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Outcomes of switching to intravitreal faricimab for neovascular age-related macular degeneration in a tertiary hospital Ophthalmology department

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Abstract
Introduction: Neovascular age-related macular degeneration (ARMD) is a leading cause of visual impairment and blindness in Australia. Faricimab is a new medication introduced to clinical practice that aims to have longer lasting efficacy, therefore reducing the frequency of injections.
Methods: Retrospective chart review clinical study was undertaken at a single tertiary Ophthalmology department for patients with neovascular ARMD whose treatment was switched to faricimab between January 2023 and June 2024. Outcome measures included change in frequency of injections, improvement in visual acuity and structural improvement on ocular coherence tomography.
Results: Total of 52 eyes were included in the study, with mean age of 78.2 years. The majority of patients (87%) were receiving intravitreal aflibercept 2mg prior to switching to faricimab. Mean follow up for our patient cohort was 8.3 months (SD = 4.1). The average reduction in central macula thickness with faricimab was 41.67 microns (SD = 72.47) which was statistically significant ($p < 0.01$). There was no significant difference between visual acuity prior to the conversion (M = 0.44, SD = 0.40) and after converting to faricimab [(M = 0.43, SD 0.45); $p = 0.64$]. Patients who were switched to faricimab did not have significant extension of injection duration (M difference = 0.01, SD = 0.17; $p = 0.64$).
Conclusion: Similar to previous studies, faricimab is safe and effective in improving retinal morphology in wet ARMD without reduction in visual acuity.

Keywords: Macula, retina, vision

Introduction

Age related macular degeneration (ARMD) is a leading cause of visual impairment and blindness in Australia, affecting people over the age of 50. Neovascular ARMD refers to presence of a neovascular membrane at the macula that can leak fluid and blood into the surrounding area. As blood and oxygen are toxic to the retinal layers, this can result in significant and rapid visual loss. Vascular endothelial growth factor (VEGF) plays a major role in this pathogenesis.

Intravitreal injections (IVI) of anti-VEGF medications are an established treatment for neovascular ARMD. Currently, a 'treat and extend' regimen exists whereby patients are initially commenced on regular monthly injections. Once a good clinical response has been achieved, the interval between the injections can be increased.

New medications have been introduced to clinical practice that aim to have longer lasting efficacy, therefore reducing the frequency of IVIs. This also means less visits to the hospital or clinic, reducing the burden on patients especially those living far from the services. Faricimab targets the VEGF and angiopoetin-TIE2 pathogenesis of macular degeneration. It has promising trial data and emerging real life data showing this to be a safe medication [1]. with non-inferiority compared to pre-existing anti-VEGF medications. There is also evidence of prolonged efficacy allowing extension of IVI intervals without compromising vision or anatomic outcomes [2, 3]. However, most of the retrospective studies are limited by small sample sizes and timeframe. (4-7) Our study aims to contribute by assessing the effect of faricimab over a longer period of up to 17 months.

Aims

To review the results of patients with neovascular ARMD that are being treated with faricimab after conversion from another anti-VEGF medication.

Methods

This retrospective chart review clinical study was undertaken at a single tertiary Ophthalmology department for patients with neovascular ARMD treated with faricimab between January 2023 and June 2024. The data were manually collected via retrospective chart review from electronic medical record and from ocular coherence tomography (OCT) software. All patient data was de-identified. This included patient details including age, sex, past ocular history, previous treatment with other intravitreal medications, visual acuity (converted to logMAR), central macular thickness, previous and current treatment frequency and presence of subretinal or intraretinal fluid. Outcome measures included change in frequency of injections (comparing previous IVI frequency before conversion to new IVI frequency at last review), improvement in visual acuity and structural improvement on OCT.

Inclusion criteria were: 1) patients diagnosed with neovascular age-related macular degeneration 2) patients had been converted to faricimab from another anti-VEGF medication 3) patient had been reviewed in outpatient department with outcome after at least one course of three injections of faricimab 4) patients being treated on treat and extend regime. Exclusion criteria were: 1) incomplete course of initial faricimab injections and 2) lost to follow-up.

Statistical analysis was performed using SPSS (version 30). Ethics exemption was obtained from the Ethics Review Board (EX/2024/QMS/112083).

Results

Total of 52 eyes were included in the study, of which 6 were bilateral (Table 1). The mean age was 78.2 years, with a slight preference for females (52%) over males (48%). The majority of patients (87%) were receiving intravitreal aflibercept 2mg prior to switching to faricimab (Figure 1). Half of the patients were pseudophakic (52%), whereas 42% had documented cataract formation. Some medical records did not mention or grade lens opacification therefore those were noted as phakic only. Mean follow up for our patient cohort was 8.3 months (SD = 4.1). There were no documented adverse events.

Previously, 48% of patients were on 4-weekly injections, with only 2% reaching 12-weekly intervals. Once on faricimab, 35% remained at a 4-weekly interval, 49% were on 6 or 8-weekly injections and 8% at 12 or more weekly injections whilst on faricimab (Figure 2). There were six cases where subretinal fluid had improved or resolved after conversion to faricimab

A paired samples t-test was conducted to determine the effect of faricimab on the logMAR visual acuity. The results indicate no significant difference between visual acuity prior to the conversion (M = 0.44, SD = 0.40) and after converting to faricimab [(M = 0.43, SD 0.45); p = 0.64]. For the subgroup who were swapped from aflibercept 2mg to faricimab visual acuity, there was again no significant difference [(M difference = 0.004, SD 0.18); p = 0.87)]. One case was excluded from visual acuity comparison due to significant cataract which was awaiting surgery.

