The Professional Medical Journal
www.theprofesional.com

DOI: 10.29309/TPMJ/18.4175

ORIGINAL PROF-4175

METABOLIC SYNDROME;
FREQUENCY IN PATIENTS PRESENTED WITH ISCHEMIC HEART DISEASE.

1. M.Phil Public Health (Continue)
Cardiac Perfusionist
Department of Cardiology
Gulab Devi Chest Hospital, LHR.
2. (MBBS, Dipcard in Cardiology, FCPS)
Associate Prof. of Cardiology
Department of Cardiac
Gulab Devi Hospital.
3. (MBBS, Dipcard Cardiology, MRCP UK)
Assistant Prof. of Cardiology
Department of Cardiac
Gulab Devi Chest Hospital
4. (PhD in Biostatistics)
Assit. Prof of Biostatistics
Gulab Devi PGMI Lahore.

Correspondence Address:
Dr. Ayesha Anwer
Cardiac Perfusionist
Department of Cardiac
Gulab Devi Chest Hospital, LHR.
ayesharana1001@gmail.com

Article received on:
20/07/2017
Accepted for publication:
05/11/2017
Received after proof reading:
31/01/2018

Ayesha Anwer[1], Majid Kaleem[2], Hassan Abbas[3], Asif Hanif[4]

ABSTRACT… Objectives: The objective of this study was to investigate the importance of individual IHD risk factors and major components of the metabolic syndrome associated with IHD. **Study Design:** Descriptive cross sectional study. **Setting:** Cardiology Department of Gulab Devi Chest Hospital Lahore. **Period:** Nov, 2015 to Feb, 2016. **Methodology:** Patients of either gender and from 20 to 90 year of age admitted with IHD via emergency department were recruited after informed consent. The frequency of metabolic syndrome was evaluated in these patients. In addition the individual component of metabolic syndrome as risk factor of IHD was calculated. The data was analysed by using the SPSS version.16. **Results:** The metabolic syndrome present in 44.67%of IHD patients and more prevalent in men 52% than in women 48%. Total of 150 patients of IHD studied with both gender as male 94(63.33%) vs female 55 (36.67%). The most common risk factor of metabolic syndrome for IHD was high blood pressure present in 75% of patients followed by diabetes in 50%, abdominal obesity 40.67%, low HDL 42.67% and high TG in 32%. **Conclusion:** The metabolic syndrome is highly prevalent among IHD patients especially in men. The most common risk factors are hypertension and diabetes.

Key words: Metabolic Syndrome, Waist Circumference, Triglyceride, Low Density Lipoprotein, Hypertension and Ischemic Heart Disease.

Article Citation: Anwer A, Kaleem M, Abbas H, Hanif A. Metabolic syndrome; Frequency in patients presented with ischemic heart disease. Professional Med J 2018; 25(2):277-281. **DOI:**10.29309/TPMJ/18.4175

INTRODUCTION

Ischemic heart disease is a global health problem. IHD caused by improper supply of blood, nutrients and inadequate removal of metabolites of heart muscles. Themetabolic syndrome exacerbates IHD and leads to catastrophic events. So it is important to investigate individual IHD risk and major component of syndrome according to current criteria.[1]

The metabolic syndrome was first described in 1998 by ravens as syndrome X. Later on it termed as insulin resistance syndrome, multi metabolic syndrome or metabolic syndrome.[2] The metabolic syndrome is a cluster of risk factor of metabolic origin that is associated with risk of cardiovascular diseases and type2 diabetes. The important risks of metabolic syndrome are dyslipidemia and insulin resistance, high blood pressure, raised waist circumference and other stimulating factors are physical inactivity, advancing age, endocrine and genetic factors. This state is developed in borderline risk factors that ultimately results in a sort of risk factors. In many patients this syndrome results in diabetes (type 2) that is a catastrophic event for ischemic heart disease.[3,4]

Definition of metabolic syndrome is not specified globally. Themetabolic syndrome was first defined by world health organization (WHO) in 1998. WHO emphasized on insulin resistance as major risk factor for diagnosis of MetS.[5] The national cholesterol education program-adult treatment panel III (NCEP-ATPIII) in 2001defined other risk factors of syndrome and it showed that insulin resistance and any other single factor are not necessary for MetS diagnosis. In 2005 ATP III modified their criteria by reducing their values for WC and dyslipidemia measurement. International diabetes federations (IDF) in 2005 make abdominal obesity mandatory and other criteria

are essentially same as ATP lll. IDF also defined the criteria of obesity in ethnic groups. The mostly used definition of syndrome is ATPlll.[6,7]

