Risk of intraocular inflammation following intravitreal injection of anti-vascular endothelial growth factor agents: a network meta-analysis

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Purpose

• The relative incidence of intraocular inflammation (IOI) between intravitreal anti-vascular endothelial growth factor (VEGF) agents for the treatment of neovascular age-related macular degeneration (nAMD) is not well established.
• Recent reports suggest an increased incidence of IOI with brolucizumab.
• A better understanding of the risk of ocular inflammatory adverse outcomes can help inform treatment paradigms in the management of nAMD, particularly in the context of recent brolucizumab findings.
• This network meta-analysis investigates the risk of IOI following intravitreal anti-VEGF injections.

Methods

• A systematic literature search was performed on Ovid MEDLINE, EMBASE, and Cochrane Library from 2005 to April 2021.
• RCTs comparing IOI incidence following intravitreal bevacizumab, ranibizumab, brolucizumab, or aflibercept for nAMD were included.
• Primary outcomes were the incidence of sight-threatening IOI (i.e. endophthalmitis, retinal vasculitis, retinal vascular occlusions) and best corrected visual acuity (BCVA).
• Secondary outcomes included the incidence of iritis/iridocyclitis, vitritis/vitreous cells, vitreous haze/floaters, and generalized intraocular inflammation.

Results

• 14 RCTs reporting on 6759 eyes at baseline were included.
• No significant differences were observed between anti-VEGFs for sight-threatening IOI.
• Compared to aflibercept, brolucizumab was associated with a significantly higher incidence of generalized IOI (RR=6.24, 95% CI=[1.40,27.90]) and vitreous haze/floaters (RR=1.64, 95% CI=[1.00,2.67]).
• There were no significant differences between comparators for other secondary outcomes.

Discussion

• There were no significant differences between anti-VEGF agents for sight-threatening IOI and BCVA.
• There was a significantly higher risk of generalized IOI and vitreous haze/floaters following brolucizumab relative to aflibercept.
• Brolucizumab is a significantly smaller molecule than other anti-VEGF agents, which may allow for high ocular concentrations in the eye and thus a risk of IOI.
• Alongside other recent brolucizumab safety findings, our analysis suggests the need for further investigation in the use of brolucizumab for the treatment of nAMD.
• Conclusions derived at the study level may not always hold true at the individual patient level.

Conflicts of Interest

N.P: None Declared, A.D: None Declared, M.P: PSI Foundation, R.M: Bayer, Novartis, P.K: Bayer, Roche, Novartis, ArcticDx