## 06. COMPARATIVE EFFICACY OF INTRAVITREAL AFLIBERCEPT AND DEXAMETHASONE IMPLANT IN TREATING MACULAR EDEMA ASSOCIATED WITH DIABETIC RETINOPATHY OR RETINAL VEIN OCCLUSION: A META-ANALYSIS AND SYSTEMATIC REVIEW (2836)

Khaled Moghib<sup>1</sup>, Yumna Mahmoud<sup>1</sup>, Ayman Hassan<sup>1</sup>, Ammar Salah<sup>2</sup>

1. Fourth-year medical student, Cairo University/ Kasralainy Medical School, Cairo, Egypt

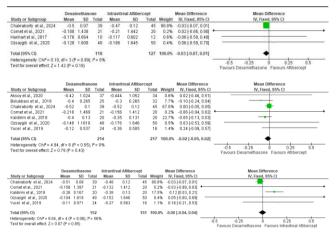
2. Fifth-year medical student. Faculty of Medicine, Al\_Azhar Asuit, Egypt



https://www.youtube.com/live/fSpXH-3Xy5w?t=6495s

BACKGROUND: Diabetic retinopathy (DR) and retinal vein occlusion (RVO) are common retinal vascular diseases that can lead to visual impairment. Macular edema is a serious complication of both DR and RVO. Anti-VEGF agents like aflibercept and corticosteroids like dexamethasone implant are treatments for ME. We aim to evaluate the comparative efficacy and safety of these two treatments for ME associated with DR or RVO. METHOD: The databases used in the study for a literature search include PubMed, Embase and Cochrane Central Register of Controlled Trials searched from inception till August 1, 2024. The aim was to include trials which addressed the efficacy and safety of treatments for macular edema. Data extraction was performed on key outcome variables which included the BCVA, CRT, the number of injections given and the SAE's. The obtained data was subsequently analyzed qualitatively and quantitively based on the RevMan 5 software program. 3 software for meta- analysis of the included studies. RESULTS: We included a total 8 of studies comprising 453 eyes. The underlying causes of macular edema in the included studies were RVO and DR. When comparing the dexamethasone implant group to the aflibercept treatment group, there was no statistically significant difference in BCVA at the 3M (MD: -0.00, 95% CI: -0.04,0.04; P=0.95),6M (MD: -0.02, 95% CI: -0.05, 0.02; P=0.43) and 12M (MD: -0.03, 95% CI: -0.07, 0.01; P=0.16). In terms of central retinal thickness reduction, there was a significant difference between the two groups at 3M (MD: -20.04, 95% CI: -34.52,-5.56; P=0.007), and 12M (MD:19.61, 95% CI: -37.4, -1.81; P=0.03), however, there was no significant result in 6M (MD: 2.07, 95% CI: - 15.4, 19.55; P=0.82). CONCLUSION: The meta-analysis revealed that the aflibercept intravitreal injection and dexamethasone implant both significant in improving BCVA and decreasing the CRT of patients with DR and ME. In the initial 3 months of therapy as well as fixed-dose 12 months of therapy, dexamethasone implant was found to provide better vision and reduced CRT than aflibercept. Nevertheless, the dexamethasone implant needed less injection but increased the incidence of elevated intraocular pressure and cataract formation.

*Figure 1:* Differences in BCVA (logMAR) Changes Between Aflibercept and Dexamethasone Implant Treatment at (A) 3 Months, (B) 6 Months, and (C) 12 Months.



*Legend:* BCVA: Best-corrected visual acuity; logMAR: Logarithm of the minimum angle of resolution; SD: Standard deviation; CI: Confidence interval.

*Figure 2.* Differences in CRT Changes Between Aflibercept and Dexamethasone Treatment at (A) 3 Months, (B) 6 Months, and (C) 12 Months.

Study or Subgroup	Dexa	methason	e	Intravitreal Aflibercept				Mean Difference	Mean Difference
	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI
Aksov et al., 2020	-264.2	88.076	37	-264.07	70.295	34	20.7%	-0.13[-31.94, 31.68]	
Bolukbasi et al., 2019	-228.3	86 902	25	-168.5	94 496	32	9.4%	-59.80 [-107.05, -12.55]	
Chakraborty et al., 2024	-169.5	53.57	39	-169.8	51 34	45	41.3%	0.30 1-22 23, 22,831	
Cornet et al., 2021		135.674	21	-128	98.587	20	4.0%	13.30 - 59.05.85.65	
Kaldirim et al., 2018	-239.05	80		-234.25	53.005	20	11.9%	-4.80 [-46.86, 37.26]	
Ozsavgili et al., 2010		130.393	48	-185.4	74.129	50		-130.00 [-172.22, -87.78] +	
Yucel et al., 2019		173.345	74		265.485	16	1.0%	83.70 +63.72, 231.12	
Yucel et al., 2019	-315.2	1/3.345	24	-398.9	265.485	16	1.0%	83.70 [63.72, 231.12]	
Total (95% CI)			214			217	100.0%	-20.04 [-34.52, -5.56]	•
Heterogeneity: Chi# = 36.6	3, df = 6 (F	< 0.00001	); #= 8	4%				-	-100 -50 0 50 100
Test for overall effect $Z = 2$	.71 (P = 0	007)							-100 -50 0 50 100 Favours Dexamethason Favours Aflibercent
									Favours Decamentason Favours Allibercept
	Fx	Experimental			Control			Mean Difference	Mean Difference
Study or Subgroup	Mean		Tota	Mean	I SE	) Tota	Weigh	t IV, Fixed, 95% CI	IV, Fixed, 95% CI
Chakraborty et al., 2024	-175.5	54.4	5 3	-179.8	50.46	3 45	5 60.09	4.30 [-18.27.26.87]	
Comet et al., 2021	-95.6				100.3516				
Kaldirim et al., 2018	-163.15								
Ozsavgili et al., 2020	-263.6								
Yucel et al., 2019		222.157							St. 14
rucer ecal, 2015	•103.0	222.137		-310.1	1 200.2705	e	1.39	5 110.20 (*30.44, 270.04)	
Total (95% CI)			15	2		15	1 100.01	2.07 [-15.40, 19.55]	+
Heterogeneity: Chi#= 38.6	2. df = 4 ()	P < 0.0000	1); P=	30%					
Test for overall effect Z =									-100 -50 0 50 100 Favours lexperimentall Favours lexperimental
		00054							Favours (experimental) Favours (control)
	Dexamethason			Aflibercept				Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD 1	Total 1	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI
Chakraborty et al., 2024	-170.5	53.04	39	-174.8	45.78	45	69.5%	4.30 [-17.05, 25.65]	
Comet et al., 2021		139.9324	21		93.7194	20	6.0%	-61.10 [-133.69, 11.49]	
Hanhart et al., 2017	-140.5	87.0925	10	-144.66		12	6.8%	4.16 [-64.10, 72.42]	
Ozsaygili et al., 2020	-317.5	132.4248	48	-209.1	70.7924	50	17.7%	108.40 [-150.69, -66.11]	
Total (95% CI)			118			127	100.0%	-19.61 [-37.40, -1.81]	•
Heterogeneity: Chi <sup>a</sup> = 23.4 Test for overall effect Z = 3			; 1* = 83	196					-100 -50 0 50 100
									Favours Dexamthasone Favours Aflibercept

*Legend:* CRT: Central retinal thickness; SD: Standard deviation; CI: Confidence interval.

**Key Words:** Meta-analysis, Diabetic retinopathy, Macular edema, Dexamethasone, Aflibercept, Best-corrected visual acuity, Central retinal thickness.