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CLINICAL CHARACTERISTICS AND MANAGEMENT OF WET AGE-RELATED MACULAR DEGENERATION AT CIPTO MANGUNKUSUMO HOSPITAL KIRANA, JAKARTA, INDONESIA

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ABSTRACT

Introduction: *Age-related macular degeneration (AMD) is a leading cause of blindness globally, with wet AMD being particularly debilitating. The prevalence of AMD is increasing, necessitating a deeper understanding of its clinical characteristics and management. This study aims to investigate the demographic and clinical features, management, and treatment outcomes of wet AMD at Cipto Mangunkusumo Hospital during January-December 2022.*

Methods: *A retrospective descriptive study was conducted, analyzing medical records of wet AMD patients treated during the specified period. Data analysis included patient demographics, clinical characteristics, treatment modalities, and outcomes.*

Results: *Of 129 eyes from 122 patients, 115 eyes met the inclusion criteria. The majority were female (55.7%) with an average age of 67 years. Most patients presented with blurry vision (93.9%) and received Patizra anti-VEGF injections (60.9%). Hypertension was the most common risk factor (28.7%). Anti-VEGF treatment significantly reduced central macular thickness ($p < 0.05$) but had no significant impact on visual acuity. Avastin and Patizra injections similarly influenced macular thickness but not visual acuity. There were no significant differences between loading and non-loading dose groups in terms of outcomes.*

Conclusion: *Anti-VEGF treatment effectively reduces central macular thickness in wet AMD patients, regardless of the specific agent used. However, it does not significantly improve visual acuity. Further research is needed to explore differences between loading and non-loading dose protocols, compare treatment strategies, and investigate demographic risk factors. Consistency in visual acuity documentation using the ETDRS format is recommended for future studies.*

Keywords: Age-related macular degeneration, wet AMD, anti-VEGF treatment, central macular thickness, visual acuity.

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INTRODUCTION

Age-related macular degeneration (AMD) is a degenerative disease affecting the macula, leading to central vision impairment in the elderly.[1] Globally, it stands as a primary cause of blindness, following cataracts and glaucoma, particularly in industrialized nations. The prevalence of AMD is on the rise worldwide, estimated to reach 196 million patients in 2020 and 288 million in 2040. In Asia, which comprises over half of the global population, cases are projected to increase to 113 million by 2040.[2,3]

Indonesia is expected to see a rise in AMD cases, aligning with increasing life expectancy. As AMD results in permanent blindness, addressing this challenge globally is crucial to reducing its incidence. Developing countries report around 10% of the population aged 65 and above and 25% of those aged 75 and above diagnosed with AMD. In the United States, approximately 11 million individuals (85% of AMD cases) have dry AMD, 1.5 million (15%) have advanced-stage AMD, and 70,000 new cases of wet AMD are diagnosed annually.[4]

AMD can be categorized into non-exudative (dry or atrophic) and exudative (neovascular or wet). Dry AMD constitutes about 90% of cases in the U.S., with milder severity compared to wet AMD. Observation and antioxidant vitamin administration are common at this stage. In contrast, wet AMD leads to a worsening of visual acuity, necessitating treatments like photodynamic therapy, laser treatment, and anti-VEGF injections. Anti-VEGF injections have become the standard therapy for wet AMD cases.[5]

Previous publications have extensively studied the impact of ranibizumab and bevacizumab in the treatment of wet age-related macular degeneration (AMD). Clinical trials such as the MARINA and ANCHOR studies demonstrated that ranibizumab significantly improved visual acuity and reduced the risk of severe ocular adverse events in patients with wet AMD. While bevacizumab is not FDA-approved for AMD, studies have shown its efficacy, with a prospective, double-masked, randomized clinical trial revealing no significant difference in visual and anatomic outcomes between bevacizumab and ranibizumab over a 1-year period, though bevacizumab required more frequent injections. Utilization patterns were notably influenced by the Comparison of Age-related macular degeneration Treatment Trial (CATT), which led to a shift among ophthalmologists from ranibizumab to bevacizumab due to cost considerations, while the introduction of aflibercept had little effect on the preference for these drugs. Both ranibizumab and bevacizumab effectively inhibit vascular endothelial growth factor (VEGF), crucial in choroidal neovascularization formation in AMD, with ranibizumab having FDA approval and bevacizumab being supported by its similar short-term efficacy and safety profile. These studies underscore the effectiveness of ranibizumab in improving visual acuity and the practical utility of bevacizumab, despite its need for more frequent administration, providing a foundation for understanding the gaps addressed by this study.[6]

The objective of this study is to obtain information on the number of patients, demographic and clinical characteristics, management, and treatment outcomes for wet AMD at RSCM Kirana during January-December 2022.

