

CORRESPONDENCE

Cardiac Autonomic Neuropathy in Type 2 Diabetes Mellitus

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Sir

Cardiac Autonomic Neuropathy (CAN) is defined as the impairment of cardiovascular autonomic control in patients with established diabetes mellitus (DM) following the exclusion of other causes. The precise prevalence of CAN in DM ranges widely from 20-70% and it increases the mortality in Type 2 DM by 5 fold.¹ This study was planned to look at the prevalence of CAN in Type 2 DM patients and its correlation with other complications and comorbidities associated with Type 2 DM

Type 2 DM patients more than 18 years age with no other major comorbidities were included in the study. All patients had a detailed history and physical examination followed by evaluation of glycemic status, retinopathy, nephropathy, neuropathy and atherosclerotic vascular disease.

Cardiac dysautonomia was assessed by 5 standard non-invasive autonomic function tests - Valsalva manoeuvre, heart rate response to deep breathing, immediate heart rate response to standing, BP response to standing and BP response to sustained hand grip. A Sympathetic skin response (SSR) was done in addition. The first three reflect cardiac parasympathetic integrity,

Table 1: Cardiac autonomic function tests in Type 2 DM (N 67)

CAN	N (%)	
	Early	22 (32.8)
Severe	18 (26.9)	
Atypical	10 (14.9)	
Definite	4 (6)	
	Abnormal	Normal
	N (%)	N (%)
Valsalva	36 (53.7)	31 (46.3)
Heart rate response to		
Deep breathing	31 (46.3)	36 (53.7)
Standing	29 (43.3)	38 (56.7)
BP response to		
Sustained hand grip	21 (31.3)	46 (68.7)
Standing	18 (26.8)	49 (73.1)

while the other three tests reflect sympathetic integrity.

Autonomic dysfunction was classified as normal, early, definite, severe and atypical according to Ewing and Clarke criteria.²

Normal: All the tests are normal

Early: one of the three heart rate tests are abnormal

Definite: Two or more heart rate tests are abnormal

Severe: Two or more of the heart rate tests abnormal plus one or more of the blood pressure tests abnormal

Atypical: Any other combination of abnormal tests

A total of 67 Type 2 DM subjects were included in the study (31 females and 36 males). The mean age was 56.4 ± 10.6 years (range 33-77) and mean duration of diabetes was 12.64 ± 9.92 years (range 1-48). Mean HbA1c was 8.76 ± 1.94 (range 5.3-14.6)

The prevalence of CAN was 54/67 (80.6%). Only Parasympathetic dysfunction was seen in 26(48.1%) while only sympathetic dysfunction was seen in 1 (1.8%) and both together was seen in 27 (50%).

Details are given in Table 1

Prevalence of CAN had significant correlation only with diabetic retinopathy but with none of the comorbidities or complications of diabetes like nephropathy, peripheral neuropathy, peripheral occlusive vascular disease, systemic hypertension or dyslipidemia. There was no correlation of CAN with age of the patient or with the level of glycemic control but there was significant correlation with the duration of diabetes; (p 0.05).

To summarise, this study, showed a very high prevalence of CAN of 80.6 % in Type 2 DM. Parasympathetic cardiac autonomic function tests were more sensitive for the detection of CAN than sympathetic cardiac autonomic function tests. Valsalva was the most sensitive parasympathetic function test and BP response to sustained hand grip was more sensitive to detect the sympathetic dysfunction.

Even though CAN increased with increasing duration of diabetes, there was significant number of patients with

CAN even in short duration diabetes. Hence screening for CAN should be included along with screening for other microvascular complications of diabetes from the onset of Type 2 DM especially in those with diabetic retinopathy irrespective of the age or level of glycemic control.

References

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