The Association of Primary Open Angle Glaucoma and Ocular Hypertension with Intravitreal Anti-VEGF

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Purpose:
To study the effects of anti–VEGF injections on the prevalence of Ocular Hypertension (OHT) and Primary Open Angle Glaucoma (POAG) with age-matched controls.

Methods:
A one-year, retrospective case-control study of 927 eyes from 624 consecutive patients were analyzed at the Acuity Eye Group. Intravitreal injections (IVI) of anti-vascular endothelial growth factor (anti-VEGF) agents were performed by a single clinician with either Bevacizumab, Ranibizumab, or a combination of the two for either neovascular AMD or diabetic macular edema (DME). Patients treated for vein occlusions (77), prior vitrectomy (1), prior history of intravitreal triamcinolone injections (18), or insufficient data (26), were excluded from this study. For the control group, 289 eyes were reviewed, consisting of atrophic AMD and diabetic retinopathy without DME.

Results:
The anti-VEGF group consisted of 517 eyes, 273 received Bevacizumab only, 83 received Bevacizumab plus Ranibizumab, and 161 received Ranibizumab only. The anti-VEGF group had a significant increase in OHT compared to the control group with 57.85% versus 22.31% respectively, p <.00001. POAG was also significantly higher in the anti-VEGF group compared to the controls, demonstrating 12.38% versus 3.81% respectively, p < .0001. Glaucoma suspects (GS) were also increased in the IVI group compared to the control, 18.57% versus 12.80% respectively, p<.05. Within GS of the IVI group, 18% of patients had cupping and RNFL loss without documented OHT. The number of IVI were classified between 0-5, 6-10, 11-15, 16-20, and 21+. The rates of POAG and OHT were positively associated with the number of injections, $R^2=.856$, p = .008 and $R^2=.749$, p <.05, respectively.

Conclusions:
We present a consecutive series of patients treated with anti-VEGF agents against age matched controls, noting an increased rate of POAG, OHT, and glaucoma suspect in the IVI group. Interestingly, the rates of POAG and OHT were strongly correlated with the number of IVI.