METHODS

This study is a retrospective descriptive research conducted at Cipto Mangunkusumo Hospital, Jakarta, in October-November 2023. The data used are derived from the medical records of patients

within the timeframe of January-December 2022. The research subjects are patients at vitreoretina clinic diagnosed with Wet AMD during that period, meeting the inclusion and exclusion criteria.

The inclusion criteria encompass all patients at vitreoretina clinic diagnosed with Wet AMD between January and December 2022. Meanwhile, the exclusion criteria involve incomplete medical records, patients who did not attend follow-up after anti-VEGF injections, patients with geographic atrophy of the macula, patients with diabetic macular edema, and those who did not return for follow-up after the initial visit.

Data collection involves searching and recording medical records meeting the inclusion criteria from outpatient clinic records during the specified period. The collected data include information such as names, medical record numbers, age, gender, chief complaints, visual acuity since the initial diagnosis of Wet AMD, visual acuity after receiving anti-VEGF injections, lens status, treatment performed, and initial diagnostic and post-anti-VEGF injection supplementary examination results.

Key parameters included best-corrected visual acuity (BCVA), measured in logMAR units, where lower values indicate better vision, and central macular thickness (CMT), measured in microns (μm) using Optical Coherence Tomography (OCT) to assess macular edema. Lens status was categorized as phakic (natural lens) or pseudophakic (artificial lens). The study also documented the type and frequency of anti-VEGF injections (Avastin, Patizra, or Eylea), as well as whether patients received a loading dose (an initial series of closely spaced injections) or a non-loading dose. Other variables included the duration of visual symptoms (in months), bilateral involvement (presence of Wet AMD in both eyes), and history of prior anti-VEGF treatment. All measurements and classifications adhered to standard clinical protocols to ensure consistency and accuracy in evaluating the influence of these factors on BCVA and CMT outcomes.

Data analysis is conducted using Microsoft Excel to organize and summarize data, and IBM SPSS© Statistics Version 25 for descriptive statistical analysis. Normality testing is done using the Kolmogorov-Smirnov or Shapiro-Wilk test, while comparative analysis of numerical data between two independent groups is performed using the independent T-test or Mann-Whitney U test, depending on the data distribution. The relationship between categorical variables is assessed using the Chi-square test or Fisher's exact test. Results are considered statistically significant if the p-value is <0.05.

RESULTS

The results of the medical record data retrieval for patients with wet AMD who received anti-VEGF injections at the Ophthalmology Outpatient Vitreoretina Clinic of Cipto Mangunkusumo Hospital during the period of January 2022 – December 2022 were obtained from 122 patients, comprising a total of 129 eyes. The total number of samples meeting the inclusion criteria was 115 eyes. Fourteen samples were excluded due to the presence of geographic atrophy, lack of follow-up visit data, and incomplete medical records.

Summary of Main Results

In this study, 115 eyes from 122 patients with wet age-related macular degeneration (Wet AMD) were analyzed. The average initial best-corrected visual acuity (BCVA) was 1.3 logMAR, and the average initial central macular thickness (CMT) was 357 μm. Following anti-VEGF treatment, the average final BCVA was 1.4 logMAR, and the average final CMT was 315 μm. The majority of patients (70.4%) received a loading dose regimen. Statistically significant reductions in CMT were

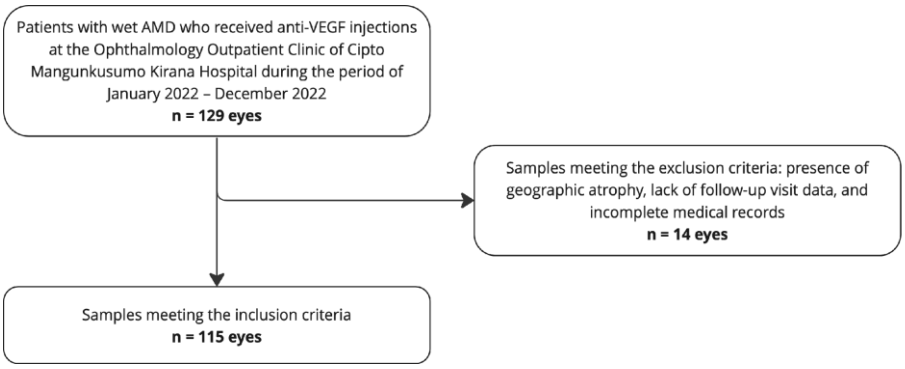

Figure 1. Data collecting flowchart

observed ($p < 0.05$), while changes in BCVA were not statistically significant ($p > 0.05$). The most common risk factor was hypertension (28.7%), and 60.9% of patients were treated with Patizra anti-VEGF.

