Diabetic cardiac autonomic neuropathy in well-controlled diabetics within 1 year of diagnosis

Sir,

Diabetic Cardiac Autonomic Neuropathy (DCAN) is associated with high risk of cardiovascular morbidity and mortality. Several methods have been devised to assess cardiac autonomic neuropathy such as measurement of resting heart rate (HR), HR variability, etc. Reduced HR variability has been associated with increased cardiac events in diabetic subjects. Portable ANSiscope is a device that noninvasively measures the parasympathetic/sympathetic nervous system imbalance in an office setting. The ANSiscope computes a percentage of dysautonomia from a recording of 571 RR intervals termed ANS index.

Based on scoring described by Bellavere et al., five risk categories have been identified using the computed ANS Index. Subjects with ANS index <11%, 11–20%, 21–50%, 51–60% and 61–100% were classified into healthy, early, late, advanced, and most-advanced diabetic cardiac autonomic neuropathy (DCAN) groups, respectively. We investigated prevalence of DCAN amongst well-controlled type-2 diabetes mellitus (T2DM) subjects within 1 year of diagnosis.

After obtaining informed consent, all T2DM subjects diagnosed within the past 12-months and hemoglobin A1C (A1C) <7 were included in the study. Eighteen of 29 subjects recruited were female, with a mean diabetes duration of 9-months and a mean A1C of 6.3% (5.3-7.0) [Table 1]. 10/29 subjects had no DCAN, whereas 4, 11, 1, and 3 subjects had early, late, advanced, and most-advanced DCAN, respectively.

Our study clearly indicates that despite good glycemic control, almost two-third of recently diagnosed T2DM subjects in Pakistan have some level of DCAN. A similar study conducted in India demonstrated an even higher prevalence of DCAN, albeit using different diagnostic criteria. It is a well-known fact that newly diagnosed T2DM subjects have the disease for at least 5-10 years before they are diagnosed. It is quite possible that if we diagnose diabetes earlier followed by aggressive treatment, we can prevent or reduce the morbidity associated with DCAN.

All our subjects had their diabetes under good control for at-least 3 months as indicated by an A1C <7.0. It seems that short-term good glycemic control does not reverse cardiac dysautonomia. Previous studies have shown that intensive diabetes control in type-1 diabetic subjects is associated with partial reversibility of DCAN. Therefore, it would be interesting to compare the DCAN profile before and after good glycemic control.

American Diabetes Association recommends yearly screening for autonomic neuropathy in T2DM from the time of diagnosis. This cannot be accomplished efficiently unless there is a device available that is accurate and easy to use in a doctor’s office setting. Portable ANSiscope seems to be a device that has the potential to meet all these needs of a busy diabetologist.

Ali Jawa, Rizwan Bokhari, Ali Jawad, Javed Akram
Department of Medicine, Jinnah-Allama Iqbal Institute of Diabetes and Endocrinology, Lahore, Pakistan

Corresponding Author: Dr. Ali Jawa, Jinnah-Allama Iqbal Institute of Diabetes and Endocrinology, Lahore-54550, Pakistan.
E-mail: alijawa@gmail.com

Table 1: Diabetic cardiac autonomic neuropathy profile of 29 subjects with type 2 diabetes mellitus within one year of diagnosis and an A1C of <7.0

| Group        | Number | Mean Age (range) | Mean BMI (range) | Mean A1C (range) | Mean ANS Index (range) |
|--------------|--------|------------------|------------------|------------------|------------------------|
| Healthy (<11%) | 10     | 47 (30-65)       | 28 (20-40)       | 6.2 (5.3-7)      | 1 (0-8)                |
| Early (11-20%)| 4      | 40 (35-51)       | 29 (27-32)       | 6.5 (6.3-6.8)    | 15 (14-17)             |
| Late (21-50%) | 11     | 55 (45-70)       | 30 (26-42)       | 6.1 (6.0-7.0)    | 34 (21-47)             |
| Advanced (51-60%) | 1     | 42               | 22               | 6.4              | 56                     |
| Most Advanced (61-100%) | 3 | 61 (50-73) | 28 (24-34) | 6.3 (6.1-6.7) | 74 (71-80) |
| Total        | 29     | 51 (30-73)       | 29 (20-42)       | 6.3 (5.3-7.0)    | 24 (0-80)              |

References

1. Maser RE, Lenhard MJ. Cardiovascular autonomic neuropathy due...
to diabetes mellitus: Clinical manifestations, consequences, and treatment. J Clin Endocrinol Metab 2005;90:5896-903.

