Guest Editorial

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Prostaglandin Analogues: A Critical Appraisal

Prostaglandin analogues are currently the first line medical therapy in the treatment of glaucoma primarily because of their high efficacy (25-30% IOP lowering), once daily dosage and systemic safety profile. However there is no consensus on which prostaglandin to use and how to choose in between the 4 formulations available. One should be aware of the drug concentrations, preservatives, and volume of drugs currently available in India:

1. *Latanoprost 0.005% with BAK preservative 0.02% (Xalatan) 2.5 ml*
2. *Travoprost 0.004% with polyquad preservative 0.001% (Travatan) 2.5 ml*
3. *Bimatoprost 0.03% BAK 0.005 %/0.01% BAK 0.02% (Lumigan) 3 ml*
4. *Tafluprost 0.0015% BAK 0.001% 2.5 ml and preservative free unims*

An important consideration when using PG analogs (PGA) esp. Latanoprost is the existence of Non responders (IOP reduction is less than 10% from baseline). In such a scenario, the patient has to be shifted to another PG analog. Regarding the IOP lowering efficacy, a recent meta-analysis showed that bimatoprost is more effective for IOP control as compared to latanoprost/travoprost but also has the highest side effects and least persistency. This may be related to the high concentration of the drug itself and high levels of BAK as compared to other PG analogs. Latanoprost is better tolerated and has least side effects as compared to Bimatoprost / Travoprost.

In addition to common adverse effects such as Conjunctival hyperaemia, ocular discomfort with dry eye like symptoms, growth of lashes, Iris and peri-ocular pigmentation, PG associated orbitopathy with enophthalmos / ptosis / deepening of upper eye lid sulcus due to fat atrophy can be a serious cosmetic problem and one must never give long term therapy in one eye of a patient. Patients with ocular surface disease should be prescribed BAK free formulations and if affordable - preservative free unims are the best option.

Recently biodegradable bimatoprost implant (Durysta) has been granted FDA approval as the first intracameral sustained release therapy for lowering IOP. Initial results have shown that the implant reduced IOP by 30 percent over the 12-week primary efficacy period.

Two new fixed drug combinations with PG analogs in addition to timolol have also been released –

Prostaglandin + Nitric oxide donor Vyzulta - Latanoprostene bunod (0.024%) – acted upon by aqueous esterases to produce latanoprost acid (increases uveoscleral outflow) and NO donor – butanediol mononitrate (increases conventional outflow)

Prostaglandin + Rho Kinase inhibitor - Rocklatan – Latanoprost 0.005% + Netarsudil 0.02%: acts by increasing outflow through both uveoscleral and conventional pathways along with decrease in aqueous production.

PGA can increase the risk of pseudophakic CME and one may stop these drugs upto 3 months post cataract surgery (especially in eyes with a complication like PC rent). In high risk cases, PGA may be given along with NSAIDs and close monitoring done for development of CME.

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2. *Steven DW, Alaghband P, Lim KS. Preservatives in glaucoma medication. Br J Ophthalmol. 2018 Nov;102(11):1497-1503.*

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