Distribution of Wet AMD Patient Characteristics

Out of 115 samples, 44.3% were male subjects, and 55.7% were female subjects. The average age of patients with Wet AMD in this study was 67 years (SD ± 8.6), with the youngest being 50 years old and the oldest being 92 years old.

The proportion of patients experiencing Wet AMD in both eyes was 10.4%. A total of 93.9% of patients presented with complaints of blurry vision, with an average duration of 6 months (SD ± 10). Patients who came for their initial visit had an average initial visual acuity of 1.3 (SD ± 0.74) with an average initial macular thickness of 357 µm (SD ± 177). Results from follow-up visits after anti-VEGF injection management showed an average final visual acuity of 1.4 (SD ± 0.7) with an average final macular thickness of 315 µm (SD ± 158).

The most common lens status among patients was phakic, accounting for 55.7%. About 51.3% of patients had no history of receiving Anti-VEGF injections before. The majority of patients received Patizra anti-VEGF, with a proportion of 60.9% and an average of 3.13 (SD ± 1.6) injections. The results indicated that 81 eyes (70.4%) received Anti-VEGF loading dose injections, and 34 eyes (29.6%) received Anti-VEGF non-loading dose injections. The most prevalent risk factor in Wet AMD patients was hypertension, with a proportion of 28.7%.

There was one 67-year-old male patient with phakic lens status who received Eylea (Aflibercept) Anti-VEGF injections in his right eye. The patient had been receiving loading dose injections for the past year and consistently received Anti-VEGF injections every month.

Table 1. Distribution of Wet AMD Patient Characteristics

Variable	Total	Percentage (%)
Gender		
Male	51	44,3
Female	64	55,7
Average age	67,7 (SD ± 8,6)	
Laterality		
Unilateral	103	89,4
Bilateral	12	10,4
Chief complains		
Blurry vision	108	93,9
Dark vision	3	2,6
Wavy vision	2	1,7
Eye pain	1	0,9
Dark spots	1	0,9
Average complains duration	6 (SD ± 10)	
Average visual acuity (Logmar)		
Before injection	1,3 (SD ± 0,74)	
After injection	1,4 (SD ± 0,7)	
Average macular thickness (µm)		
Before injection	357 (SD ± 177)	
After injection	315 (SD ± 158)	
Lens status		
Phakia	64	55,7
Pseudophakia	51	44,3
Previous treatment		
Yes	56	48,7
No	59	51,3
Anti-VEGF		
Avastin	41	35,7
Patizra	70	60,9
Patizra + Triamcinolon	3	2,6
Eylea	1	0,9
Therapeutic protocol		
Loading dose	81	70,4
Non loading dose	34	29,6
Average injection given	3,13 (SD ± 1,6)	
Risk factors		
Hypertension	33	28,7
Diabetes melitus type II	18	15,7
Smoking	6	5,2
Dyslipidemia	8	7
Coronary heart disease	5	4,3
No risk factors	68	59,4

The Influence of Anti-VEGF Administration on BCVA (logMar) and Central Macular Thickness

The results indicate that after the administration of Anti-VEGF injections, 29.5% of eyes experienced a decrease in BCVA (logMar), 29.5% of eyes showed an improvement in BCVA (logMar), and 36.5% of eyes exhibited no change in BCVA. The statistical analysis results indicate that there is no significant influence of Anti-VEGF administration on BCVA (logMar) outcomes, with a p-value of 0.423 ($p > 0.05$).

Based on the research findings following Anti-VEGF injections, 67.8% of eyes experienced a reduction in central macular thickness, 30.4% of eyes showed an increase in central macular thickness, and 1.7% of eyes exhibited no change in central macular thickness. The statistical analysis results demonstrate a significant influence of Anti-VEGF administration on central macular thickness, with a p-value of 0.000 ($p < 0.05$).

