Research Brief

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Anti–Vascular Endothelial Growth Factor Therapy for Age-related Macular Degeneration: A Systematic Review and Network Meta-analysis

Summary

A systematic review was conducted to determine the comparative safety and efficacy between anti–vascular endothelial growth factor agents (anti-VEGFs) and between combined therapies for patients with neovascular age-related macular degeneration (nAMD) is unclear.

Implications

The results of this study showed that anti-VEGF agents are superior to other medications on the market, especially when administered alone. The anti-VEGF agents have similar effectiveness and safety profiles. These results can be used by decision-makers, such as patients and healthcare providers regarding use of anti-VEGF agents.

Reference: Tricco AC, Thomas SM, Lillie E, et al. Anti-vascular endothelial growth factor therapy for age-related macular degeneration: a systematic review and network meta-analysis. Syst Rev. 2021 Dec 20;10(1):315. doi: 10.1186/s13643-021-01864-6.

PMID: 34930439

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What is the current situation?

- AMD is one of the leading causes of blindness in older adults globally.
- First-line treatment for nAMD includes anti-VEGF agents, including aflibercept, ranibizumab, and bevacizumab.
- Previous reviews included only 3-4 different interventions (bevacizumab, ranibizumab, pegatanib, verteporfin), and did not look at other existing treatment options or combinations of treatments. The majority of these reviews conducted pairwise meta-analysis, which limits them to the direct comparison of two interventions.
- As newer anti-VEGF agents (conbercept, brolucizumab) become available, there is a need to assess the comparative safety and efficacy between existing anti-VEGF agents and combined therapies for patients with nAMD.

What is the objective?

- To examine the relative safety and efficacy of anti-VEGF agents compared with other treatments for patients with nAMD

How was the review conducted?

- Studies were identified through MEDLINE, EMBASE, and Cochrane CENTRAL (inception to June 3, 2019), grey literature, and scanning reference lists.
- Two reviewers independently screened citations and full-text articles to identify randomized controlled trials, extracted data, and appraised risk of bias.
- Pairwise random-effects meta-analysis and Bayesian network meta-analysis (NMA) were conducted.
- The primary outcomes were the proportion of patients experiencing moderate vision gain (≥15 letters on the Early Treatment Diabetic Retinopathy Study chart) and the proportion of patients experiencing moderate vision loss (≤15 letters).

What did the review find?

- NMA showed small differences among anti-VEGFs in improving the proportion of patients with moderate vision gain, with the largest for conbercept versus broluczumab, conbercept versus ranibizumab, conbercept versus aflibercept, and conbercept versus bevacizumab.
- In NMA for the proportion of patients with moderate vision loss, small differences were observed among anti-VEGFs, with the largest being for conbercept versus aflibercept, conbercept versus brolucizumab, conbercept versus bevacizumab, and conbercept versus ranibizumab.
- The rank-heat plot showed that the anti-VEGF agents are the most efficacious and safest when administered alone and compared to other agents.
- Results are consistent with guidance issued by the UK National Institute for Health and Care Excellence and previous reviews.

Funded by the Canadian Institutes of Health Research (CIHR) through the Drug Safety and Effectiveness Network (DSEN)

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