DSEN ABSTRACT

Anti-vascular endothelial growth factor (anti-VEGF) drugs for the treatment of retinal conditions

Summary

- Our findings of our systematic review and meta-analysis of 30 RCTs suggest no statistically significant difference (SSD) in vision improvement in patients with wet AMD in response to ranibizumab (R), bevacizumab (B), or aflibercept (A) treatment. Similarly, in patients with DME, there were no significant differences between R and B for visual acuity and vision-related outcomes. Few studies evaluated the efficacy of anti-VEGF drugs in patients with RVO and CNV. Though R, A and B seem to have a similar safety profile in the wet AMD and DME populations, this finding should be interpreted with caution given the paucity of harms data.

Key messages

- Our results suggest that ranibizumab and bevacizumab have similar effects on visual acuity and other vision-related outcomes in patients with wet AMD, DME, RVO, or CNV. A major limitation of this study is the lack of data for some conditions (RVO and CNV), as well as for the comparison of aflibercept with bevacizumab. This meant that certain comparisons were not possible to evaluate through meta-analysis. Though our study did not reveal any differences with respect to potential harms, none of the included studies were designed to evaluate safety of anti-VEGF drugs, and there were limited data on harms.

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What is the issue?

- Aflibercept, ranibizumab, and bevacizumab are anti-VEGF drugs currently available in Canada. However, only the first two have been approved for intravitreal use to inhibit abnormal blood vessel growth in the retina.

What was the aim of the study?

- We aimed to assess the effectiveness and safety of anti-VEGF drugs compared to each other or placebo for the treatment of retinal conditions.

How was the study conducted?

- Multiple electronic databases, trial registries and grey literature were searched.
- Parallel or cluster randomized clinical trials (RCTs) of adults (age ≥ 18 years) with wet age-related macular degeneration (wet AMD), diabetic macular oedema (DME), macular oedema due to retinal vein occlusion (RVO) or choroidal neovascularization (CNV) due to pathologic myopia were eligible.
- Interventions of interest: aflibercept (A), bevacizumab (B), and ranibizumab (R) administered intravitreally vs. each other, sham or no treatment.
- Outcomes of interest included vision gain or loss of ≥ 15 early treatment diabetic retinopathy study (ETDRS) letters (primary outcome), mean difference in best corrected visual acuity (MD BCVA), and harms.
- Screening of titles, abstracts and full-text articles, data abstraction, and risk-of-bias assessment were conducted independently by 2 reviewers, and meta-analyses (MAs) were conducted if sufficient data were available.

What did the study find?

- Thirty RCTs were included (13 wet AMD, 5 DME, 9 RVO, and 3 CNV).

Population	*Outcome*	*Comparison*		
		R vs. B	**R vs. A**	**A vs. B**
Wet AMD	**Vision gain:**	No SSD (7 RCTs)	No SSD (2 RCTs)	No data
	Vision loss:	No SSD (9 RCTs)	No SSD (2 RCTs)	No data
	MD BCVA:	No SSD (8 RCTs)	No SSD (2 RCTs)	No data
DME	**Vision gain:**	No SSD (1 RCT)	SSD (1 RCT)*	SSD (1 RCT)*
	Vision loss:	No SSD (1 RCT)	No SSD (1 RCT)	No SSD (1 RCT)
	MD BCVA:	No SSD (2 RCTs)	SSD (1 RCT)*	SSD (1 RCT)*
RVO	**Vision gain:**	No SSD (2 RCTs)	No data	No data
	Vision loss:	No data	No data	No data
	MD BCVA:	No SSD (2 RCTs)	No data	No data
CNV	**Vision gain:**	No SSD (1 RCT)	No data	No data
	Vision loss:	No data	No data	No data
	MD BCVA:	No SSD (2 RCTs)	No data	No data

Note: *SSD but not clinically meaningful difference

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