Riguetto et al. Diabetology & Metabolic Syndrome 2015, 7(Suppl 1):A15
http://www.dmsjournal.com/content/7/S1/A15

DIABETOLOGY & METABOLIC SYNDROME

MEETING ABSTRACT Open Access

Clinical predictors of cardiac autonomic neuropathy in patients with type 1 diabetes

Cinthia Minatel Riguetto*, Caroline Rigoleto Takano, Maria Cândida Ribeiro Parisi, Elizabeth João Pavin, Arnaldo Moura Neto

From 20th Brazilian Diabetes Society Congress
Porto Alegre, Brazil. 11-18 November 2015

Background

Cardiac autonomic neuropathy (CAN) is frequently underdiagnosed. The prevalence of CAN rises with diabetes duration and poor glycemic control. Individuals with DM and CAN have an increased mortality risk, up to 53% five yrs. after diagnosis. Early identification can improve treatment, quality of life and mortality.

Objective

Our aim was to determine the prevalence of CAN in patients with type 1 diabetes (T1D) and its association with clinical characteristics.

Materials and methods

We evaluated 102 patients with T1D (67% female) divided in 2 groups: with and without CAN. Mean age and HcA1c were 34,27±10,96 yrs. and 9.0±2.0%, respectively. CAN was assessed by Poly-Spectrum software using standardized cardiovascular reflex testing and measures of heart rate variability. Statistical significance was set at 5%.

Results

CAN was diagnosed in 39 (38.2%) patients. No statistically significant differences were found in age (34.87±9.71 vs. 33.90±11.74 yrs.; p=0.467), age at diagnosis (15.10±9.16 vs. 17.38±11.29 yrs.; p=0.495) and HbA1c (9.26%±2.04 vs. 8.84%±2.07; p=0.144) between groups. Hypertension and dyslipidemia were seen more frequently in patients with CAN (61.5 vs. 19%; p≤0.001 and 51.3 vs. 22.2%; p=0.002, respectively). Patients with CAN had higher total cholesterol (p=0.009) and triglycerides (p=0.004). Patients with CAN complained more often of post-prandial sweating and orthostatic hypotension (35.9 vs. 14.3%; p=0.011 and 51.3 vs. 30.2%; p=0.033, respectively). Other symptoms questioned were similar between groups, including

Variables	CAN	Without CAN	p
Sex (F)	41.8%	58.2%	0.307
Age	34.87 (9.71)	33.9 (11.74)	0.467
Age at diagnosis	15.1 (9.16)	17.38 (11.29)	0.495
HbA1C	9.26 (2.04)	8.84 (2.07)	0.144
Fast plasma glucose	226.36 (136.07)	196.73 (68.02)	0.827
Years in school	10.18 (3.33)	10.4 (3.73)	0.961
Smoking	38.2%	61.8%	0.528
Alcoholism	33.3%	66.7%	0.521
Urinary retention	57.1%	42.9%	0.117
Erectile dysfunction/vaginal dryness	40%	60%	0.879
Explosive diarrhea	40%	60%	0.934
Nausea	57.1%	42.9%	0.117
Post-prandial sweating	60.9%	39.1%	0.011
Orthostatic hypotension	51.3%	48.7%	0.033
Hypoglycemia	37.3%	62.7%	0.700
Hypertension	66.7%	33.3%	0.001
Dyslipidemia	58.8%	41.2%	0.002
Total cholesterol	205.2 (55.92)	177.46 (39.83)	0.009
Triglycerides	148.92 (126.57)	87.17 (40.84)	0.004
LDL	117.61 (45.49)	98.35 (34.93)	0.078
HDL	61.23 (22.59)	57.06 (15.81)	0.579
Retinopathy			<0.001
No retinopathy	18.5%	81.5%	
Nonproliferative	54.2%	45.8%	
Proliferative	60%	40%	
Unilateral blindness	75%	25%	
Bilateral blindness	80%	20%	
Retinal laser therapy	66.7%	33.3%	0.006
Nephropathy			<0.001
No nephropathy	21%	79%	
Microalbuminuria	41.2%	58.8%	
Macroalbuminuria	75%	25%	
Chronic kidney disease	88.9%	11.1%	
Hemodialysis	100%	0	
Kidney transplant	100%	0	
Diabetic neuropathy			0.001
No neuropathy	23.3%	76.7%	
Motor sensory neuropathy/symmetric polyneuropathy	72%	28%	
More than one type	100%	0	
Lower limb ulceration risk	71.4%	28.6%	0.001
Neuropathy pain intensity			0.317
Mild pain	81.8%	18.2%	
Moderate pain	71.4%	28.6%	
Severe pain	50%	50%	
Abnormal 10g monofilament	73.3%	26.7%	0.003

Figure 1 Clinical predictors of cardiac autonomic neuropathy in patients with type 1 diabetes. Values are shown as frequency (%) and mean (standard deviation).

* Correspondence: cinthia.mr@hotmail.com
UNICAMP, Campinas, Brazil

hypoglycemia (p=0.7). CAN showed a rising prevalence as complication severity increased. For retinopathy, the frequency of CAN was 54.2%, 60%, 75% and 80% in those with nonproliferative, proliferative, unilateral and bilateral blindness, respectively (p<0.001). Regarding nephropathy, CAN was present in 41.2%, 75%, 88.9%, 100% and 100% in patients with microalbuminuria, macroalbuminuria, chronic kidney disease, hemodialysis and kidney transplant, respectively (p=<0.001). Diabetic neuropathy, motor sensory neuropathy/symmetric polyneuropathy and more than one neuropathy were seen in 72% and 100% of patients with CAN, respectively (p=0.001).

Conclusions

These results support an association of increased CAN prevalence and chronic complications and their severity. CAN was also associated with hypertension and dyslipidemia, but with few autonomic symptoms (post-prandial sweating and orthostatic hypotension). As expected, HbA1c had no relevance in CAN occurrence.

Published: 11 November 2015

doi:10.1186/1758-5996-7-S1-A15
Cite this article as: Riguetto *et al.*: Clinical predictors of cardiac autonomic neuropathy in patients with type 1 diabetes. *Diabetology & Metabolic Syndrome* 2015 **7**(Suppl 1):A15.