Clinical Effectiveness of Intravitreal Therapy With Ranibizumab vs Aflibercept vs Bevacizumab for Macular Edema Secondary to Central Retinal Vein Occlusion: A Randomized Clinical Trial

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In this paper, the researchers' objective was to determine whether intravitreal aflibercept or bevacizumab compared with ranibizumab results in a noninferior mean change in vision at 100 weeks for eyes with central retinal vein occlusion (CRVO)-related macular edema.

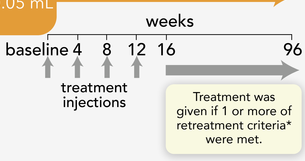
This trial (Lucentis, Eylea, Avastin in Vein Occlusion [LEAVO] Study) took place from December 12, 2014, through December 16, 2016, at 44 UK National Health Service ophthalmology departments. 463 individuals aged 18 years and older were included.

This was a prospective, 3-arm, double-masked, randomized noninferiority trial.

Adults with visual impairment due to CRVO-related macular edema of less than 12 months' duration with best corrected visual acuity (BCVA) Early Treatment Diabetic Retinopathy Study (ETDRS) letter score (approximate Snellen equivalent) in the study eye between 19 (20/400) and 78 (20/32) and spectral-domain optical coherence tomography (OCT) imaging central subfield thickness (CST) of 320 µm or greater

Randomized 1:1:1

- Intravitreal ranibizumab 0.5mg/0.05 mL
- Aflibercept 2mg/0.05 mL
- Bevacizumab 1.25 mg/0.05 mL

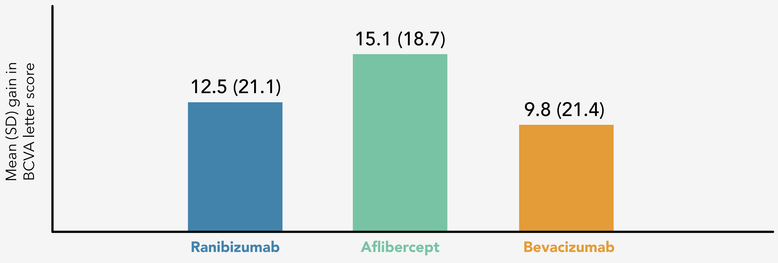


Treatment was given if 1 or more of retreatment criteria* were met.

***Retreatment criteria**

- A decrease in the BCVA letter score of > 5 between the current and most recent visit that was attributed to an increase in OCT CST
- An increase in BCVA letter score of more than 5 between the current and most recent visit OCT CST of ≥ 320 µm (Heidelberg, Spectralis, or > 300 µm for alternatives) because of intraretinal or subretinal fluid
- OCT CST increase of more than 50 µm from the lowest previous measurement

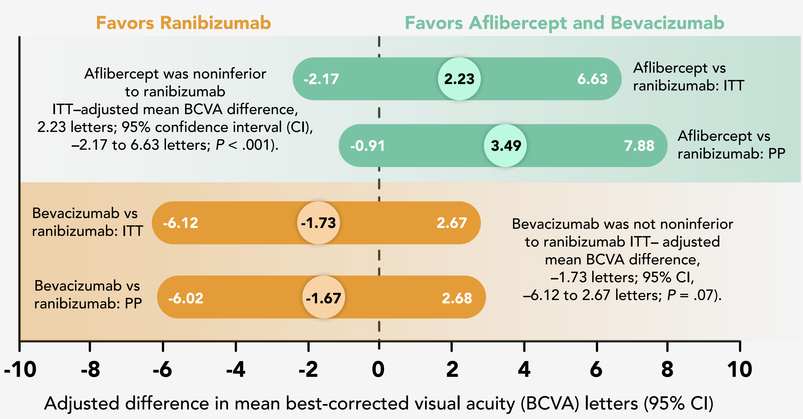
Visual acuity outcomes were improved for all 3 anti-VEGF agents.



The intention-to-treat (ITT) primary outcome at 100 weeks showed that bevacizumab was not noninferior compared with ranibizumab. However, aflibercept was noninferior but not superior to ranibizumab.

Aflibercept treatment was noninferior (no worse than) ranibizumab treatment at 100 weeks, and the results for bevacizumab vs ranibizumab were not noninferior (ie, inconclusive compared with the ranibizumab group).

Forest Plot of the Primary Outcome ITT and Per Protocol (PP) Analyses



The per protocol analysis conclusions were similar. Fewer mean injections were given in the aflibercept group (10.0) than in the ranibizumab (11.8) group (mean difference at 100 weeks, –1.9; 95% CI, –2.9 to –0.8).

Conclusions

Mean changes in vision after treatment of macular edema due to CRVO were no worse using aflibercept compared with ranibizumab. Mean changes in vision using bevacizumab compared with ranibizumab were inconclusive regarding vision outcomes (ie, the change in visual acuity from baseline, on average, and may be worse or may not be worse when using bevacizumab compared with ranibizumab). The frequency of all ocular adverse events and Anti-Platelet Trialists' Collaboration–defined events was similar among the groups.