



PREVALENCE OF METABOLIC SYNDROME IN NEWLY DETECTED DIABETES MELLITUS TYPE 2

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ABSTRACT

Introduction: In worldwide metabolic syndrome being increasing as a epidemic and also major risk factor for CVD and other vascular events like stroke. Last few decades infectious disease is decreasing in global whereas burden of chronic diseases (e.g. CVD and Diabetes) is on the rise.

Metabolic syndrome is defined as a clustering of key cardiovascular risk factors like dyslipidemia, abdominal obesity, hypertension and hyperglycemia. The metabolic syndrome with the individuals also differs by sex, race, and ethnicity.

Most of the people having metabolic syndrome was estimated prevalence of 62.4 per cent for Mexican Americans, 69.9 per cent for Whites and 64.8 per cent for Blacks. For coronary artery disease (CAD) and stroke, Type 2 diabetes mellitus (T2DM) is major risk factor. Low HDL cholesterol and High triglyceride levels significantly related to coronary heart disease and to coronary mortality in patients with T2DM.

According to Third National Health and Nutrition Examination Survey (NHANES III) data, people not having metabolic syndrome had the lowest risk for cardiovascular disease (CVD) whereas people with metabolic syndrome had an intermediate level of risk and with diabetes had the highest level of risk.

Aim: The main aim is to find the prevalence of metabolic syndrome in newly detected cases of type 2 diabetes mellitus.

Material and methods: This study was conducted in Department of General Medicine of K.M. Medical College and Hospital, Mathura (UP), India during 1 year. Total 100 patients were included in this study who were diagnosed with newly detected Type 2 Diabetes Mellitus. These studies were performed after the approved by the Institute's Ethics Committee. With the help of clinical history, examination and investigations data was collection. Patients with more than 25 year of age with physical and history with clinical findings of Type 2 Diabetes Mellitus were including in this study. From all the patient's Blood samples were taken after a minimum of nine hours of fasting then were asked to have a light fat free diet on the day prior to sampling. On the same day the samples were analyzed for the levels of triglycerides, HDL, LDL, and total cholesterol levels.

Result: According to age, 45 patients were in age group of 30- 49 yrs, 36 patients in 50-59 yrs, 12 patients in 60-69 yrs and 7 patients in more than 70 years. As comparing age among male and female, mean age of all patients is 49.15 and Z value is 0.53, $p > 0.05$. According to the age group 30-49 yrs, 38 (44%) patients were predicting MS and 6 (7%) patients were predicting MS more than 70 years. 33 (38.4%) patients and 9 (10.5%) patients were follow in the group 50-59 years and 60 respectively predicting MS. This study showed more number of newly detected diabetes predicting MS were 30-49 years and least in more than 70 years. Mean age of male is 47.2 ± 9.5 , mean age of female is 49.6 ± 10.3 , and mean age of all cases is 48.6 ± 10.5 . Comparing this age mean age of all cases is 48.6 ± 10.4 . Various parameters of MS in newly detected DM patients as high Triglycerides present in 68(79%) patients

where male by raised SBP in 58(67.4%) patients where male High fasting blood glucose was present in 55 patients and low HDL in 53 patients.

Conclusion: Conclusion: In newly detected type 2 DM patients' occurrence of MS was predicted highest. Decreased HDL for women and raised serum TG for men were strongest predictors which indicating effectively presence of MS in newly detected type 2 DM patients.

Keywords: Diabetes Mellitus, Metabolic Syndrome, High-Density Lipoprotein, Triglycerides

INTRODUCTION

In worldwide metabolic syndrome being increasing as a epidemic and also major risk factor for CVD and other vascular events like stroke. Last few decades infectious disease is decreasing in global whereas burden of chronic diseases (e.g. CVD and Diabetes) is on the riseⁱ. Metabolic syndrome is defined as a clustering of key cardiovascular risk factors like dyslipidemia, abdominal obesity, hypertension and hyperglycemiaⁱⁱ.

Metabolic syndrome consists of a constellation of metabolic abnormalities such as hyperinsulinemia, high blood pressure (BP), dyslipidemia, hyperglycemia and central obesity which increased the risk to cardiovascular disease and diabetes mellitus. When metabolic syndrome associated with Type 2 diabetes mellitus (T2DM) risk for coronary artery disease and stroke have increasedⁱⁱⁱ.

The metabolic syndrome with the individuals also differs by sex, race, and ethnicity. Most of the people having metabolic syndrome was estimated prevalence of 62.4 per cent for Mexican Americans, 69.9 per cent for Whites and 64.8 per cent for Blacks. For coronary artery disease (CAD) and stroke, Type 2 diabetes mellitus (T2DM) is major risk factor^{iv}. Almost 65% people die having T2DM form of heart disease and stroke^v. Low HDL cholesterol and High triglyceride levels significantly related to coronary heart disease and to coronary mortality in patients with T2DM^{vi}. Therefore to detect new type 2 diabetes mellitus is very important to investigate for signs of metabolic syndrome so that complications can be prevented^{vii}.