The South Asian countries including Pakistan contribute a major part to Ischemic heart disease. In these countries diabetes, raised blood pressure, abdominal obesity, increased waist circumference and depression are the main risk factors associated with cardiovascular diseases mainly the myocardial infarction. This syndrome raised the risk of IHD 7.3 times in males and 10.2 times in female patients. Some studies shows frequency of syndrome is more in male.[8]

Studies showed the prevalence of MetS was 31% and 32% respectively in Pakistan according to ATPlll.[9,10] The aim of this study was to indentify factors or components of MetS that independently influence the cardiovascular disease prognosis related to MetS.

MATERIAL AND METHOD

It was a cross sectional study. The data was collected from Gulab Devi hospital. The study was conducted in 4 months from November 2015 to February 2016. The study included the 150 patients of ischemic heart disease. Sample size was calculated by using 35% prevalence of metabolic syndrome at level of significance 7.5% and confidence interval of 95%. The sampling technique was Non probability purposive sampling. Patients with stable angina, unstable angina, STEMI, NSTEMI, and myocardial infarction were included in this study based on the result of ECG, Troponin T and ECHO respectively. Patients with valvular heart diseases, chronic liver and kidney disease, type1 diabetes, stroke, pulmonary disease and hyperthyroidism were excluded from study. A questioner was made to see the presentation of IHD as a complication of metabolic syndrome. All expected presentations and risk factor were included in the questionnaire. ECG changes, clinical history and angiographic study also included to evaluate the patients completely. Because the study was noninvasive and did not touch the sensitive barriers of religion and social norms, so a formal ethical approval was not taken. After having deliberate consent from each patient, data was collected in pre-designed questionnaire with ages between 20 to 90 years, including both male and female with IHD were included in the study on the basis of non-probability purposive sampling.

Clinical diagnosis of IHD was established based on ST-segment elevation and non ST-elevation on ECG. In addition to collecting basic demographic details, patients were asked about the presence of chronic hypertension and diabetes mellitus. All data was entered in a Performa. Patients were considered hypertensive if already on anti-hypertensive therapy or renoted to have blood pressure of more than 140/90mmHg on two or more occasions. The patients were taken as diabetic if already taking treatment for diabetes or fasting blood sugar >126mg/dl or random blood sugar >200mg/dl. Serum lipid profile and fasting blood glucose were estimated in all study population. Samples for blood glucose, TGs and HDL Cholesterol were taken after an overnight fast. The waist circumference was taken to the nearest standing horizontal position between the lower border of the 12th rib and the highest point of the iliac crest on the mid axillary line at the end of normal expiration detect central obesity. The data was analyzed by using SPSS version 16. The qualitative data were presented in the form of graph and tables along with percentage. The quantitative data were presented in the form of mean, range, standard deviation by simple descriptive analysis. The cross tabulation was also used for the qualitative data.

RESULT

The study was included 150 patients of ischemic heart disease. Among these 150 patients 55(36.67%) were female and 94(63.33%) were female. The minimum age was 20 years and maximum age was 90 years and the mean age was 57.45±12.141.

MetS present in 40.67% of total IHD patients as shown in Table-II, and most frequent in men (52%) as compare to women (48%) according to modified ATP lll criteria as demonstrated in Table-II. The frequency of various component of MetS as CV risk factors in entire of IHD patients was

as follow, the most common risk factor of MS for IHD was hypertension(75% patients) followed by diabetes(50% patients), low HDL level, high triglycerides level and abdominal obesity as shown in Figure-1.

Group	Total Number (n=150)	IHD with MetS	P-value
Male	95	35(52%)	<0.05
Female	55	32(48%)	<0.05

Table-I. Frequency of metabolic syndrome according to gender.

Total no. of patients	Mets present	MetS absent
150	44.6%(67)	55.33%(83)

Table-II. Frequency of metabolic syndrome in IHD patients.

