

Metabolic Syndrome in Patients with Type II Diabetes Mellitus

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ABSTRACT

Aims: To determine the frequency of metabolic syndrome in patients with type II diabetes mellitus.

Study design: It was a descriptive cross sectional survey.

Duration: From Mar 2012 to Sep 2012.

Material and method: A total of 200 diagnosed type II patients coming to Department of Medicine DHQ teaching Hospital Sahiwal were enrolled.

Results: During the study period, majority of the patients were between 51-50 years i.e. 41%(n=82), mean and standard deviation was recorded as 51.85±6.21, 42%(n=84) male patients and 58%(n=116) were found female. Frequency of metabolic syndrome in patients with type II diabetes mellitus was recorded in 80%(n=160).

Conclusion: The frequency of metabolic syndrome is high among patients with type II diabetes mellitus. So, it is recommended that every patient who presents with type II diabetes mellitus, should be sort out for metabolic syndrome. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

Keywords: Type II diabetes, frequency, metabolic syndrome

INTRODUCTION

The metabolic syndrome is a cluster of risk factors for cardiovascular disease and diabetes that includes hypertension, glucose intolerance, dyslipidaemia and abdominal obesity¹. In the United States (US), the prevalence of the MS in the adult population was estimated to be more than 25%. Similarly, the prevalence of MS in 7 European countries was approximately 23%. It was estimated that 20%–25% of South Asians have developed MS and many more may be prone to it^{2,3}. The exact prevalence of metabolic syndrome in Pakistan is not known⁴. The main reason why MS is attracting scientific and commercial interest is that the factors defining the syndrome are all factors associated with increased morbidity and mortality in general and from CVD in particular⁵.

The people with metabolic syndrome have a fivefold greater risk of developing type 2 diabetes⁶. Diabetes is the sixth-leading cause of death, with most deaths attributed to cardiovascular disease (CVD; nearly 70%) and with ischemic heart disease being responsible for nearly 50% of these deaths⁷.

Obesity, particularly abdominal obesity, is associated with resistance to the effects of insulin on peripheral glucose and fatty acid utilization, often leading to type 2 diabetes mellitus. Insulin resistance, the associated hyperinsulinemia and hyperglycaemia, and adipocyte cytokines (adipokines) may also lead to vascular endothelial dysfunction, an abnormal lipid profile, hypertension, and vascular inflammation, all of which promote the development of atherosclerotic cardiovascular disease (ASCVD)⁶.

The aim of this study was to determine the frequency of the metabolic syndrome in individuals with type II diabetes mellitus. The significance of the study will be that if the frequency of metabolic syndrome is found to be increased in diabetic patients in our setup, we may consider the type II diabetes mellitus as an indicator of metabolic syndrome and able to easily diagnose metabolic syndrome in diabetic patients and also to control the metabolic syndrome with the control of diabetes mellitus.

MATERIAL AND METHODS

A total of 200 patients fulfilling the inclusion criteria from Out Patients Department of Medicine District Hospital, Sahiwal were included after an informed consent was taken. Metabolic Syndrome was made when at least three out of four of the following criteria are met:

- 1) body mass index (BMI) ≥ 30 ;
- 2) systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg;
- 3) fasting triacylglycerol ≥ 150 mg/dL(1.7mmol/L), high density lipoprotein cholesterol (HDL-C) <40 mg/dL (1.03 mmol/L) in men and <50 mg/dL (1.29 mmol/L) in women;
- 4) fasting glucose ≥ 110 mg/dL(6.1 mmol/L).

All this information was recorded on a proforma (Annexure). The collected data was entered and analysed in computer software SPSS version 16.0. The demographics (gender) were presented as frequency and percentages. Metabolic syndrome (i.e. BMI ≥ 30 , SBP ≥ 140 , DBP 90mmHg for triglyceride and fasting glucose ≥ 110 mg/dL (6.1mmol/L) in patients

with type II diabetes mellitus was computed and presented as frequency and percentage. Mean±standard deviation was calculated for age of the patients.

RESULTS

A total of 200 patients fulfilling the inclusion/exclusion criteria were enrolled to determine the frequency of metabolic syndrome in patients with type II diabetes mellitus.

Age distribution of the patients was done which shows 16%(n=32) between 30-40 years, 24%(n=48) between 41-50 years, 41%(n=82) between 51-60 years and 19%(n=38) between 61-70 years of age, mean and sd was calculated as 51.85±5.21 years. Gender distribution shows 42%(n=84) male and 58%(n=116) female cases. Frequency of metabolic syndrome in patients with type II diabetes mellitus reveals 80%(n=160) and 20%(n=40) had no metabolic syndrome.

Table 1: Age distribution of the subjects (n=200)

Age (in years)	=n	%age
30-40	32	16
41-50	48	24
51-60	82	41
61-70	38	19
Total	200	100
Mean and S.D.	51.85 ±6.21	

Table 2: Gender of the subjects (n=200)

Gender	=n	%age
Male	84	42
Female	116	58

Table 3: Frequency of metabolic syndrome in patients with type II diabetes mellitus (n=200)

Metabolic syndrome	=n	%age
Yes	160	80
No	40	20

DISCUSSION

In addition to predicting cardiovascular disease (CVD), morbidity and mortality, the metabolic syndrome (MS) is strongly associated with the development of type 2 diabetes mellitus (T2DM), itself an important risk factor for CVD⁸.

We planned this study to determine the frequency of the metabolic syndrome in individuals with type II diabetes mellitus in our population. The significance of the study is that if the frequency of metabolic syndrome is found to be increased in diabetic patients in our setup, we may consider the type II diabetes mellitus as an indicator of metabolic syndrome and able to easily diagnose metabolic

syndrome in diabetic patients and also to control the metabolic syndrome with the control of diabetes mellitus.

The findings of the study reveals 41%(n=82) between 51-60 years which is in majority of the patients of the study, mean and sd was calculated as 51.85±6.21 years, 42%(n=84) male and 58%(n=116) female cases, frequency of metabolic syndrome in patients with type II diabetes mellitus reveals 80%(n=160) and 20%(n=40) had no metabolic syndrome.

The findings of the study are in agreement with the study conducted by Ahmed N and workers⁹ who shows seventy six (76%) were diagnosed to have metabolic syndrome, of the 56 females, forty eight (85.71%) were having metabolic syndrome while twenty eight (63.63%) of the 44 male participants were having the syndrome and concluded that frequency of MetS was found to be significantly high in this study with female preponderance.

The results are in accordance with other studies, i.e., prevalence of 70–80% among Caucasian type 2 diabetics¹⁰ and 75.6% among Chinese population with type 2 diabetes mellitus¹¹ were estimated. In our study metabolic syndrome was found to be more common in female type 2 diabetics as compared to their male counterparts. Different studies showed quite varied effects of gender on the metabolic syndrome in different populations. In USA, metabolic syndrome is more prevalent in white males.¹² In American blacks, Mexicans Americans, Korea, Kinmen, Iran, India and Oman, women had higher prevalence of the syndrome than men.¹³⁻¹⁶ Nigerian women also have higher percentage than men.¹⁷ However, in light of the results of the current study in agreement with the other studies we may consider type II diabetes mellitus as an indicator of metabolic syndrome and able to easily diagnose metabolic syndrome in diabetic patients and also to control the metabolic syndrome with the control of diabetes mellitus.

CONCLUSION

The frequency of metabolic syndrome is high among patients with type II diabetes mellitus. So, it is recommended that every patient who present with type II diabetes mellitus, should be sort out for metabolic syndrome. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

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