Top Strategies for Managing and Treating Primary Open Angle Glaucoma

Primary Open Angle Glaucoma is a diagnosis of exclusion and has been defined as "a chronic optic neuropathy with characteristic changes in the optic disc and corresponding typical defects in the visual field for which IOP is the only treatable risk factor."[1]

In a previous article, I discussed risk factors for POAG. In this article we will explore initial treatment and management options for a newly diagnosed patient.

Initial treatment

In an uncomplicated case of primary open angle glaucoma, you have multiple treatment options from which to choose. Typically this will either be topical pharmaceuticals or surgical procedures. For initial treatment, most glaucomologists will choose the pharmaceutical route. The topical options can be divided into the following five classes: prostaglandin analogues (PAs), alpha-2 agonists (AAs), beta-blockers (BBs), carbonic anhydrase inhibitors (CAIs), and cholinergic agonists (CAs).

PAs are currently the first line treatment of choice for many practitioners. This is largely due to their dosing schedule, efficacy, limited adverse effects, and availability.[2,3] They are typically dosed once per day as their effect has been shown to last 24 hours.[4] The average IOP reduction has been reported to be 18%-31% during the day and 8.5%-17% at night. The most commonly reported potential side effects are mild conjunctival hyperemia, hypertrichosis, periorbitopathy, and iris and periorbital hyperpigmentation.[5] There is also some concern that PAs may increase the

likelihood of cystoid macular edema developing in pseudophakic patients, cause anterior uveitis, and reactivate herpes keratitis simplex, however these adverse effects seem to be rare.[6] There are multiple drugs within this category, including generic, alternative preservative, and non-preserved options. All of those benefits make these agents excellent first line options.

AAs are most often used in a secondary role, when monotherapy with another agent is insufficient. They have been shown to lower IOP by 22%-28%.[7] They have a fairly short duration of action and thus are typically dosed TID as monotherapy or BID when combined with another agent.[7,5] Adverse effects can include blepharitis, follicular conjunctivitis, miosis, conjunctival vessel blanching, dry mouth, systemic hypotension, fatigue, and drowsiness.[7,5] They are contraindicated in patients taking MAOIs because MAOIs may reduce the efficacy of PAs. AAs may offer some degree of neuroprotection, which would strongly increase their appeal; however, the current research is inconclusive.[8]

BBs were once the initial drugs of choice before they were replaced by PAs. They can reduce IOP by 22%-28% during the day.[7,5] They are typically dosed BID, with the second dose in the afternoon, however some glaucomologists will forego the later dose as PAs cause little to no IOP reduction at night.[7,5] Adverse effects include ocular irritation, stinging, dryness, and conjunctival hyperemia, headache, confusion, lethargy and fatigue, bradycardia, and bronchospasm.[7,5] Caution should especially be used in patients with hypertension or asthma. The concurrent use of systemic BBs may reduce the efficacy of topical BBs and may worsen the bradycardia side effect; as such, topical BBs are often not prescribed for those patients.[5]

CAIs have been shown to lower IOP by 13.2%-22% during the day and are typically dose BID-TID.[5] The most common side effect is ocular irritation. They are contraindicated in patients with a sulfa allergy.[7] These are used as an additional agent when further IOP reduction is desired.

CAs are rarely used, despite 25% reductions in IOP, due to TID-QID dosing and adverse effects of miosis, brow ache, headache, myopic shift, induced accommodation, and increased risk of retinal detachment and iritis.[9,7,5]

Various combinations also exist, but we rarely use those as initial treatment.

Selective Laster Trabeculoplasty (SLT) has been proposed as an initial treatment option. While some glaucomologists are using it as a first line treatment, doing so is not very common. A thorough exploration of the concept would require its own article.

In clinic, when I first decide to initiate treatment, I will typically set a target IOP that is 20% lower than the highest recorded untreated Goldmann reading. I will usually prescribe a prostaglandin analog one drop in each eye every night and have the patient back in a month to check IOP, compliance, side effects, etc. If at that visit all is well, I will typically continue to monitor the IOP every three to four months, visual field studies every six months, OCT (ONH and GCC) every 12 months, and fundus photos every 12 months.

However, things can become a bit more complicated if at any visit all does not seem well.

Managing primary open angle glaucoma

If at the first visit the IOP is not at target there are several factors I will consider. Is the patient being compliant? When was the last dose (some otherwise compliant patients will skip a dose the day/night before an appointment)? Was there a delay in the patient actually starting the treatment regimen? Is the drop being instilled properly? Has there been a change in systemic medications since the last visit (especially were steroids initiated or beta blockers discontinued)? Is this drop incapable of getting this patient to the target?

Of course, the answers can have significant impact on the next step.

Compliance should be addressed with patient counseling and education regarding the importance of compliance to prevent or delay vision loss. Instillation issues should be addressed with clear instructions and possibly a live or recorded demonstration of proper technique.

If a change in systemic medication(s) is suspected to be the causative factor, a letter to the prescriber and a change in our treatment regimen may be in order.

Once those issues have been addressed and ruled out, it is time to reconsider the treatment plan. An initial thought could be to simply continue the current medication for another few weeks or one month and recheck the IOP. Often, I have found that the patient will be at target at that visit. A common practice in glaucoma management is to never alter treatment based on just one pressure reading.

However, if altering the treatment regimen is desired, many practitioners will switch to another drop within the same class and reassess in one month. Often that will result in an extra point or two of IOP reduction. This is most commonly done with PAs.

Alternatively, adding a second medication may be the desired course of action. In which case, an AA or CAI usually chosen.

If further IOP reduction is desired, adding on a combination drop is typically my next step. At this point, many would say the patient has reached maximal medical therapy and surgical options should be considered for further IOP reduction. Some would argue they should have already been at least strongly considered by this point.

If the patient is having difficulties not with the medication's efficacy, but with its side effects, again switching to another drop in the same class may resolve the issue. However, switching to one with an alternative preservative or no preservative is also an option worth considering.

Armed with the above information, you should be able to confidently manage most of your cases of primary open angle glaucoma.

References

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