Table 2. The Influence of Anti-VEGF Administration on BCVA and Central Macular Thickness

Characteristics		Amount of Patients		*p value*
		N	%	
BCVA results (logMar)	Increase	34	29,5	0,423
	Decrease	39	34	
	Remains the same	42	36,5	
Central macular thickness	Increase	78	67,8	0,000
	Decrease	35	30,4	
	Remains the same	2	1,7	

The Influence of Intravitreal Avastin Injection on BCVA (logMar) and Central Macular Thickness

The results indicate that after intravitreal Avastin injection, 31.71% of eyes experienced a decrease in BCVA (logMar), 34.15% of eyes showed an improvement in BCVA (logMar), and 34.15% of eyes exhibited no change in BCVA. The statistical analysis results indicate that there is no significant influence of intravitreal Avastin injection on BCVA (logMar) outcomes, with a p-value of 0.492 ($p > 0.05$).

Based on the research findings following intravitreal Avastin injection, 63.41% of eyes experienced a reduction in central macular thickness, and 36.59% of eyes showed an increase in central macular thickness. The statistical analysis results demonstrate a significant influence of intravitreal Avastin injection on central macular thickness, with a p-value of 0.038 ($p < 0.05$).

Table 3. The Influence of Intravitreal Avastin Injection on BCVA and Central Macular Thickness

Characteristics		Amount of Patients		*p value*
		N	%	
BCVA results (logMar)	Increase	13	31,71	0,492
	Decrease	14	34,15	
	Remains the same	14	34,15	
Central macular thickness	Increase	26	63,41	0,038
	Decrease	15	36,59	
	Remains the same	-	-	

The Influence of Intravitreal Patizra Injection on BCVA (logMar) and Central Macular Thickness

The results indicate that after intravitreal Patizra injection, 27.4% of eyes experienced a decrease in BCVA (logMar), 34.25% of eyes showed an improvement in BCVA (logMar), and 38.36% of eyes exhibited no change in BCVA. The statistical analysis results indicate that there is no significant influence of intravitreal Patizra injection on BCVA (logMar) outcomes, with a p-value of 0.564 ($p > 0.05$).

Based on the research findings following intravitreal Patizra injection, 69.86% of eyes experienced a reduction in central macular thickness, 27.4% of eyes showed an increase in central macular thickness, and 2.74% of eyes underwent a change in central macular thickness. The statistical analysis results demonstrate a significant influence of intravitreal Patizra injection on central macular thickness, with a p-value of 0.005 ($p < 0.05$).

Table 4. The Influence of Intravitreal Patizra Injection on BCVA and Central Macular Thickness

Characteristics		Amount of Patients		*p value*
		N	%	
BCVA results (logMar)	Increase	20	27,4	0,564
	Decrease	25	34,25	
	Remains the same	28	38,36	
Central macular thickness	Increase	51	69,86	0,005
	Decrease	20	27,4	
	Remains the same	2	2,74	

The results indicate that eyes receiving the loading dose injection experienced changes in BCVA (logMar) with an average of 0.015 (SD ± 0.45), and those receiving the non-loading dose had an average change of 0.68 (SD ± 0.23). The statistical analysis results show that there is no significant difference in the change in BCVA (logMar) between the loading dose and non-loading dose injection groups, with a p-value of 0.325 ($p > 0.05$).

Based on the research findings, eyes receiving the loading dose injection underwent changes in central macular thickness with an average of 54.91 (SD ± 145) μm, while those receiving the non-loading dose had an average change of 11.03 (SD ± 163) μm. The statistical analysis results indicate that there is no significant difference in the change in central macular thickness between the loading dose and non-loading dose injection groups, with a p-value of 0.17 ($p > 0.05$).

Table 5. Changes in BCVA (logMar) and Central Macular Thickness in the Loading Dose and Non-Loading Dose Groups.