In comparison, the average reduction in CMT with faricimab was 41.67 microns (SD = 72.47) which was statistically significant ($p < 0.01$). A subgroup analysis of the patients who swapped from aflibercept 2mg to faricimab showed an average reduction in CMT of 41.27 microns (SD = 75.48) which was statistically significant ($p < 0.01$). Patients who were switched to faricimab also had significant extension of injection interval by one week [(M difference = -0.94, SD = 2.73); p = 0.016] and this was maintained when comparing only alifbercept 2mg to faricimab [(M difference = -0.91; SD = 2.87); p = 0.039)].

Discussion

Our study revealed that in patients with wet neovascular ARMD that is are not responding favourably to other anti-VEGF treatments, faricimab improved retinal morphology with reduced frequency of injections whilst maintaining visual acuity. Our results are in keeping with other published data. In a case series of 54 eyes with ARMD being treated with faricimab following courses of aflibercept 2mg, the CMT had significantly decreased by 45 microns at the end of a 12 month period [4]. Another study found use of faricimab resulted in substantial improvement in vision and retinal morphology over a 12 month period, with 44% able to extend to a 16-week interval [1]. Furthermore, a meta-analysis by Samaca showed that faricimab had a significant reduction in the number of annual injections compared to other anti-VEGF treatments, however there were no significant differences in visual acuity [3]. A large multicenter retrospective study by Sim *et al* also showed that after switching to faricimab for ARMD, there was no statistically different in mean visual acuity, however there was improvement in retinal morphology and increase between treatment intervals [7]. This shows that patients with previous high treatment burden were able to maintain visual acuity and improved anatomic outcomes on extended intervals after switching to faricimab.

A possible reason for the lack of significant change in visual acuity in our cohort of patients may be the presence of confounding factors, such as cataracts and other macula pathologies, which could have influenced vision over time. In Australia, challenges related to remote care include patients travelling from long distances for treatment. Therefore, reduced injection frequencies would alleviate some burden on these patients. Of note, there were six cases where subretinal fluid had improved or resolved with faricimab. Some clinicians appear to tolerate some subretinal fluid and extended the interval between injections, whilst others treated it as still active. Recent evidence does show that residual subretinal fluid may be protective against macula atrophy and may be a benign form of ARMD [8-10]. Long-term data would be necessary to determine whether an increased interval between faricimab injections can be sustained over an extended period of time.

Our study had strengths including assessing change over a longer period of time of 17 months whereas previously studies only observed up to 12 months. This study is limited by its retrospective design and smaller sample size. Additionally, the pattern of change in treatment intervals was not assessed as only the most recent interval was used in the comparison. Nevertheless, this study offers valuable real-world data reflecting clinical practice.

Table 1: Demographics

Sex	
Male	25 (48%)
Female	27 (52%)
Age (years)	M = 78.2 (SD 9.2)
Treatment eye	
Right	29 (56%)
Left	23 (44%)
Bilateral	6 (0.1%)
Lens status	
Pseudophakic	27 (52%)
Cataract	22 (42%)
Other ocular pathology	
Macula hole	2
Epiretinal membrane	1
Glaucoma	3

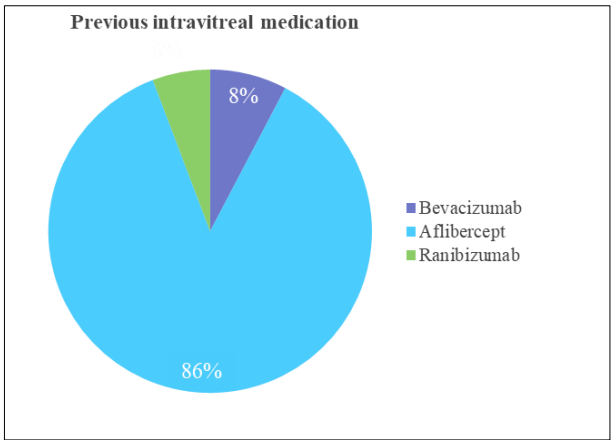

Fig 1: Previous intravitreal medication

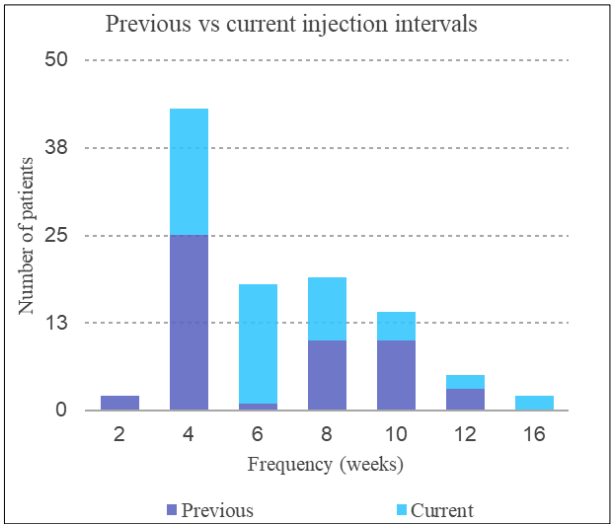

Fig 2: Previous vs current injection intervals

Conclusion

Our study results are in alignment with previous studies showing that faricimab is safe and effective in improving retinal morphology in neovascular ARMD whilst reducing number of injections and hospital visits without reduction in visual acuity. Further prospective, randomised control trials are required to see whether these effects are sustainable over a longer period of time.

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