

First-Line Treatment of Bulky Diabetic Macular Edema: Intravitreal Triamcinolone vs. Bevacizumab in a Randomized Clinical Trial

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Abstract:

Purpose: To compare the effectiveness of intravitreal injection of triamcinolone acetonide (IVT) versus bevacizumab (IVB) as first-line therapies for bulky diabetic macular edema (DME), defined as central macular thickness (CMT) ≥ 500 microns.

Methods: In this randomized clinical trial, patients with bulky DME and best-corrected visual acuity (BCVA) between 20/40 and 20/400 were divided into two groups. The IVT group received 2 mg IVT monthly until CMT fell below 500 microns, after which treatment switched to 1.25 mg IVB monthly. The IVB group received 1.25 mg IVB from the start. BCVA and CMT were assessed monthly for six months by masked examiners.

Results: Both treatments significantly improved CMT and BCVA. IVT led to a more rapid decrease in CMT, reaching 409.0 μm within the first month ($P=0.001$) and stabilizing at 409.7 μm by month six. The IVB group showed a gradual decline, reaching 413.4 μm at six months ($P=0.000$). In terms of visual acuity, IVT resulted in more rapid and significant improvement (from 0.81 to 0.51 logMAR, $P=0.000$) compared to IVB (from 0.85 to 0.71 logMAR, $P=0.008$). However, the IVT group experienced more steroid-related side effects, including elevated intraocular pressure and cataract progression. No significant difference in both final CMT and BCVA outcomes was observed between groups ($P=0.927$).

Conclusions: Both IVT and IVB are effective for managing bulky DME, with IVT showing quicker improvements in structure and function, suitable for cases requiring rapid recovery. IVB, while slower, has a safer profile, making it preferable for patients at higher risk of steroid complications.

Personalized treatment strategies based on patient needs, urgency, and safety are essential. Further research into combination or sequential therapies may optimize outcomes for this challenging condition.

Keywords:

Diabetic macular edema, intravitreal injection, triamcinolone, bevacizumab, central macular thickness.