	Loading dose	*Non loading dose*	*p value*
Average change in BCVA (*mean* ± SD)	0,015 (SD ± 0,45)	0,68 (SD ± 0,23)	0,325
Average change in central macular thickness (*mean* ± SD)	54,91 (SD ± 145)	11,03 (SD ± 163)	0,17

DISCUSSION

Main Findings

In this study of 115 eyes from 122 patients with wet age-related macular degeneration (AMD), we found that while anti-VEGF treatment led to a significant reduction in central macular thickness (CMT) from an average of 357 μm to 315 μm ($p < 0.05$), changes in best-corrected visual acuity (BCVA) were not statistically significant ($p > 0.05$). Approximately 70.4% of patients received a loading dose regimen, which did not significantly differ in BCVA or CMT outcomes compared to the non-loading dose group. Intravitreal injections of Patizra were the most commonly used, with significant improvements in CMT but not BCVA. The most prevalent risk factor among patients was hypertension (28.7%), and the majority of patients presented with blurry vision lasting an average of six months. Despite the significant anatomical improvements, the lack of corresponding functional improvement in BCVA suggests that while anti-VEGF therapy effectively reduces macular edema, it may not necessarily translate to better visual outcomes, highlighting the complexity of managing wet AMD.

Distribution of Characteristics in Wet AMD Patients

Based on the research findings, the majority of wet AMD patients were females, comprising 55.7%. This contrasts with a prior study by Thoongsuwan et al, which reported a higher prevalence of male patients.[7] A study by Johnston et al stated that more females experience wet AMD.[8] Jonas' research suggests that female gender is considered a weak risk factor for late AMD.[9] In our patients, females demonstrated a higher prevalence compared to males.

The wet AMD patients involved in this study had an average age of 67 (SD ± 8.6) years. Thoongsuwan et al's study reported an average age of 68.64 (SD ± 10.24) for wet AMD patients.15 In contrast, Johnston et al found average ages of 78.49 (SD ± 6.76) and 77.96 (SD ± 8.14) for patients in Australia and the UK, respectively. This suggests that wet AMD patients receiving Anti-VEGF injections at our hospital have a younger age compared to populations in developed countries. Increasing age is a major risk factor associated with AMD, linked to the accumulation of acellular deposits in the RPE and Bruch's membrane.[10]

The proportion of patients with wet AMD in both eyes was 10.4%. Thapa et al's study in Nepal showed that the majority (92%) of neovascular AMD subjects had bilateral involvement.[9] Kawasaki's study found that 30.8% of Asians had bilateral involvement compared to 45.1% of

Caucasians.[9] This study exhibited similarity with the Asian population, suggesting that the laterality of wet AMD may be influenced by genetics, race, and ethnicity.

Of the patients, 93.9% presented with complaints of blurry vision, with an average duration of 6 months (SD ± 10). Parfitt et al's study showed that the most common complaint in their patients was visual distortion at 40%, followed by blurry vision at 38%, with patients seeking help within 2-6 days after the onset of symptoms at 38%.[10] Abusharkh et al's study indicated that 56.9% of AMD patients had a complaint duration of <5 years.[11] Wet AMD patients at our hospital tended to have a longer average complaint duration compared to previous studies, indicating various factors influencing patients to seek help later after the onset of symptoms.

Patients attending initial visits had an initial average visual acuity of 1.3 (SD ± 0.74) with an initial average macular thickness of 357 (SD ± 177) µm. Amarakoon et al's study showed an initial visual acuity (logMar) before injection of 0.47 (SD ± 26) with an average macular thickness of 358 (SD ± 93) µm.[12] Calvo et al's study reported a baseline visual acuity (logMar) of 0.68 (SD ± 0.38 with a macular thickness of 342.12 (SD ± 121.57 µm.23 This indicates that our patients have a higher baseline visual acuity (logMar) and a similar macular thickness compared to previous studies, potentially influencing the improvement or lack thereof in visual acuity and macular thickness after Anti-VEGF injections.

Results from post-treatment follow-up visits after Anti-VEGF injections revealed a final average visual acuity of 1.4 (SD ± 0.7) with a final average macular thickness of 315 µm (SD ± 158). Calvo et al's study showed a post-injection visual acuity (logMar) of 0.67 (SD ± 0.4 µm with a macular thickness of 276 (SD ± 88 µm.[13] Aichi et al's study reported a post-injection visual acuity (logMar) of 0.360 (SD ± 0.049.[14] The results in this study show no improvement in post-injection visual acuity (logMar), but there is a decrease in the average macular thickness. Overall, previous studies already had low baseline values, resulting in output that did not differ significantly from the baseline, unlike our patients who had higher baseline values, leading to generally higher final results.

