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Research Paper

Treatment of Diabetic Macular Edema with Anti-VEGF: A 50-Case Series

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I. INTRODUCTION

Diabetes mellitus is a major global public health issue, affecting over 537 million adults in 2021. Diabetic macular edema (DME) remains the leading cause of visual impairment in patients with diabetic retinopathy (1,2). It results from the breakdown of the blood-retinal barrier, leading to intraretinal fluid accumulation in the macular region (3). Historically, focal/grid laser photocoagulation was the standard therapy, yet it only stabilized vision. The advent of intravitreal injections of anti-vascular endothelial growth factor (anti-VEGF) agents revolutionized management, providing significant visual and anatomical improvement (4–7). This study aimed to evaluate the efficacy and safety of intravitreal bevacizumab (Avastin®) in DME treatment at the Ophthalmology Department of Hassan II Military Hospital, Laâyoune, between 2023 and 2025.

II. PATIENTS AND METHODS

This prospective descriptive and analytical study was conducted between January 2023 and December 2025. Fifty patients with clinically and OCT-confirmed DME were included.

Inclusion criteria: Type 1 or 2 diabetes, clinically significant DME treated with bevacizumab, and ≥12 months of follow-up.
Exclusion criteria: Ischemic maculopathy, recent ocular surgery, neovascular glaucoma, or incomplete records.

Each patient underwent a full ophthalmologic examination (best corrected visual acuity, slit-lamp, funduscopy), fluorescein angiography, and spectral-domain OCT. Systemic workup included HbA1c, lipid profile, renal function, and blood pressure.

Treatment protocol: Intravitreal injection of bevacizumab (1.25 mg/0.05 mL) following a 3-monthly loading phase, then as-needed (PRN) regimen based on functional and anatomical response. Follow-up was monthly.

Data analysis: Descriptive statistics using Excel 2019; quantitative variables expressed as mean ± SD, qualitative as frequencies.

III. RESULTS

The mean age was 60 ± 8 years (range 42–75), with 33 men (66%) and 17 women (34%). Ninety percent had type 2 diabetes, with a mean duration of 11 years. Poor glycemic control (HbA1c > 7%) was observed in 70%. Hypertension was present in 18% and dyslipidemia in 24%. Bilateral involvement was found in 68%.

Mean baseline visual acuity was 3/10 (range 1–5/10). Non-proliferative diabetic retinopathy was severe in 52%, moderate in 30%, and mild in 18%. Prior panretinal photocoagulation was reported in 38%.

On angiography, DME was classified as mixed (62%), diffuse (28%), or cystoid (10%). Mean central macular thickness (CMT) before treatment was 550 ± 145 µm. Patients received an average of 4.2 injections (range 3–7) over a 12-month follow-up.

Final outcomes: Visual acuity improved by ≥2 lines in 56%, remained stable in 34%, and decreased in 10%.

Mean CMT reduction was 85 µm (≈15%), observed in 80% of eyes. No cases of endophthalmitis or sustained ocular hypertension were noted.

IV. DISCUSSION

Our results confirm the efficacy and safety of bevacizumab for DME, in line with major international studies (8–11). The functional improvement rate (56%) aligns with the DRCR.net Protocol T (2015) findings, where mean visual gain reached 10 ETDRS letters (12). Anatomical improvement with mean CMT reduction of 85 µm confirms the anti-permeability effect of VEGF blockade (13,14).

Better outcomes were observed in patients with early DME, non-proliferative retinopathy, and well-controlled diabetes (15,16). Bevacizumab remains an effective and cost-efficient alternative to ranibizumab and aflibercept, especially in resource-limited settings (17,18). Reported adverse events were minimal, consistent with literature showing post-injection endophthalmitis risk <0.05% (19).

V. CONCLUSION

Intravitreal anti-VEGF therapy is currently the gold standard for diabetic macular edema management. In this 50-case series, bevacizumab achieved visual improvement in 56% of patients and anatomical regression in 80% of eyes, with excellent safety profile. Early diagnosis, systemic control of diabetes and hypertension, and close follow-up are essential to maintain functional gains and prevent recurrence.

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