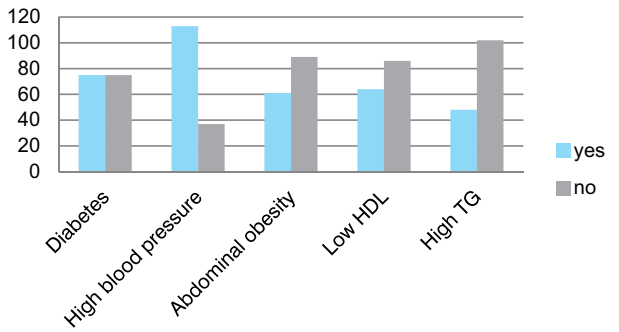

Figure-1. Risk factors of MetS in IHD.

DISCUSSION

Our study demonstrated that frequency of metabolic syndrome in ischemic heart disease patients according to modified ATP III criteria 2001. Ischemic heart disease is one of the four leading cause of death word widely. Metabolic syndrome and its five major components are the major risk factor of ischemic heart disease. The risks of syndrome are high triglyceride, low HDL, raised waist circumference (>90 cm in men and >80cm in female), hyperglycemia and high blood pressure. The frequency of IHD markedly increases with the presence of metabolic syndrome.[6]

Our study was aimed to find the frequency of metabolic syndrome in IHD patients. We enrolled the IHD patients admitted in CCU of our hospital. A reasonable study sample was taken to strengthen the results. In this study the frequency of metabolic syndrome was high as 44.67% and higher prevalence in male 52% than in female 48%.Wetook all IHD patients presented with STEMI, NSTEMI and unstable angina. Among them 55(36.67%) were male and 94(63.33%) were female. These results are different to local study that found the prevalence of syndrome were 31% and 32.[9,10] This difference is due to modified ATP III criteria that we used in our report. Another local study showed the prevalence of syndrome was 54.95% but according to IDF criteria(11). A study in Spain showed the prevalence of MetS was 40.82%.[12] A study in Iran shows 49.5.[13] A report of US population showed about 44% of MetS prevalence in adults.[14] A European study showed slightly higher prevalence in men 15.7% than in women 14.2%.[15] A study in Pakistan showed higher prevalence of MetS with diabetes as 70%.[16] An study in our neighboring country showed the prevalence 29.9% and 30% respectively.[6,16] Zalunas et al. found the MetS more prevalent in women than men 70.2% to 52.6%.[18] Our study prevalence very near to study that also based on modified ATPIII criteria showed prevalence or MetS was 50%.[19]

We found hypertension is the most common risk factor of MetS as present in 75% of patients. The second risk is diabetes followed by dyslipidemia and abdominal obesity as similar to zaffer et al. and Framingham study.[9,20] While a study found abdominal obesity was frequent followed by high TG. Some studies showed dyslipidemia was common risk factor.[18] Our results found frequency of risk factor similar as in other local studies.[9] A very recent study also showed the similar results and syndrome more common in male as in our study.[19] The similarity is due to same set of life style and dietary habits.

The high significant prevalence of this syndrome in IHD patients revealed that we should keep in view the risk clustering of this syndrome in our patients as well as public awareness regarding this syndrome entity. We should elaborate our research work on larger population to estimate the actual magnitude of MetS, its association with IHD and early diagnosis, treatment and good

prognosis of disease. Weight loss and exercise and dietary habits modification decreases the severity of metabolic risk factor such as HTN, diabetes, high TG, low HDL and reduce abdominal obesity.

CONCLUSION

Our study concluded that metabolic syndrome have high frequency in patients with IHD especially in men. The most common risk factors of syndrome are hypertension and diabetes.

REFERENCES

1. Basit A, Shera AS. **Prevalence of metabolic syndrome in Pakistan.** Metabolic syndrome and related disorders. 2008;6(3):171-5.

2. Cabré J-J, Martín F, Costa B, Piñol JL, Llor JL, Ortega Y, et al. **Metabolic syndrome as a cardiovascular disease risk factor: patients evaluated in primary care.** BMC Public Health. 2008;8(1):251.

3. Wilson PW. **Diabetes mellitus and coronary heart disease.** Endocrinology and metabolism clinics of North America. 2001;30(4):857-81.

4. Achari V, Thakur A, Sinha AK. **The metabolic syndrome-its prevalence and association with coronary artery disease in type 2 diabetes.** Journal, Indian Academy of Clinical Medicine. 2006;7(1):32-8.

