Anti-Vascular Endothelial Growth Factor Treatment Outcomes in Macular Telangiectasia: A Systematic Review

Aswen Sriranganathan[1], BHSc, Justin Grad[2], Andrew Mihalache[3],
Marko M. Popovic[4], MD MPH, Peter J. Kertes[5], MDCM FRCSC,

[1]Faculty of Medicine, University of Ottawa
[2]Michael G. DeGroote School of Medicine, McMaster University
[3]Faculty of Medicine, University of Toronto
[4]Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Ontario, Canada
[5]John and Liz Tory Eye Centre, Sunnybrook Health Sciences Cenrte

Introduction: Effective treatment for type 2 macular telangiectasia (MacTel) remains unknown. In this study, we assessed clinical outcomes of anti-vascular endothelial growth factor agents (anti-VEGF) for patients with MacTel.

Methods: We conducted a systematic literature search on Ovid MEDLINE, Embase, and Cochrane Library from inception to January 2023 for peer-reviewed articles reporting on different treatment regimens of anti-VEGF agents in MacTel. Our primary outcomes were the final best-corrected visual acuity (BCVA) and the change in BCVA from baseline. Secondary outcomes were central macular thickness (CMT), central choroidal thickness (CCT), and fluorescein angiography (FA) leakage.

Results: A total of 1,107 studies were screened, and 10 studies reporting on 377 eyes of 239 patients were included. Seven studies reported positive outcomes and recommended the use of anti-VEGF agents for MacTel, while 3 studies concluded that there was no functional benefit of treatment. Mean best-corrected visual acuity (BCVA) changed from 0.42 ± 0.39, or 20/52 to 0.35 ± 0.18, or 20/45 over 23.4 ± 8.3 months of follow up in non-proliferative MacTel. Mean BCVA changed from 0.66 ± 0.43, or 20/92 to 0.52 ± 0.34, or 20/66 at final follow-up in eyes with subretinal neovascular membrane (SRNVM). In non-proliferative MacTel, mean central macular thickness (CMT) changed from 201 ± 32 µm to 199 ± 29 µm. CMT in participants with SRNVM or MNV changed from 328.23 ± 161.16 µm to 267.44 ± 118.56 µm at final follow up. Central choroidal thickness (CCT) was reported only in proliferative MacTel, with initial and final CCT of 272.37 ± 52.65 µm and 247.40 ± 48.80 µm, respectively. Overall, FA leakage outcomes were improved on ranibizumab therapy. No serious adverse events were reported in association with anti-VEGF treatment. Given that most studies were nonrandomized and had small associated sample sizes, there was heterogeneity and limited generalizability of findings.

Conclusion: There remains a lack of evidence evaluating the efficacy of anti-VEGF treatment in MacTel. The findings of our study, albeit limited, suggests that anti-VEGF agents may be associated with favourable anatomical and functional outcomes, particularly in proliferative MacTel, however, future large-scale clinical trials are warranted.