcuate scotoma with scotoma close to fixation (Fig 2) and left eye showed generalised reduction sensitivity.

Central corneal thickness:

CCT OD = 543; CCT OS = 537

Office phasing: it was not done as at baseline IOP was very high and that was confirmed by checking IOP one more time during baseline visit which also showed IOP of 27 mm Hg in Right eye and 39 mm Hg in right eye.

Diagnosis: Steroid Induced Glaucoma with right eye showing advanced glaucomatous damage

Management plan:

Considering the diagnosis of **Steroid Induced Glaucoma with right eye showing advanced glaucomatous damage** steroid responder, we asked patient to stop topical steroid eye drops. as glaucomatous damage in one eye was advanced, patient was counseled to initiate treatment for the same. He was prescribed bimatoprost 0.01% for the right eye. Management aimed to achieve at least 35% reduction in the intraocular pressure (IOP).

Follow up/Response to treatment: Patient was called after 3 weeks for IOP check up. His IOP at the end of one of treatment was 22 and 18 mm Hg in the right and right eye respectively. He was tolerating treatment well with no complaints. In view of the positive response to treatment, the patient was advised to use bimatoprost 0.01% for both his eyes. He was advised to follow up for repeat IOP assessment at the end of two months.

Case discussion:

One third of the population may experience an increase in IOP in response to the local or systemic use of corticosteroids, but the response varies among individuals.[1] The increase in IOP noted with steroid therapy appears to be dose and time dependent. Fortunately, most of the IOP spikes can be controlled with topical medical therapy alone.

Although the incidence and natural history of steroid-induced glaucoma are well known, the cause of this phenomenon is not well understood. Various theories exist as to the mechanism of the disease's development at the cellular level.

HOW TO DEAL WITH LIKELY STEROID RESPONDERS

The first problem in dealing with steroid responders is identifying them. Clinicians must remain vigilant after initiating steroid treatment due to the variable time of onset and severity in IOP responses between patients. IOP spikes may occur hours to weeks after the initiation of steroid therapy. The initial step is to rule out other causes for elevated IOP.
When the elevated IOP is more obviously due to steroid therapy, as occurs shortly after an intravitreal injection of triamcinolone for retinal pathology unrelated to glaucoma, the ophthalmologist should make an effort to remove the offending agent. It may take days to weeks for a patient's IOP to return to baseline, and some individuals may require chronic medical or surgical therapy to control their IOP. Up to 3% of steroid responders may have irreversible elevations of IOP.

Safety and efficacy of bimatoprost 0.01% was evaluated and compared with bimatoprost 0.0125% and bimatoprost 0.03% in patients with glaucoma or ocular hypertension. Bimatoprost 0.01% was safe and efficacious in lowering the intraocular pressure through the 12 months of treatment. It demonstrated improved tolerability, less frequent and severe conjunctival hyperaemia as compared to bimatoprost 0.03%. As compared to bimatoprost 0.0125% treatment with bimatoprost 0.01% demonstrated a better benefit to risk ratio. Bimatoprost in treatment naïve patients with elevated intraocular pressure either due to ocular hypertension or primary open angle glaucoma was evaluated in a real world clinical setting as part of the CLEAR trial. The study observed that once daily instillation of bimatoprost 0.01% caused a reduction in the IOP by a mean of 30% from the baseline value. This effect was noted in 93% of the treatment naïve patients and no adverse effects of moderate or severe ocular hyperaemia were noted in them.