CORRELATION BETWEEN VITREORETINAL INTERFACE ABNORMALITIES AND CHANGES IN THE OUTER RETINAL LAYERS IN DIABETIC MACULAR EDEMA BY OPTICAL COHERENCE TOMOGRAPHY

Ashraf Saad Galal, Amir Ramadan Gomaa, Amira Fouad Ahmed Elgendi

Department of Ophthalmology, Faculty of Medicine, University of Alexandria

Introduction

Macular edema is a common complication that threatens vision in diabetic retinopathy patients, especially those with type 1 DM, long duration of diabetes and high levels of glycosylated haemoglobin.

It has been proven that the retinal-blood barrier disruption is the main factor in macular edema pathogenesis, leading to extracellular leakage of proteins and other substances followed by accumulation of extracellular fluid and formation of macular edema.

In the present era of anti-VEGF therapy, OCT became a reliable and valuable method not only for diagnosis of DME but also for treatment protocols of DME patients. Rather than measurements of thickness, OCT can detect different structural changes in retinal layers such as formation of cystic spaces, structural integrity of outer retinal layers, accumulation of subretinal fluid, and vitreomacular interface abnormalities.

Aim of the Work

This prospective observasional study aimed to correlate the presence of vitreo-retinal interface abnormalities with the changes occurred in the outer retinal layers by OCT scans in eyes with diabetic macular edema.

Patients and Methods

The study included 60 eyes of 60 patients with newly discovered Ci-DME with CST of at least 300 µm of either cystic or spongiform pattern with or without subretinal fluid collection, the study population was divided into 2 groups, a case group of 40 eyes with VIAs and a control group with normal vitreo-retinal interface. Clinical data of patients fulfilling inclusion criteria were evaluated; including age, sex, diabetic retinopathy status and visual acuity measured at presentation. Their SD-OCT scans were also evaluated regrading certain parameters, including CST, pattern of edema, ELM & EZ integrity, presence of HF in outer retinal layers and the condition of the vitreo-retinal interface.

Results

Relation between BCVA in log MAR and different OCT parameters in study population (n = 60)

Study population (n = 60)	N	BCVA in log MAR			Test of Sig.	p
		Min.–Max.	Mean±SD.	Median		
Pattern						
Cystic	44	0.00–1.00	0.48±0.31	0.42	H= 7.03*	0.039*
Ass.NSD	14	0.18–1.30	0.80 ±0.44	0.70		
Spongiform	2	0.20–0.70	0.44±0.3	0.40		
ELM						
Intact	49	0.00–1.30	0.51±0.35	0.40	U= 122.50	0.396
Distorted	11	0.10–1.30	0.65±0.39	0.70		
EZ						
Intact	25	0.10–1.30	0.53±0.39	0.40	U= 173.0	0.812
Distorted	35	0.00–1.30	0.55±0.35	0.45		
HF						
Absent	11	0.00–0.70	0.24±0.15	0.30	H= 7.487*	0.024*
Outer retina	34	0.10–1.30	0.64±0.38	0.70		
Inner & outer retina	15	0.18–1.30	0.57±0.33	0.45		
VMI						
Normal interface	20	0.10–0.80	0.46±0.28	0.50	H= 1.133	0.568
ERM	13	0.18 –1.0	0.51±0.26	0.40		
VMA	20	0.0–1.30	0.53±0.43	0.40		
VMT	7	0.10–1.0	0.64±0.33	0.70		

Relation between types of VMIAs and EZ for case group (n = 40)

EZ	Types of VMI						c^2	^{MC}p
	ERM (n = 13)		VMA (n = 20)		VMT (n = 7)			
	No.	%	No.	%	No.	%		
Intact	1	7.7	11	55.0	2	28.6	7.921*	0.016*
Distorted	12	92.3	9	45.0	5	71.4		

Conclusion

In eyes with newly diagnosed DME; VIAs are more prevalent with older age and with more advanced DR grade. Each of VIAs, or ELM, EZ defect in isolation cannot explain VA. VIAs and EZ disruption tend to occur synchronously. Eyes with VMT were usually associated with better vision than eyes with ERM.