AB031. Switching to aflibercept in diabetic macular edema not responding to bevacizumab in a Canadian real-life setting

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Background: Diabetic macular edema (DME) is a leading cause of severe visual impairments in older and the working-age population. An important target of current therapy is vascular endothelial growth factor (VEGF), which plays a role in the pathogenesis of DME by inducing angiogenesis and increasing vascular permeability. Currently available anti-VEGF agents include off-label use of Bevacizumab, which has been shown to be effective in the treatment of DME. However, many patients with DME do not respond or demonstrate only a partial response to this agent. As of November 2016, the Canadian Health authorities approved Aflibercept as an anti-VEGF agent for treatment of DME, and the patients who are non-responders to Bevacizumab are switched to this non-off label medication. We aimed to investigate the anatomical and functional visual changes associated with response to Aflibercept in a real-life Canadian population of Bevacizumab non-responders.

Methods: A retrospective review of chronic DME patients refractory to bevacizumab treatment who were switched to Aflibercept was done. Best-corrected visual acuity (BCVA), Intraocular pressure (IOP), central subfield thickness (CST), average macular thickness, and total macular volume were extracted at the visit prior to switching to Aflibercept (baseline) as well as the first, second and third follow-up visits after switching. Anatomical and functional visual changes were compared using Generalized Estimating Equations and the association between variables was tested using Pearson correlation test with significance set at $P<0.05$.

Results: Twenty-six eyes with mean age of 63 were included. Average CST at baseline was 421.5±116.1 μm and the number of Bevacizumab injections received prior to switching was 15.3±8.0. No significant changes were observed in terms of BCVA and IOP, from baseline to any of the follow-ups. Switching to Aflibercept significantly improved CST, average macular thickness, and total macular volume. From baseline to the first follow-up visit, CST decreased from 421.5±116.1 to 333.0±91.2 μm (P=0.001) and average macular thickness reduced from 344.6±74.9 to 322.2±60.5 μm (P=0.008). Similarly, total macular volume decreased from 12.4±2.7 to 11.6±2.2 μm^3, measured at baseline and the first follow-up (P=0.007). No further improvements were observed from the first follow-up to the subsequent ones. The median CST value at baseline (378 μm) was used to classify the patients into low and high CST groups. We observed that those with higher CST at baseline (>378 μm) showed a trend for improvements in visual acuity (P=0.058). Pearson correlation test confirmed the association between higher CST at baseline and better visual outcomes in response to switching to Aflibercept (P=0.018).

Conclusions: Our data evidenced significant anatomical improvements in macula, which did not translate to immediate functional vision improvements. Bevacizumab non-responders with higher CST might also gain visual acuity and benefit functionally from switching to Aflibercept.

Keywords: Diabetic macular edema (DME); bevacizumab; aflibercept

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