FREQUENCY OF METABOLIC SYNDROME IN PATIENTS WITH ISCHEMIC HEART DISEASE

Dr. Mustansar Iqbal, Dr. Anam Zahra, Dr. Sikandar Hayat,

Dr. Shabbar Hussain Changazi*, Dr. Samiullah Bhatti and Dr. Sumaira Siddique

Pakishtan.

*Corresponding Author

Dr. Shabbar Hussain

Changazi

Pakishtan.

ABSTRACTS

Objective: To determine the Frequency of Metabolic Syndrome in patients with Ischemic Heart Disease presenting to OPD (outpatients Department) on routine follow up. **Methods:** This study was done in outpatients department, Punjab Institute of Cardiology (PIC) Lahore, from December 2016 to March 2017. 76 Ischemic heart disease patients, male and female, coming for routine follow up were screened and risk factors like Obesity, Triglyceridemia, Decreased HDL, Hypertension and Diabetes were analyzed. **Result:** 75% of total IHD patients were suffering from Metabolic Syndrome. Among these 53 % were males while 47% were females. 91% of the total obese were having Metabolic Syndrome. 88% of the total patients with Triglyceridemia were having Metabolic syndrome. 84.% of the total patients with low HDL values were suffering from Metabolic Syndrome. 80.3 % of the total Hypertensive IHD patients were having Metabolic syndrome. 85.7% of total patients with increased fasting blood glucose levels were suffering from Metabolic syndrome. Role of Gender, Occupation, Educational status, Marital status, Smoking, Exercise, Stress and Fast food restaurant visits were insignificant in determining the Metabolic syndrome. **Conclusion:** A high frequency (75 %) of Metabolic Syndrome in Ischemic Heart Disease patients take us to a conclusion that presence of metabolic syndrome is an important risk factor of IHD. Also, Obesity proves to be the most important component of Metabolic Syndrome with a frequency of 91 %.

KEYWORDS: Metabolic syndrome, Ischemic Heart Disease.

INTRODUCTION

Ischemic Heart Disease (IHD) is the generic designation for a group of patho-physiologically related syndromes resulting from myocardial ischemia, an imbalance between the supply and demand of the heart for oxygenated blood. Pathologically the dominant cause of IHD is insufficient coronary perfusion relative to myocardial demand, due to chronic, progressive atherosclerotic narrowing of epicardial coronary arteries, and variable degrees of superimposed acute plaque change, thrombosis and vasospasm.[1]

IHD is the leading cause of death worldwide with 7.2 Million deaths and 12.2 percent of total deaths per year.[2] The highest coronary mortality is seen at present in the European Region followed by South-East Asian Region.[3]

The aetiology of IHD is multi-factorial. Age, Sex, Family history and genetic factors are major non-modifiable risk factors. Modifiable risk factors include cigarette smoking, Alcohol, high blood pressure, elevated serum cholesterol, diabetes, obesity, sedentary habits and stress.[2]

The metabolic syndrome is a cluster of the most dangerous heart attack risk factors: diabetes and raised fasting plasma glucose, abdominal obesity, high cholesterol and high blood pressure.[4] It is estimated that around 20-25 percent of the world's adult population have the metabolic syndrome and they are twice as likely to die from and three times as likely to have a heart attack or stroke compared with people without the syndrome.[5]

The underlying cause of the metabolic syndrome continues to challenge the experts but both insulin resistance and central obesity are considered significant factors. Genetics, physical inactivity, aging, a pro-inflammatory state and hormonal changes may also have a causal effect, but the role of these may vary depending on ethnic group.[6][7] Metabolic syndrome increases the risk of coronary artery disease by 7.3 times in males and 10.2 times in female Patients.[8]

These mentioned facts elaborate a clear relationship between Metabolic syndrome and Ischemic Heart disease. However the data in this regard about metabolic presentation of patients from Lahore is deficient. This study is designed to add this information. Doing such a research in Lahore, Pakistan will be helpful for health education and awareness of people regarding the two and hence prevention from the fatal disease by adopting safety measures.

METHOD

This study was done in outpatients department, Punjab Institute of Cardiology (PIC) Lahore, from December 2016 to March 2017. A total of 76 patients known with Ischemic Heart Disease between age coming for routine follow up were selected for the study. Informed consent was taken for all the patients. Detailed physical examination was performed. Blood pressure was recorded with patients in resting state. Anthropometric measurements including height and weight were taken and BMI was calculated. Structured Questionnaire were used to interview the chosen subjects and data was subsequently analyzed.

