Glaucoma Update

Issue 1

Latanoprost is associated with better adherence and persistence compared to other prostaglandin analogs for glaucoma and ocular hypertension

Background

Glaucoma affects 3.54% of the global population aged 40–80 years, with Asia alone accounting for ≈60% of the cases.[1] As per data from population-based studies in India, the prevalence of glaucoma ranges from 2.67% to 3.23%.[2,3] Nearly one in every eight Indians aged over 40 years is either diagnosed with glaucoma or is at risk of the disease.[4]

Topical prostaglandin analogs (PGAs) are used in the initial management of glaucoma and ocular hypertension. These agents have demonstrated greater efficacy in lowering intraocular pressure (IOP) and decreasing the risk of adverse events compared to other classes of ophthalmic drugs, including beta-blockers and carbonic anhydrase inhibitors.[5]

Latanoprost was the first of the presently available topical prostaglandin F2α analogs to be marketed for glaucoma or ocular hypertension. It has been shown to have the best efficacy–tolerability ratio among the PGAs available for glaucoma therapy.[6]

Importance of adherence and persistence to glaucoma medications[5]

- In glaucoma, daily use of medications can minimize disease progression and achieve successful treatment outcomes.
- Poor persistence to initial therapy in glaucoma patients can lead to adverse health sequalae like elevated IOP levels and consequent blindness.
- Moreover, failure of the initial PGA monotherapy to lower IOP adequately may necessitate adjunctive medication, a switch to alternative medications, or surgery/laser therapy in order to attain optimal IOP control.

Consistent and appropriate use of glaucoma medications is essential to minimize disease progression and achieve successful treatment outcomes.[5]

Comparative analysis of latanoprost, travoprost, and bimatoprost: A long-term follow-up study[5]

A study was performed to compare medication adherence, duration of therapy, and treatment patterns among three PGAs, latanoprost, travoprost, and bimatoprost, as initial therapies for patients with glaucoma or ocular hypertension. The study methods are described in Figure 1.

Figure 1: Study methods[5]

Study design	A retrospective, observational, 24-month follow-up study using data from a large national health plan
Patients	Patients (n = 3,888; mean age: 74.4 ± 7.9 years; 45% males) newly diagnosed with glaucoma or ocular hypertension who had at least one prescription for latanoprost, travoprost, or bimatoprost (n = 1,296 per group)
Outcomes measures	• Medication adherence, assessed using 24-month medication possession ratio (MPR) • Discontinuation of first-line therapy, defined as non-persistence (90-day gap allowance) of the index PGA or a change in therapy (i.e., addition, switch, or surgery) during the 24-month follow-up
Statistical analysis	• MPR was compared between the treatment groups using a multivariate generalized linear model. • The time to discontinuation of first-line therapy was estimated with the help of a Cox proportional hazards model and a Kaplan-Meier plot. • The models were adjusted for demographic and clinical characteristics.

Results

Medication adherence and duration of therapy

- After controlling for demographic and clinical characteristics, latanoprost users had a significantly higher medication possession ratio compared to bimatoprost users during the 24-month follow-up (Table 1).
- In the adjusted Cox proportional hazards model, travoprost and bimatoprost were associated with a significantly higher risk of discontinuation of first-line therapy as against latanoprost (Table 1).
- A Kaplan-Meier survival plot revealed a significantly longer time to discontinuation of first-line therapy for the latanoprost group *vs.* other groups (Figure 2).

Persistence to therapy

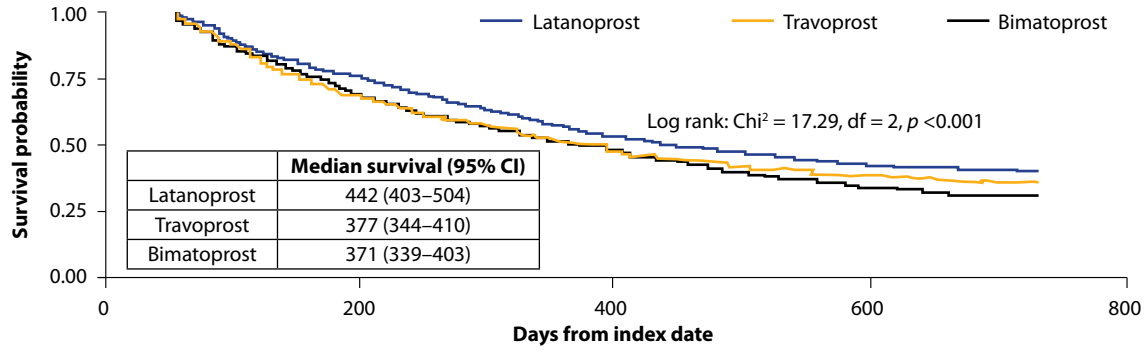
- The proportion of patients persistent on the index PGA (i.e., without switches, additions, and surgery) was highest in the latanoprost group *vs.* travoprost and bimatoprost groups (Figure 3).
- Relative to latanoprost users, travoprost users had significantly higher odds of adding another medication (Figure 4).

