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Research article

Efficacy of faricimab (Vabysmo) intravitreal injections in diabetic macular edema and macular edema with sub retinal neovascular membrane: A retrospective analysis

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Abstract

Objective: *To evaluate the efficacy of faricimab intravitreal injections in patients with diabetic macular edema (DME) and macular edema with sub retinal neovascular membrane (SRNVM) who were unresponsive to previous treatments, including bivacizumab and dexamethazone intravitreal implant.*

Methods: *A retrospective analysis was conducted on 28 patients (ages 40-88) with either DME (17 patients) or SRNVM (6 patients). All patients had received more than five avastin injections, and five DME patients had also received ozurdex injections without significant improvement. Faricimab injections ranged from 2 to 6 doses. Anatomical and functional outcomes were assessed.*

Results: *Significant anatomical improvement was observed in patients with DME including those with disorganization of inner retinal layers. However, no detectable improvement was noted on the visual outcome in some cases. SRNVM patients showed stable or improved outcomes with up to 6 injections. Functional satisfaction was reported by most patients despite the lack of visual acuity gain.*

Conclusion: *Faricimab intravitreal injections demonstrate anatomical benefits in DME patients unresponsive to other treatments in Sri Lankan population and offer a promising alternative therapy for managing nonresponsive cases of DME and SRNVM.*

Introduction

Diabetic macular edema (DME) and macular edema with sub retinal neovascular membrane (SRNVM) are leading causes of vision impairment globally, particularly in aging populations and those with longstanding diabetes[1,2]. The mainstay of treatment for DME involves intravitreal injections of anti-VEGF agents such as bevacizumab, ranibizumab, and aflibercept, which target vascular endothelial growth factor (VEGF) to reduce macular swelling[3]. Corticosteroid implants like Ozurdex are also used in refractory cases[4]. However, some patients fail to respond adequately to these treatments, highlighting the need for alternative options[5].

Faricimab, a bispecific antibody designed to target both VEGF-A and angiopoietin-2 (Ang-2), has emerged as a promising therapeutic alternative. By inhibiting both VEGF-A and Ang-2, faricimab aims to reduce vascular permeability and inflammation more effectively than monotherapy with anti-VEGF agents alone[6]. This study evaluates the effectiveness of faricimab in patients with DME and SRNVM who have not responded satisfactorily to previous standard therapies.

Methods

- **Study population:** 28 patients aged 40-88 years were included. Seventeen patients had DME, and six had SRNVM-unilateral injection.
- **Treatment protocol:** Faricimab injections (6mg) were administered at monthly intervals ranging from 2 to 6 injections per patient, depending on the clinical response.
- **Outcome measures:** Anatomical improvement was assessed using optical coherence tomography (OCT) to assess the macular oedema measure. Visual acuity was measured using the Snellen chart. Functional satisfaction was assessed through patient-reported outcomes regarding daily visual functioning.

Results

Table 1. Demographics and baseline characteristics

Characteristic	*DME patients (n=17)*	*SRNVM patients (n=6)*
Age (years)	40-88	55-88
Prior Avastin Injections	> 5	> 5
Prior Ozurdex Injections	5	0
Disorganization of Retinal Layers	5	0

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Table 2. Treatment outcomes

Outcome measure	*DME group*	*SRNVM group*
Number of Faricimab Injections	2-6	2-6
Anatomical Improvement (OCT)	Significant	Stable/Improved
Visual Acuity Improvement (Snellen)	Variable	Minimal
Functional Satisfaction	High	Moderate

Table 3. Detailed analysis of DME patients

Patient ID	*Age of the patient at first injection*	*Number of injections*	*Anatomical improvement*	*Visual acuity improvement (Snellen) From start to at the time of measurment*	*Functional satisfaction*
DME01	48	3	yes	6/60 to 6/18	yes
DME02	42	4	yes	6/24-6/9	yes
DME03	53	2	yes	3/60 to 6/36	yes
DME04	40	6	yes	3/60 to 3/60	yes
DME05	50	5	yes	6/24 to 6/9	yes
DME06	60	3	yes	HM to HM	yes
DME07	56	4	yes	6/12 to 6/6	yes
DME08	47	2	yes	6/18 to 6/6	yes
DME09	51	3	yes	6/36 to 6/12	yes
DME10	48	5	yes	6/60 to 6/60	yes
DME11	65	2	yes	6/60 to 6/24	yes
DME12	61	6	No improvement	3/60 to 3/60	yes
DME13	57	3	yes	6/36 to 6/9	yes
DME14	40	4	+	6/60 to 6/60	+
DME15	56	5	+	6/60 to 6/12	+
DME16	43	3	+	6/36 to 6/12	+
DME17	49	2	+	6/24 to 6/9	+

Table 4. Detailed analysis of SRNVM patients

Patient ID	*Age of the patient at first injection*	*Number of injections*	*Anatomical improvement*	*Visual acuity improvement (Snellen) From start to at the time of measurment*	*Functional satisfaction*
DME01	72	4	yes	6/60 to 6/18	yes
DME02	56	4	yes	6/24-6/9	yes
DME03	83	3	yes	3/60 to 6/36	yes
DME04	68	6	yes	3/60 to 3/60	yes
DME05	76	4	yes	6/24 to 6/9	yes
DME06	78	4	yes	HM to HM	yes

Discussion

Faricimab intravitreal injections showed significant anatomical improvements in DME patients with prior inadequate responses to other treatments. The dual inhibition of VEGF-A and Ang-2 provides a synergistic effect that may explain the observed anatomical benefits, even in the absence of measurable visual acuity gains in some patients[6-8]. Importantly, ability to perform in day today activities was increased among patients who did not exhibit visual acuity improvements, suggesting that visual function as perceived by patients may extend beyond traditional acuity measures[9].

Anatomical improvements in retinal thickness and reduced fluid observed in OCT scans indicate Faricimab's potential efficacy in reducing retinal oedema[10]. Despite the lack of significant visual acuity gains in five DME patients with disorganized inner retinal layers, these patients reported substantial functional benefits, aligning with previous studies that suggest anatomical improvements may not always translate directly to Snellen chart improvements but still enhance quality of life[11]. There is no significant association of visual acuity improvement concerning the age or the number of injections. Higher visual acuity at the time of first injection is possitively related with the improvement.

Justification for faricimab use

The persistent anatomical improvements, coupled with high functional satisfaction reported by patients, justify the use of faricimab in refractory DME and SRNVM cases. These findings are supported by recent clinical trials showing that dual inhibition of VEGF-A and Ang-2 can improve retinal oedema and decrease the frequency of injections needed, making faricimab a compelling alternative to current therapies[7,10,11].

Limitations

This study's limitations include a small sample size, retrospective analysis of patients and the absence of a control group, which may limit the generalizability of the findings. Future prospective studies with larger cohorts and randomized controlled trials are warranted to validate these preliminary findings.

Conclusion

Faricimab intravitreal injections offer significant anatomical improvements in DME patients unresponsive to conventional treatments, with high patient satisfaction despite limited visual acuity gains. This treatment may represent a promising alternative for managing refractory DME and SRNVM.

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