RESULT

75% of total IHD patients were suffering from Metabolic Syndrome. Among these 53 % were males while 47% were females. 91% of the total obese were having Metabolic Syndrome. 88% of the total patients with Triglyceridemia were having Metabolic syndrome. 84% of the total patients with low HDL values were suffering from Metabolic Syndrome. 80.3 % of the total Hypertensive IHD patients were having Metabolic syndrome. 85.7% of total patients with increased fasting blood glucose levels were suffering from Metabolic syndrome. Role of Gender, Occupation, Educational status, Marital status, Smoking, Exercise, Stress and Fast food restaurant visits were insignificant in determining the Metabolic syndrome.

Table 1: Relation of Ischemic Heart Disease with Metabolic Syndrome.

Results	Frequency (%)		Percentage (%)
	Male	Female	
Yes	53 (30)	47(27)	75 (57)
No	53 (10)	47 (9)	25 (19)
Total			100 (76)

Table 2: Co-relation of Ischemic Heart Disease with risk factors of Metabolic syndrome.

Specific risk factors	Number of Patients (%)	With Metabolic Syndrome (%)
Obesity	81.6 (62)	91.9 (57)
Triglycerdemia	77.6 (59)	88 (52)
Low hdl	67 (51)	84.3 (43)
Hypertension	80.3 (61)	80.3 (49)
Impared fasting glucose	46.1 (35)	85.7 (30)

"Co-relation of Ischemic Heart Disease with Risk Factors of Metabolic Syndrome"
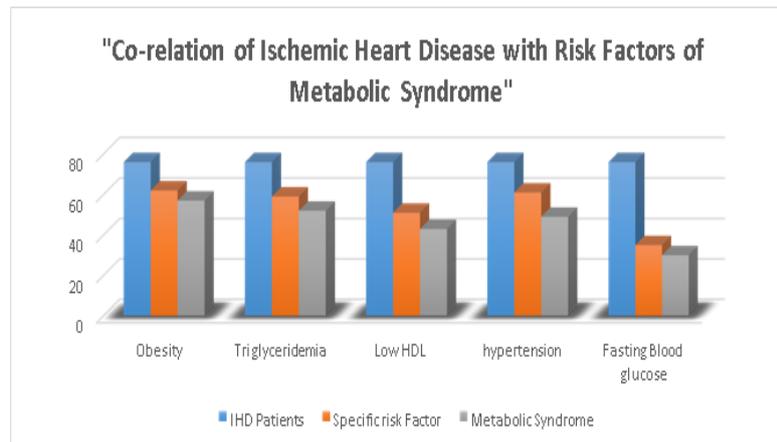
DISCUSSION

The metabolic syndrome is a cluster of the most dangerous heart attack risk factors: diabetes and raised fasting plasma glucose, abdominal obesity, high cholesterol and high blood pressure.[4] It is estimated that around 20-25 percent of the world's adult population have the metabolic syndrome and they are twice as likely to die from and three times as likely to have a heart attack or stroke compared with people without the syndrome.[5]

Our Research was carried out on 76 patients of Ischemic Heart Disease Visiting the OPD of Punjab Institute of Cardiology. Among these 76, 40 were males (53 %) and 36 were females (47 %). IDF Criteria of defining the Metabolic Syndrome was used to to identify the patients having Metabolic syndrome.

According to our study 57 patients out of total 76 were having Metabolic Syndrome ie 75 % of the total IHD Patients [Table 1]. Among these 30 (53 %) were males while 27 (47 %) were females. In a previous research Metabolic Syndrome was more prevalent among Females than Males[10], so Gender seems to have no influence in determining the metabolic syndrome among IHD patients (Gender comes out to b insignificant after applying Chi-Square test).

Results of our study show that 62 persons (81.6 %) out of total 76 were obese (according to IDF criteria) [Table-2] [Figure-2]. 57 (91.9 %) out of these 62 obese patients were suffering from Metabolic syndrome. Hence Obesity shows to have a significant influence in determining metabolic syndrome. (Obesity proves to be significant according to Chi-Square tests. In a previous result done by Dirk De backer and Guy De Backer, only 31 % of the patients of IHD were obese.[12] So prevalence of obesity among IHD patients according to our study were much more in comparison with the previous studies.

According to our study, out of total 76 IHD patients, 59 (77.6 %) were having increased Triglycerides level in blood plasma [Table-2] [Figure-2]. 52 (88 %) out of these 59 patients were having metabolic syndrome.So, Triglyceridemia can be considered as a significant variable in determining Metabolic Syndrome. According to another research work done in Iran by by ZN Hatmi, S Tahvildari, A Gafarzadeh Motlag and A Sabouri Kashani in year 2007, 32% of the patients of IHD were having Triglyceridemia.[15] Prevalence of Triglyceridemia is much higher in patients of IHD in our study.