5. Achari V, Thakur A, Sinha AK. **The metabolic syndrome-its prevalence and association with coronary artery disease in type 2 diabetes.** J Indian Acad Clin Med. 2006;7:32-8.

6. Sultana N, Kabir MS, Hossain MZ, Chowdhury J, Begum S, Datta R, et al. **Prevalence of Metabolic Syndrome in Ischemic Heart Disease Patients.** Journal of Dhaka Medical College. 2015;23(2):157-60.

7. Detection EPO. **Evaluation, and treatment of high blood cholesterol in adults. Executive summary of the third report of The National Cholesterol Education Program (NCEP) Expert panel on detection, evaluation, and treatment of high blood cholesterol in adults (Adult Treatment Panel III).** Jama. 2001;285(19):2486-97.

8. Yusuf S, Reddy S, Ôunpuu S, Anand S. **Global burden of cardiovascular diseases part I: general considerations, the epidemiologic transition, risk factors, and impact of urbanization.** Circulation. 2001;104(22):2746-53.

9. Zaffar J, Butt U, Ayaz M, Shoukat S, Qureshi MA, Akram Z. **Frequency and characteristics of metabolic syndrome in patients with acute coronary syndrome among pakistani adults.** Pakistan Heart Journal. 2014;47(4).

10. Yasmin S, Mallick NH, Naveed T, Ali M, Noman A, Shakoor T. **Metabolic syndrome in patients with ischemic heart disease.** J Coll Physicians Surg Pak. 2008;18(10):605-7.

11. Ashraf T, Memon MA, Talpur MS, Panhwar Z, Rasool SI. **Frequency of metabolic syndrome in patients with ischaemic heart disease.** JPMA-Journal of the Pakistan Medical Association. 2011;61(8):729.

12. Mijares AH, Fortuny CR, Triguero MLM, Ariño CM, Cascales PC, Suárez-Varela MM. **Síndrome metabólico en pacientes con cardiopatía isquémica. Resultados obtenidos con la utilización de diferentes criterios.** Revista espanola de cardiologia. 2004;57(9):889-93.

13. Montazerifar F, Bolouri A, Mozaffar MM, Karajibani M. **The Prevalence of Metabolic Syndrome in Coronary Artery Disease Patients.** Cardiology Research. 2016;7(6):202-8.

14. Alexander CM, Landsman PB, Teutsch SM, Haffner SM. **NCEP-defined metabolic syndrome, diabetes, and prevalence of coronary heart disease among NHANES III participants age 50 years and older.** Diabetes. 2003;52(5):1210-4.

15. Hu G, Qiao Q, Tuomilehto J, Balkau B, Borch-Johnsen K, Pyorala K. **Prevalence of the metabolic syndrome and its relation to all-cause and cardiovascular mortality in nondiabetic European men and women.** Archives of internal medicine. 2004;164(10):1066-76.

16. Khuwaja AK, Ali FN, Naqvi I, Bux R, Jabbar A, Dhanani RH. **Metabolic syndrome and its individual components among people with type 2 diabetes: Prevalence, gender differences and its association with ischemic heart disease.** 2012.

17. Misra A, Wasir JS, Pandey RM. **An evaluation of candidate definitions of the metabolic syndrome in adult Asian Indians.** Diabetes care. 2005;28(2):398-403.

18. Žaliūnas R, Šlapikas R, Babarskienė RM, Šlapikienė OB, Lukšienė D, Milvidaitė I, et al. **The prevalence of the metabolic syndrome components and their combinations in men and women with acute ischemic syndromes.** Medicina. 2008;44(7):521-8.

19. Hamid N, Jilliani G, Nargis P, Parveen N, ul Haq I, Arif S, et al. **Metabolic syndrome and its rela abolic syndrome and its rela abolic syndrome and its relationship with tionship with associated risk f ted risk f ted risk factors.**

20. Wilson PW, D'Agostino RB, Parise H, Sullivan L, Meigs JB. **Metabolic syndrome as a precursor of cardiovascular disease and type 2 diabetes mellitus.** Circulation. 2005;112(20):3066-72.

If you avoid conflict to keep the peace you start a war inside yourself.

– Unknown –

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Ayesha Anwer	Sampling + Review Literature + discussion.	
2	Majid Kaleem	Review Literature.	
3	Hassan Abbas	Proof reading + Introduction.	
4	Asif Hanif	Study design and analysis.	