Table 1: Results of statistical analysis for medication adherence and discontinuation of first-line therapy in the study groups[5]

PGA used	Medication adherence (MPR)[a]		Discontinuation of first-line therapy[b]	
	Coefficient	*p*-value	Hazard ratio	*p*-value
Latanoprost (ref.)	–	–	–	–
Travoprost	–1.32	NS	1.41	<0.0001
Bimatoprost	–7.21	<0.0001	1.48	<0.0001

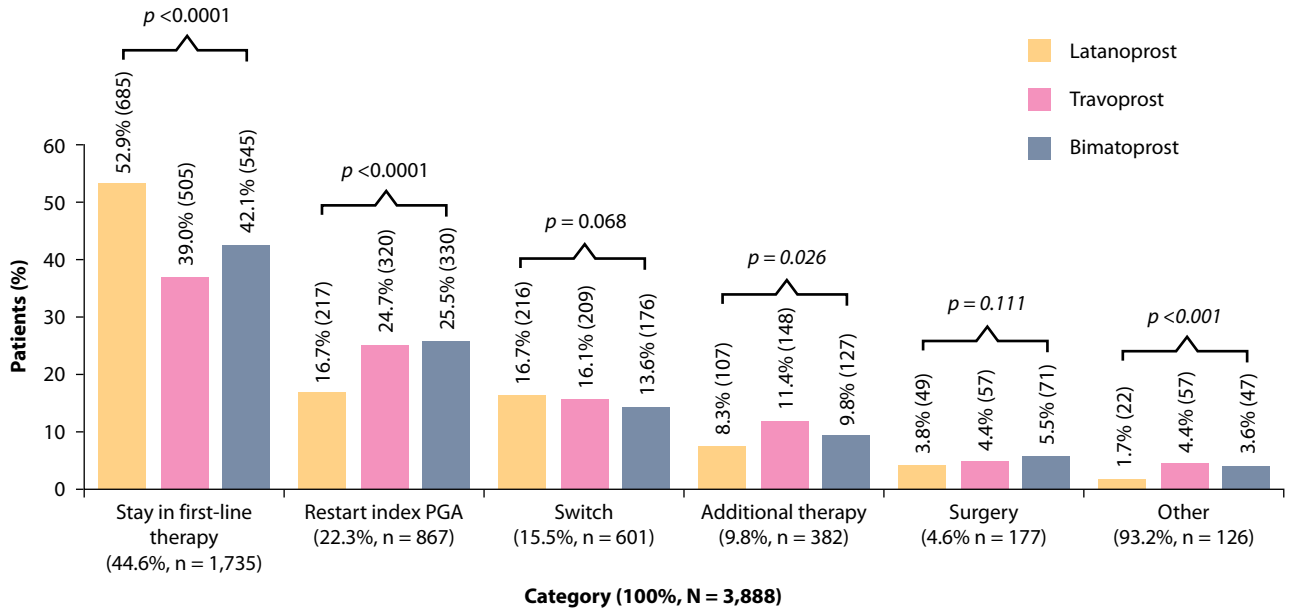
[a]Generalized linear model with normal distribution with the identity link function was used. [b]Cox proportional hazard model was used. Both the models were adjusted for age, gender, race/ethnicity, Charlson Comorbidity Index, type of glaucoma, presence of ocular hypertension and diabetes, and all-cause outpatient and inpatient visits during a 12-month pre-index period. NS: Not significant.

Figure 2: Kaplan-Meier plot for discontinuation of first-line therapy based on the index prostaglandin analog[5]



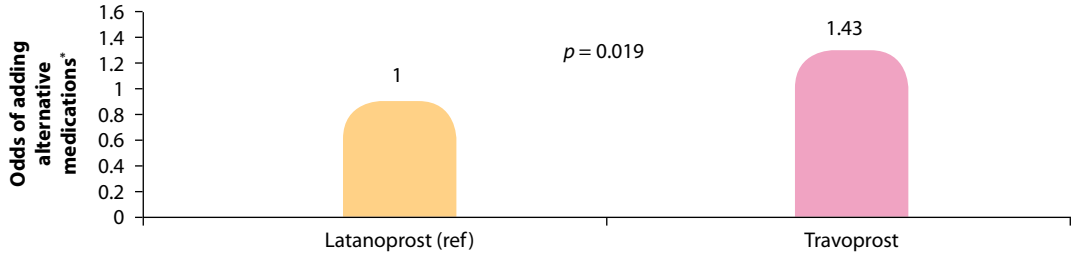
Chi²: Chi-square; CI: Confidence interval; df: Degrees of freedom.

Figure 3: Comparison of treatment patterns in the study groups[5]



Chi-square test was used. PGA: Prostaglandin analog.

Figure 4: Odds of adding a second-line therapy to latanoprost *vs.* travoprost[5]



**Conditional logistic regression model was used.*

Clinical implications

- Use of latanoprost, compared to bimatoprost or travoprost, as initial treatment for patients with glaucoma or ocular hypertension was found to have greater odds of adherence and a lower risk of medication discontinuation.
- The choice of initial therapy may be an important consideration to improve adherence and persistence.

References

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