The most common lens status among patients was phakic, with a proportion of 55.7%. Calvo et al's study showed that 49% of lens status in wet AMD patients receiving Anti-VEGF injections was pseudophakic.[13] Thapa et al's study indicated that 81.79% of AMD patients had a phakic lens status, and late AMD was significantly higher among pseudophakic individuals.[9] Hanhart et al stated that pseudophakia is associated with better functional outcomes than phakic status.[15] There was no significant difference between the number of wet AMD patients at our clinic with phakic and pseudophakic lens status, warranting further research to investigate the possible connection between lens status and the occurrence of wet AMD.

A total of 51.3% of patients had no history of previous Anti-VEGF injections. Figurska et al's study stated that 43.7% of wet AMD patients in their study had a history of previous Anti-VEGF injections, with no significant difference in visual improvement between those with and without therapy history.[16] The number of 'treatment-naïve' patients at our hospital was higher compared to previous studies.

The majority of patients received the anti-VEGF Patizra, accounting for 60.9% with an average of 3. (SD ± 1.6) injections. Thoongsuwan et al's three-year study showed average (SD) injection counts in years 1, 2, and 3 were 6.06 (3.00), 3.44 (2.94), and 2.71 (3.07), respectively, with Bevacizumab being the most administered anti-VEGF at 78.5%.[5] In contrast to previous research, We used more Ranibizumab than Bevacizumab, and the average injection count was lower. This could be influenced

by hospital policies, BPJS, socio-economic factors, and the effectiveness of the drug itself.

The results indicate that 81 eyes (70.4%) received Anti-VEGF loading dose injections, while 34 (29.6%) subjects' eyes received Anti-VEGF non-loading dose injections. Sagong et al's study showed that 52.3% received loading doses, stating that loading doses are associated with increased VA after one year of intervention.[17] The number of wet AMD patients at our clinic receiving loading doses was higher than in previous studies.

The most common risk factor in wet AMD patients was hypertension, with a proportion of 28.7%. Kristianto et al's study showed that 50% of AMD patients at Sanglah Hospital had a smoking habit, and the majority of wet AMD patients suffered from hypertension.[18] Abusharkh et al's study showed that AMD is significantly associated with a history of smoking, family history, and hypertension.[11] Hypertension may be a prevalent risk factor for wet AMD occurrence in RSCM patients due to the high prevalence of hypertension among them.

There was one 67-year-old male patient who received Aflibercept (Eylea) Anti-VEGF injections. The patient had been receiving loading dose injections since one year prior and routinely received Anti-VEGF injections every month. Meta-analysis studies show the effectiveness of both monthly and bimonthly Aflibercept doses to be comparable to monthly Ranibizumab.[19] This study only had one subject receiving Aflibercept because the drug is not covered by the BPJS budget and is relatively expensive, limiting its availability to only a few patients.

Influence of Anti-VEGF Administration on BCVA (logMar) and Macular Thickness

Statistical analysis results show no significant influence of Anti-VEGF administration on BCVA (logMar) with a p-value of 0.423 ($p > 0.05$). This differs from Thoongsuwan et al's study, which revealed visual improvement post-Anti-VEGF injection over one year ($P = 0.0026$).15 Meta-analysis studies with control patients found an improvement in visual acuity of 15 letters or more, less than 15 letters lost, and an increase in average visual acuity after one year of follow-up intravitreal injections.[20] This study is not aligned with previous research due to the lack of significant influence on BCVA post-injection.

Statistical analysis results indicate an influence of Anti-VEGF administration on macular thickness with a p-value of 0.000 ($p < 0.05$). This aligns with Thoongsuwan et al's study, which found anatomical improvement (macular thickness) post-injection over one year with an average decrease of 104.03 µm ($P < 0.0001$).[5] Meta-analysis studies show subjects receiving Anti-VEGF injections exhibit morphological improvement (central retina thickness) compared to participants not treated with anti-VEGF agents.[20] This study aligns with previous research, indicating an influence on macular thickness reduction post-injection.

Influence of Intravitreal Avastin Injection on BCVA (logMar) and Macular Thickness

Statistical analysis results show no influence of intravitreal Avastin injection on BCVA (logMar) with a p-value of 0.492 ($p > 0.05$). Amarakoon et al's study showed improved visual acuity (VA) after 1 year post-Bevacizumab injection, with no significant difference in mean VA change on-demand every 4 weeks (5.6 (SD ± 10.2)) and every 8 weeks (4.6 (SD ± 12.0 ETDRS)).[12] This study does not align with previous research due to the lack of significant influence on BCVA post-intravitreal Avastin injection.

