DSEN ABSTRACT

How safe is intravitreal bevacizumab to treat common causes of blindness? Emerging real-world data

Summary

Age-related macular degeneration (AMD) is a leading cause of blindness and may affect up to 3.2% of Canadians. Our objective was to examine the safety of anti-VEGF agents when injected intravitreally as the treatment of AMD or other retinal conditions.

Results of the current study support prior findings, suggesting that different anti-VEGF agents have similar safety profiles regarding systemic effects (stroke, heart attack, deep vein thrombosis, pulmonary embolism).

We did find a greater risk of ocular adverse outcomes for bevacizumab versus ranibizumab or aflibercept versus ranibizumab in some instances.

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What is the current situation?

Age-related macular degeneration (AMD) is one of the leading causes of blindness among older Canadians, leading to severe disability. Anti-vascular endothelial growth factor (anti-VEGF, e.g.: bevacizumab) agents have dramatically changed management of neovascular AMD and other retinal conditions. Drug-related adverse events associated with anti-VEGF agents have been reported, but there is a paucity of real-world safety data. This study examined ocular and systemic complications of anti-VEGF injections given for neovascular ('wet') AMD and other serious retinal conditions, using population-based cohorts.

What was the aim of the study?

We studied the safety of bevacizumab when injected intravitreally for the treatment of patients threatened with the following causes of serious vision loss:

- neovascular (wet) AMD;
- diabetic macular edema;
- macular edema due to retinal vein occlusion;
- choroidal neovascularization secondary to pathologic myopia.

How was the study conducted?

The first cohort study used previously validated International Classification of Diseases (ICD) diagnostic codes to identify the above diagnoses of interest within the United States Marketscan Commercial Claims administrative health database (2011-2016).

The second study used drug codes to identify a treatment-based cohort of anti-VEGF users within the National Prescription Drug Utilization Information System, NPDUIS (2012-2016). In all analyses, we used time-to-event analyses of safety outcomes including.

- Local complications (endophthalmitis, rhegmatogenous retinal detachment, retinal tear, uveitis, glaucoma, and vitreous hemorrhage)
- Systemic complications (stroke, heart attack, deep vein thrombosis, and pulmonary embolism).

What did the study find?

- Current use of any anti-VEGF (versus no current use) was associated with higher risk of both local and systemic complications.
- In the direct comparisons of different anti-VEGF agents, we found a greater risk of local complications for bevacizumab versus ranibizumab in patients with diabetic retinal conditions. We also noted higher risk of uveitis for aflibercept versus ranibizumab in AMD patients and lower risk of vitreous hemorrhage when comparing the same agents in patients with AMD and diabetic retinal conditions.
- No clear differences were seen in systemic complications, comparing anti-VEGF agents with each other.
- These drugs, which hold promise to prevent or delay blindness for millions of Canadians, are associated with relatively low rates of systemic complications, which did not differ amongst the different agents. However, differences in the profile of local complications were noted for some anti-VEGF agents.

This research was funded by CIHR – Drug Safety and Effectiveness Network and conducted by investigators affiliated with:

Link to publication: https://onlinelibrary.wiley.com/doi/full/10.1002/pds.4275