

Correlation of Prediabetes and Metabolic Syndrome in Rural Population of Dinanath

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ABSTRACT

Aims: The prediabetes in the age group of 20-35 with minor ailments were found in patients attending OPD of medical department in pak red crescent medical college Dina nath. the association of prediabetes with other risk factors of metabolic syndrome were found.

Materials and Methods: Forty two patients including 24 males and 18 females were selected with minor ailments and the other associated risk factors of metabolic syndrome were investigated.

Results: Were framed in tables the prevalence of metabolic syndrome was found in 78% of cases with prediabetes as compared to 22% without this syndrome.

Conclusion: The patients with prediabetes should be evaluated for other risk factors of metabolic syndrome so as to avoid the serious complications of the other risk factors.

Keywords: Prediabetes, metabolic syndrome

INTRODUCTION

Insulin resistance is either impaired fasting glucose (glucose 100-125mg/dl) or impaired glucose tolerance prandial glucose after two hours of intake of 75 gm glucose in between 140-199 mg/dl) or both may be combined. the condition may be called as prediabetes¹. It is insulin resistance in liver and peripheral tissues muscle and fats where it is a paradox of insulin as there is hyperglycemia in spite of lipogenesis^{2,3,4}. so the insulin resistance is not due inappropriate signaling from liver but is due to hyperinsulinemia, the quality of substrate and input from several extrahepatic signals⁵ if the condition is not managed properly, the serious complication DM2⁶ may occur which may to life threatening serious conditions as myocardial infarction, stroke renal disease⁷. According to NCEP ATP111 CONDITIONS Prediabetes may occur in association of other conditions such as high blood pressure >135/85. central obesity, hypertriglyceridemia (triglyceride more than 150 mg /dl or HDL < 40 MG IN men and < 35 mg /dl. if it associated with at least 3 out of five conditions, the term metabolic syndrome is used^{8,9} although it is not a disease itself and there is no common pathophysiologic background and it is considered as risk factors for severe microvascular and macrovascular complications of diabetes mellitus¹⁰ so the association of prediabetes with other factors of metabolic syndrome are to be investigated so as to save the patients from severe complications of risk factors for coronary heart disease.

MATERIALS AND METHODS

The Patients attending in OPD of Pak Red Crescent Medical College and not suffering from any major ailments in early age groups of 20 to 35 years were randomly selected.

Their fasting blood sugars were measured.

The patients weight, height, BMI were taken.

Their central abdominal circumference, and blood pressure were measured with mercury sphygmomanometer as per JNC 8 CRITERIA. And ACC/AHA Criteria^{11,12}

The patients found to be prediabetic, their fasting HDL C and triglyceride levels are measured.

The patients diagnosed with prediabetes were scrutinized for other components of metabolic syndrome.

The patients finally with prediabetes and falling in category of metabolic syndrome were found for comparison with patients with prediabetes but not falling in criteria of metabolic syndrome.

RESULTS

The data collected is present in the following tables.

Table 1: Laboratory data of patients selected for inclusion criteria

Prediabetic patients	Male (24)	Female (18)	Total (42)	
Patients with BP >.130/85	24	18	42	100%
Fasting HDL-C<40 mg in males &<50mg in females	15	18	32	76%
Triglyceride>150mg/dl	15	16	31	73%
Central obesity	18	15	33	77%

As in 42 patients of prediabetes including 24 males and 18 females, the prevalence of all risk factors of metabolic syndrome are found in prediabetic patients

Table 2: No of Patients with more Than 3/5 Metabolic Syndrome Asperncepatp111

Prediabetes	Male (24)	Female (18)	42
Prediabetes +HTN+Central obesity	18	15	33
Prediabetes + triglyceride .150mg+HTN+Central obesity	16	14	30
Metabolic syndrome +ve	18	15	33

Sp prevalence of metabolic syndromes in different groups with prediabetes are noted

Table 3: Prevalence of Metabolic Syndromes in Prediabetes

Metabolic syndrome +ve	males	Females	total	% age
	18	15	33	78
Metabolic syndrome _ve	6	3	9	22%
total	24	18	42	100%

So metabolic syndrome was found in 78% of cases as compared to 22% in those without metabolic syndrome

DISCUSSION

In our study metabolic syndrome in prediabetes is 78% as compared to 22% in non prediabetic. In this study a very close association prediabetes with other factors of metabolic syndrome in general and prediabetes and hypertension in particular are found.