According to Third National Health and Nutrition Examination Survey (NHANES III) data, people not having metabolic syndrome had the lowest risk for cardiovascular disease (CVD)

whereas people with metabolic syndrome had an intermediate level of risk and with diabetes had the highest level of risk^{viii}. According to the studies Kerala is the diabetic capital of India with a prevalence of 20% (compared to 8% national prevalence). Other studies also show that state's cardiac mortality is the highest in country which is 2 times of China and Japan^{ix}. The main aim is to find the prevalence of metabolic syndrome in newly detected cases of type 2 diabetes mellitus.

MATERIAL AND METHODS:

This study was conducted in Department of General Medicine of K.M. Medical College and Hospital, Mathura (UP). Total 100 patients were included in this study who were diagnosed with newly detected Type 2 Diabetes Mellitus. These studies were performing after the approved by the Institute's Ethics Committee.

With the help of clinical history, examination and investigations data was collection.

Patients with more than 25 year of age with physical and history with clinical findings of Type 2 Diabetes Mellitus were including in this study.

From all the patient's Blood samples were taken after a minimum of nine hours of fasting then were asked to have a light fat free diet on the day prior to sampling. On the same day the samples were analyzed for the levels of triglycerides, HDL, LDL, and total cholesterol levels.

RESULT:

Table 1: DM detection at different age group

Age	Male	Female	Total
30-50	20(20)	25(25)	45(45)
50-60	14(14)	22(22)	36(36)
60-70	5(5)	7(7)	12(12)
More than 70	3(3)	4(4)	7(7)

According to age, 45 patients were in age group of 30- 49 yrs, 36 patients in 50-59 yrs, 12 patients in 60-69 yrs and 7 patients in more than 70 years. Mean and S.D of age (male) is 48.1±10.2. Mean and S.D of age (female) is 49.6±11.2. As comparing age among male and female, mean age of all patients is 49.15 and Z value is 0.53, p>0.05 as shown in above table.

Table 2: Predicting MS at different age group

Age	Male	Female	Total
30-50	19(22)	19(22)	38(44)
50-60	14(16.3)	19(22)	33(38.4)
60-70	3(3.5)	6(7)	9(10.5)
M0re than 70	2(2.3)	4(4.6)	6(7)

According to the age group 30-49 yrs, 38 (44%) patients were predicting MS and 6 (7%) patients were predicting MS more than 70 years. 33 (38.4%) patients and 9 (10.5%) patients were follow in the group 50-59 years and 60 respectively predicting MS. This study showed more number of newly detected diabetes predicting MS were 30-49 years and least in more than 70 years. Mean age of male is 47.2±9.5, mean age of female is 49.6±10.3, and mean age of all cases is 48.6±10.5. Comparing this age mean age of all cases is 48.6±10.4 as shown in above table.

Table 3: table showing various single parameters predictors of metabolic syndrome

Parameter	Male	Female	Total
Systolic blood pressure	29(33.7)	29(33.7)	58(67.4)
Fasting blood glucose	30(34.9)	25(29)	55(64)
High density lipoprotein	14(16.3)	39(45.3)	53(61.6)
Triglyceride	39(45.3)	29(33.7)	68(79)
Waist hip ratio	16(18.7)	24(27.9)	40(46.5)
Waist circumference	20(23.3)	24(28)	44(51.2)
Body mass index	16(18.7)	24(27.9)	40(46.5)

The above table shows various parameters of MS in newly detected DM patients as high Triglycerides present in 68(79%) patients where male by raised SBP in 58(67.4%) patients where male High fasting blood glucose was present in 55 patients and low HDL in 53 patients. Significant WC, waist hip ratio and significant BMI was seen in 44, 40 and 40 patients respectively.

DISCUSSION:

In our study 100 pts of newly detected diabetes mellitus were included, among these 18 patients were detected as newly DM, at the time of admission, 28 patients had 1 months history of DM and 54 patients had 4 history of DM. Among 100 newly detected DM patients 42 (42%) were males and 58 (58%) were females. When considering single strongest predictor for MS in newly diagnosed type 2 DM. In our study Triglyceride was showing in 79% of patients which was maximum compared to SBP (67.4%), FBS (64%), HDL (61.6%), WC (51.2%), Obesity (46.5%) and BMI (46.5%). In Charles et al study it was FBS (90.2%) which was single strongest predictor for MS in type 2 DM compared to WC (86%), SBP (82.7%), TG (72%), HDL (69.7%), BMI (30.9%) which shows almost similar to this study^x. According to study of Sylvia et al HDL and WC both had maximum predictor each 53 % and FBS 21% the lowest predictor for MS which is also similar to this study. Timothy et al study had mean values of SBP 131.7, HDL 37.3, TG 247.3, WC 107 cms and BMI 31.0 Hsieh et al study showed obesity, hypertension, low HDL were significant^{xi}.

CONCLUSION:

In newly detected type 2 DM patients' occurrence of MS was predicted highest. Decreased HDL for women and raised serum TG for men were strongest predictors which indicating effectively presence of MS in newly detected type 2 DM patients.

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