Statistical analysis results indicate an influence of intravitreal Avastin injection on macular thickness with a p-value of 0.038 ($p < 0.05$). Previous research found a decrease in average foveal thickness after 1 year of injection ranging from 61 (SD ± 90) µm in the 4-week group to 91

(SD ± 83) µm in the 8-week group (p = 0.07).[12] Previous studies stated significant improvement in BCVA and thickness reduction in patients receiving Bevacizumab injections.[21] This study aligns with previous research, indicating an influence on macular thickness reduction post-intravitreal Avastin injection.

Influence of Intravitreal Patizra Injection on BCVA (logMar) and Macular Thickness

Statistical analysis results show no influence of intravitreal Patizra injection on BCVA (logMar) with a p-value of 0.564 (p > 0.05). Calvo et al's study showed improved VA compared to baseline at 6 and 12 months (P < 0.005), with no significant differences at months 18, 24, 30, and 36 (P > 0.05) post-Ranibizumab injection.[13] Sagong et al's study showed at month 12, the average (SD) change in VA from baseline was +10.1 (SD ±21.77; P=0.0005) and +1.4 (SD ±15.17; P=0.2142) ETDRS, with average injection counts of 5.2 and 3.4 in the treatment-naïve and previously injected groups, respectively. Factors influencing this include younger age, lower baseline VA, and those receiving loading doses associated with a higher likelihood of VA improvement within 1 year (P<0.05).[17] This study does not align with previous research due to the lack of significant influence on BCVA post-intravitreal Patizra injection.

Statistical analysis results indicate an influence of intravitreal Patizra injection on macular thickness with a p-value of 0.005 (p < 0.05). Calvo et al's study showed a decrease in central macular thickness post-Ranibizumab injection (P < 0,001) at all analyzed time points (months 6, 12, 18, 24, 30, and 36).[13] Sagong et al's study showed the average (SD) change in central macular thickness from baseline was -126.7 (SD ±174.90) µm (P<0.0001) and +10.8 (SD ±89.62) µm (P=0.5833) in the treatment-naïve and previously injected groups, respectively.[17] This study aligns with previous research, indicating an influence on macular thickness reduction post-intravitreal Patizra injection.

Changes in BCVA (logMar) and Macular Thickness in Loading Dose and Non-Loading Dose Groups

Statistical analysis results show no significant difference in BCVA (logMar) changes between the loading dose and non-loading dose injection groups with a p-value of 0.325 (p > 0.05). Previous studies showed improved BCVA from baseline at months 3 and 12 in the loading dose group (4.7 [10.1] and 3.4 [13.1] letters, P <0.0001 and 0.0266), with no significant change in the non-loading dose group.[22] This study does not align with previous research, as it shows no difference in BCVA progress between loading and non-loading doses.

Statistical analysis results show no significant difference in changes in macular thickness between the loading dose and non-loading dose injection groups with a p-value of 0.17 (p > 0.05). Previous research found a significant decrease in average CMT at month 12 in both loading dose and non-loading dose groups (P < 0.0001).[22] This study does not align with previous research, as it shows no difference in the decrease in macular thickness between loading and non-loading doses.

CONCLUSION

In conclusion, the research outcomes provide valuable insights into the effects of Anti-VEGF administration on patients with wet AMD. The study indicates that Anti-VEGF treatment does not significantly impact BCVA (logMar) outcomes, but it does have a notable influence on central macular thickness. Additionally, the research highlights that while intravitreal Avastin injection does not affect BCVA (logMar), it does significantly influence central macular thickness. Similarly, intravitreal Patizra injection demonstrates no significant impact on BCVA (logMar) but does affect central macular thickness. Moreover, the study finds no

significant disparities in BCVA (logMar) changes between the loading dose and non-loading dose injection groups, as well as in changes in central macular thickness.

Moving forward, several recommendations emerge from this research. Firstly, further investigations should delve into the distinctions in outcomes between loading dose and non-loading dose protocols. Additionally, future research could explore the comparative effectiveness of pro re nata injections versus treat and extend injections. The study suggests the need for extended evaluations to comprehensively understand the outcomes of Eylea (Aflibercept) injection management. Moreover, researchers are encouraged to conduct more in-depth studies on the demographic risk factors influencing wet AMD patients. Lastly, it is recommended that future researchers adopt the ETDRS format for visual acuity documentation to enhance consistency and comparability across studies.

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