Prediabetics is associated with metabolic syndrome in many national and international studies^{13,14}. in one international study the prevalence of prediabetes in metabolic syndrome was found to be upto 63% as compared to 27% in non diabetics where it was 37%.¹⁵

CONCLUSION

As has been observed in this study that prediabetes is closely associated with other risk factors of metabolic syndrome which is a culprit for diabetes mellitus type 2 and other cardiovascular risk so we should try to find out and treat these risk factors in the very beginning .

REFERENCES

- Benn Bennick, Anne Wynn , Samuell Dagogo, Jack. Prediabetes is a toxic environment of the initiation of microvascular and macrovascular complications. *Experimental biology and medicine* 2016 jun;241(12)
- Santoleri, Dominic, and Paul M Titchenell. "Resolving the Paradox of Hepatic Insulin Resistance." *Cellular and molecular gastroenterology and hepatology* vol. 2017 Jul;28(7):497-505.
- Brown M.S., Goldstein J.L. Selective versus total insulin resistance: a pathogenic paradox. *Cell Metab.* 2008;7:95–96. [PubMed] [Google Scholar]
- Sunny N.E., Parks E.J., Browning J.D., Burgess S.C. Excessive hepatic mitochondrial TCA cycle and gluconeogenesis in humans with nonalcoholic fatty liver disease. *Cell Metab.* 2011;14:804–810. [PMC free article] [PubMed] [Google Scholar]
- Paul M Touchenil, Mitchell A Lazar, Morris J Bimbaum. Unravelling the regulations of hepatic metabolism by insulin. *Affiliations Expand* (2)2019. 447-456
- Tabak AG, Herder, C. Rathman W Burner EJ, Kiwimaki M. Prediabeteshighrisk statefor diabetes development; *Lancet* 2012 379. 2279-90
- Rizza R.A. Pathogenesis of fasting and postprandial hyperglycemia in type 2 diabetes: implications for therapy. *Diabetes.* 2010;59:2697–2707.
- Third report of the national cholesterol education program . Expert panel on detection evaluation and treatment of High Blood Cholesterol in adults(Adult Panel Treatment 111)final report. *Circulation* 106, 3143-3421
- Hernandez.Baixauli J Quesada Vazquez S, Marina Casado R , etal , Detection of early disease risk factors associated with metabolic syndrome , a new era with the NMR metabolonomia assessment,*Nutrients.* 2020 Mar 18. 12(3)
- Riccardo B , CussinatoD , Riccarde G , Tiengo A The metabolic syndrome is a risk indicator of microvascular and macrovascular complications in diabetes results from metascreen . Amulticenterdiabetes clinic based survey. *Diabetes Care* 2006;29; 2701-7
- JNC 8 Guiddelines for the management of Hypertension in Adults. *A m Fam Physssician* 2014 Oct 1,90 (7) 503-504
- New ACC/AHA High Blood Pressure Guidelines Lower Definition of Hypertension. *ACC News Story* noV 13 2017
- Maliha Sarfraz, Sana ullah Sajid, Muhammad AQEEL, Ashraf . Prevalence and pattern of dyslipidemia in hyperglycemic patients and its associated factors among Pakistani population . *Saudi journal of Biological Sciences* (2016)23. 761-765
- Arif Gulzar, Kishwar Naheed, Mushtaq Ahmad Shahid, Naila Ahmad, M Faheem Siddiqui. Prevalence of Metabolic syndrome in hypertension patients in rural population in adult age group of 18-35 years. *PJMHS* vol12 No. 4 Oct –Dec 2018
- Rajesh Rajput,Meena Rajput, Sanat Mishra,Parul Ahlwat. Prevalence of Metabolic Syndrome in Prediabetes, *Metabol Syhd Relate Disord* 2019 Oct 17(8);406-410