2. Singh JP, Larson MG, O’Donnell CJ, Wilson PF, Tsuji H, Lloyd-Jones DM, et al. Association of hyperglycemia with reduced heart rate variability (The Framingham Heart Study). Am J Cardiol 2000;86:309-12.

3. Bellavere F, Bosello G, Fedele D, Cardone C, Ferri M. Diagnosis and management of diabetic autonomic neuropathy. Br Med J (Clin Res Ed) 1983;287:61.

4. Jyotsna VP, Sahoo A, Sreenivas V, Deepak KK. Prevalence and pattern of cardiac autonomic dysfunction in newly detected type 2 diabetes mellitus. Diabetes Res Clin Pract 2009;83:83-8.

5. Burger AJ, Weinrauch LA, D’Elia JA, Aronson D. Effect of glycemic control on heart rate variability in type I diabetic patients with cardiac autonomic neuropathy. Am J Cardiol 1999;84:687-91.

Asymptomatic peripheral artery disease in South Indian women with type 2 diabetes

Sir,

Although it is well known that peripheral vascular disease is a common macrovascular complication in diabetes, the same is rather overlooked in women when compared with their male counterparts. Moreover, asymptomatic peripheral artery disease is also not well studied, both in men and women.

Asymptomatic Peripheral Arterial Disease (PAD) is defined as Ankle-Brachial Index (ABI)<0.9 in patients with no clinical evidence of PAD or foot ulcer.

ABI<0.9 has 90% sensitivity and specificity.

Low Ankle Brachial Index (ABI) is a predictor of future myocardial events, strokes, and amputations.

Although prevalence of PAD is high in diabetics, no studies have looked into the presence of asymptomatic PAD in diabetic women from southern India.

We selected 100 type-2 diabetic women attending medical outpatient department in a rural tertiary care center (Sree Mookambika Institute of Medical Sciences, Kulasekharam, Tamil Nadu, India). Those with pre-existing PAD, with symptoms suggesting PAD-like claudication, with established coronary artery disease, and smokers or tobacco chewers were excluded. All patients were already on treatment with oral anti-diabetic drugs with fair control. Patients taking insulin regimes were excluded for uniformity.

Ankle Brachial Index (ABI) was measured using blood pressure apparatus and handheld Doppler equipment. Blood sugar and Hemoglobin A1c (HbA1c) were measured to assess diabetic control of the patients.

A total of 100 non-diabetic women attending general medical OP for other complaints were selected as control. Those with hypertension and metabolic syndrome were not excluded. Those with known coronary artery disease or cerebrovascular disease were not included in the control group. Those with peripheral vascular disease and symptoms suggesting PAD were excluded. Tobacco users were also excluded from the study.

All 100 patients were diabetics, with more than one-year history of detected type-2 diabetes mellitus. Of the 200 people for whom ABI was measured, 22 (11%) had values less than 0.9. The prevalence of low ABI was significantly higher in diabetics –19% vs 3%.

According to the data we collected, this is the first study to look into the association of asymptomatic PAD in diabetics without clinical cardiovascular disease or cerebrovascular disease in South Indian women. Most of the previous studies were done on symptomatic patients.

Classical risk factors are frequently associated with low ABI.

A number of conditions associated with diabetes such as low High-Density Lipoprotein (HDL), high triglyceride, high Low-Density Lipoprotein (LDL), metabolic syndrome, and others, are associated with high incidence of low ABI and PAD.

Although ABI may establish the diagnosis of asymptomatic PAD, the guidelines for treatment of such patients is lacking. Hence, we believe that more studies need to be conducted in this field and criteria developed, in order to ensure screening and treatment of these patients.

Binu M. G., Shanija P., J. Bino John Sahayo
Department of Medicine, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Tamil Nadu, India
Corresponding Author:
Dr. Binu M. G, Associate Professor, Department of Medicine, Sree Mookambika Institute of Medical Sciences, Kulasekharam, KK Dist, Tamilnadu – 629 161, India.
E-mail: binumonglavil@hotmail.com

Access this article online
Quick Response Code:
Website: www.ijem.in
DOI: 10.4103/2230-8210.83047

Letters to the Editor