Diabetes Mellitus-Associated Uveitis

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Background:
The association between Diabetes Mellitus (DM) and Uveitis was described almost 150 years ago. Nevertheless, few reports regarding this association have been published ever since.

Purpose: To describe clinical features of patients with diabetes mellitus-associated uveitis (DMAU)

Patients & Methods:
We reviewed the clinical records of patients with uveitis and DM at the Uveitis Department of Hospital Del Salvador in Santiago, and classified them into three categories: 1. Patients with uveitis and DM with an underlying cause for uveitis; 2. Patients with DMAU, defined as patients with uveitis where secondary causes were ruled out, and decompensated DM (Capillary glycaemia >300mg/dL and/or HbA1c>12%) and; 3. Patients with idiopathic uveitis and well controlled DM. Demographic data, DM features, comorbidities, complete ophthalmic examination and treatments were recorded in Excel® and analysed using *Prism7*®

Results:
We found 72 patients with uveitis and DM (out of 1203 uveitic patients) (Table 1)
16 patients fulfilled the criteria for DMAU. In these patients an anterior location was seen in all cases, versus 80% in idiopathic. 9 were male, and the average age at presentation was 51 yo. All had type 2 Diabetic with an average capillary blood glucose at presentation of 331 mg/dL and HbA1c of 14.2%

The clinical features of patients with DMAU are seen in table 2.
When compared with idiopathic uveitis in diabetic patients, DMAU patients presented a much worse inflammation, even with hypopion and a fibrinous reaction. Also, diabetic retinopathy was significantly higher in the DMAU patients.
All DMAU patients responded well to topical or periocular steroids.

Table 1: Etiologies of uveitis in diabetic patients

Idiopathic: 15 pts (21%)	Anterior uveitis: 12 patients (16.68%) Pars planitis: 3 patients (4.16%)
Secondary: 41 pts (57%)	Herpes virus: 8 patients
	Tuberculosis: 5 patients
	Secondary to systemic disease (i.e: RA, SLE, RP, Sarcoidosis): 5 patients
	Toxoplasmosis: 5 patiens
	Sympathetic Ophthalmia: 3 patiens
	White dots syndrome: 2 patiens
	Vogt Koyanagi Harada: 2 patiens
	Related to HLA B27: 2 patients
	Other: 10 patients
DMAU: 16 pts (22%)	

RA: Rheumatoid arthritis; SLE: Systemic Lupus Erythematous; RP: Relapsing Polychondritis; DMAU: Diabetes Mellitus-Associated uveitis

Conclusions:
Patients with DMAU present a much more severe inflammation compared with patients with DM and idiopathic uveitis. The distinctive clinical picture of these patients, suggests an independent entity from idiopathic uveitis in diabetic patients. Whether the hyperglycemia by itself initiates the inflammation process by inducing ischemia, or a break-down of the blood-ocular barrier, or modifying the immune response, or making a different underlying inflammation process worse, is difficult to assess. We believe the uncontrolled diabetes by itself can drive inflammation through a series of mechanisms that induce a severe anterior chamber inflammation, and thus may be an independent cause of uveitis.
Futures studies are required to elucidate a real association between DM and anterior uveitis.

Table 3. Comparison between Idiopathic uveitis and DMAU

	Idiopathic uveitis	DMAU	p value
Age at diagnosis	54 yo	51 yo	0.52
Anterior uveitis	80%	100%	
Type 2 DM	80%	100%	
HbA1c (mg/dL)	7.6	14.2	p<0.001
DM duration (years)	13.3	11	0.4
Diabetic retinopathy	33%	88%	p<0.005
Unilateral	67%	88%	p=0.22
IOP (mm Hg)	15	15	p=0.98
Final-Initial VA (logMAR)	0.1	0.13	
Inflammation 3-4+ cells	5% (1/20 eyes)	33% (6/18 eyes)	p<0.05
Fibrinous reaction	0%	28% (5/18 eyes)	p<0.05
Hypopion	0%	17% (3/18 eyes)	p=0.096
Posterior Synechiae	50% (10/20 eyes)	83% (15/18 eyes)	p<0.05

Table 2. DMAU: Clinical features (n=16 patients, 18 eyes)

Site of inflammation	Anterior n=18 (100%)
Laterality	14 unilateral (87.5%)
IOP (mm Hg), mean ± SD	15 ±4.1
Initial VA (Snellen), mean [min-max]	0.15 (NLP-1.0)
Final VA (Snellen), mean [min-max]	0.1 (HM-0.6)
Inflammation grade: Tyndall (eyes, %)	(+1) n = 6: 33.3%
	(+2) n = 6: 33.3%
	(+3) n = 2: 11.1%
	(+4) n = 4: 22.2%
Inflammation grade: Flare (eyes, %)	(0+): n= 9 (50%)
	(+1) n = 2: (11%)
	(+2) n = 0: (0%)
	(+3) n = 2: (11%)
	(+4) n=5: (28%)
Fibrin (eyes, %)	N = 5; 28%
Hypopyon (eyes, %)	N = 3; 17%
Posterior synechia (eyes, %)	N = 15; 83%
Vitritis (eyes, %)	N = 2; 11% (BIO-Score 1 in both)
Time to resolution (days), mean ± SD, [min-max]	30.5±16.3 [7-70]
Follow-up (months)	4.1

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