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Peer Review

Review of: "Incidence and Predictors of Ocular Hypertension After Intravitreal Injection of Bevacizumab Among Patients Attending KCMC Hospital, 2023–2024"

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This study presents a timely and clinically relevant investigation into the incidence and predictors of ocular hypertension (OHT) following intravitreal Bevacizumab injections in a Tanzanian referral hospital. One of its strongest aspects is the prospective cohort design, which enhances the reliability of findings through systematic follow-up and minimizes recall bias. The rigorous methodology—particularly the consistent measurement of intraocular pressure (IOP) at multiple time points—adds scientific robustness. By including both injected and non-injected fellow eyes, the researchers established a valuable internal control that strengthens the causal inference between injections and IOP changes.

A notable strength is the study's contribution to filling a knowledge gap in Sub-Saharan Africa, where data on ophthalmologic outcomes of anti-VEGF therapies remain limited. The inclusion of 120 participants over a one-year period provides a reasonably powered sample for exploratory and inferential statistics. Moreover, the use of multivariate regression to adjust for confounding variables such as age, sex, YAG capsulotomy, and systemic hypertension strengthens the credibility of the associations found, particularly the influence of injection frequency and YAG laser history on OHT.

The documentation of transient and persistent IOP spikes adds nuanced understanding to the immediate and cumulative effects of Bevacizumab. The detailed reporting of IOP behavior—especially the time-course analysis within the first hour and across multiple injections—offers practical insights for

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clinicians on the timing of post-injection assessments. Such findings could inform follow-up protocols and highlight the need for IOP monitoring, particularly after multiple injections.

The study also effectively situates its findings within global literature, drawing meaningful comparisons with other key trials. It is commendable that the authors contextualize their higher observed OHT incidence not only through methodological considerations (e.g., stricter operational definition) but also through regional and procedural factors such as injection technique, frequency, and lack of prophylactic measures. This reflective approach enriches the discussion and avoids overly deterministic conclusions.

However, several opportunities for improvement emerge. First, while the study employs a pragmatic design, the reliance on the Icare tonometer rather than Goldmann applanation tonometry—considered the gold standard—may limit the generalizability and precision of IOP measurements. Have the authors considered the calibration or cross-validation of the Icare against Goldmann in their setting? Additionally, the study would benefit from clarifying the rationale for selecting the 0.1 mL injection volume, which exceeds common practice and may itself influence transient pressure spikes.

Another point concerns the exclusion criteria, which, though comprehensive, might have been overly restrictive. The exclusion of any pathology that could "make interpretation difficult" introduces subjective judgment that could limit external validity. Would including such patients—followed by subgroup analysis—have allowed for broader applicability without compromising data integrity?

The data presentation is generally clear, but the results section could benefit from more focused synthesis. For instance, the dual use of two OHT definitions (IOP >21 mmHg and >5 mmHg from baseline) adds depth but could be confusing without a stronger rationale for employing both. Perhaps a sensitivity analysis showing how incidence estimates differ under each definition would strengthen the argument. Similarly, it would be valuable to elaborate further on the clinical implications of short-lived but severe IOP spikes (e.g., >50 mmHg) even if they normalize within an hour—could these cause subclinical optic nerve damage over time?

Another area for elaboration is the role of prophylactic measures. The study references the absence of IOP-lowering pre-treatment but does not explore whether the implementation of such measures—such as topical carbonic anhydrase inhibitors or alpha agonists—could mitigate the observed spikes. Including a discussion or even a proposed protocol for future evaluation would enhance the translational relevance.

Regarding the statistical analysis, the use of Poisson regression is appropriate for count data, yet the justification for choosing this model over alternatives such as logistic regression could be made more

explicit. Also, although adjusted hazard ratios (AHR) are reported, the use of “hazard” suggests time-to-event modeling; were Cox models considered or applied? Clarification here would improve methodological transparency.

Lastly, while the discussion highlights the influence of YAG capsulotomy and multiple injections, further reflection on how this should change clinical practice is warranted. Should patients with a YAG history be monitored more aggressively? Is there a role for more conservative injection intervals or alternative therapies in such populations? Addressing these questions would bolster the practical application of the findings.

In conclusion, this study makes an important contribution to understanding post-injection ocular hypertension in a low-resource setting and raises awareness about the need for vigilance in long-term anti-VEGF therapy. Its strengths in design, analysis, and regional relevance are clear. Future studies could build upon this work by incorporating broader patient inclusion, validating IOP measurements with gold-standard tools, and evaluating interventional strategies to prevent pressure elevation. The paper serves as both a scientific contribution and a call to action for improved IOP monitoring protocols in anti-VEGF treatment regimens.

Declarations

Potential competing interests: No potential competing interests to declare.