Results of our study have shown that 51 (67 %) patients out of 76 were having Decreased HDL levels in their blood (an important risk factor for IHD) [Table-2] [Figure-2]. 43 (84.3 %) out of these 51 patients were suffering from Metabolic syndrome indicating a clear relationship between these two. The same study work mentioned above showed a very low prevalence of decreased HDL levels in IHD patients.[16] After applying chi-square square test, relationship between decreased HDL and Metabolic Syndrome turned out to be significant.

Our study shows that 61 patients (80.3 %) out of total 76 were Hypertensive (Most important risk factor for ischemic heart disease) [Table-2] [Figure -2]. 49 (80.3 %) out of these 61 Hypertensive IHD patients were suffering from metabolic syndrome. This shows that as stated by IDF criteria, Hypertension has got a major role in determining the patients of ischemic heart disease. Research Conducted on "Prevalence of risk factors for coronary artery disease in the community in eastern Nepal" by Kalra S, Narain S, Karki P, Ansari JA, Ranabhat K, Basnet N Under Department of Medicine, B.P. Koirala Institute of Health Sciences, Dharan, Nepal in 2011, showed that 35.3 % patients with ischemic heart disease were hypertensive.[14] Chi-square test also shows that hypertension has a significant role in determining IHD.

Our study results show that 35 (46.1 %) patients out of total 76 were having fasting blood glucose levels above the cut off value and most of them were taking treatment for the diabetes [Table-2] [Figure-2]. 30 out of these 35 patients were positive for metabolic syndrome showing an important relationship between increased fasting blood glucose and metabolic syndrome in IHD patients. A previous research Conducted on "Metabolic syndrome and its individual components among people with type 2 diabetes: Prevalence, gender differences and its association with ischemic heart disease" by Ali Khan Khuwaja1, Farzana Nawaz Ali, Imama Naqvi, Rasool Bux, Abdul Jabbar, Raheem Hassan Dhanani from Department of Family Medicine and Community Health Sciences, Aga Khan University,

Karachi, Pakistan in year 2012 showed that 28 % of patients with ischemic heart disease were suffering from type 2 diabetes.[13] Our study indicates increased prevalence of diabetes in IHD patients as compared to that previous research.

According to our study, role of Occupation, Marital status and educational status were insignificant in determining the metabolic syndrome in IHD. Chi-square test results indicate their insignificance. Frequencies of these variables are shown in Tables 12, 13 & 14.

Relationship of these variables with Metabolic syndrome is shown in Figure 13, 14 & 15.

Our study results show that 19 (25 %) patients out of total 76 IHD patients were smokers out of these 19 patients were suffering from Metabolic syndrome. These results show that the role of smoking in determining Metabolic syndrome is insignificant. A research was carried out on the "Prevalence of Coronary Heart Disease Risk.

According to our study Exercise, Stress and Fast food restaurant visits were insignificant in determining Metabolic Syndrome in Ischemic Heart Disease patients. Frequencies of these variables are shown in Tables 16, 17 & 18. Relationship of these variables with Metabolic syndrome is shown in Figure 17, 18 & 19.

CONCLUSION

A high frequency (75 %) of Metabolic Syndrome in Ischemic Heart Disease patients take us to a conclusion that presence of metabolic syndrome is an important risk factor of IHD. Hence routine screening and timely treatment for these risk factors can prevent burden of Ischemic Heart disease.

REFERENCES

1. Robins & Cotran. Pathological Basis of Disease. 8[Th] Ed. Philadelphia: Saunders Elsevier., 2010.
2. Park, JE. Preventive and Social Medicine. 20[Th] Ed. Jabalpur,India: Banaridas Bhanot., 2009.
3. WHO World Health Status. Annual., 1984.
4. Alberti KG, Zimmet P, Shaw J; IDF Epidemiology T11 ask Force Consensus Group. The metabolic syndrome-a new worldwide definition. Lancet, 2005; 366: 1059-62. [Available at: http://www.idf.org/webdata/docs/IDF_Meta_def_final.pdf]

5. www.idf.org/metabolic_syndrome, website of the International Diabetes Federation Saad MF, Lillioja S, Nyomba BL et al. Racial differences in the relation between blood pressure and insulin resistance. New England Journal of Medicine 1991; 324: 733-9. [Available at http://www.idf.org/webdata/docs/IDF_Meta_def_final.pdf

6. Anderson PJ, Critchley JAJH, Chan JCN et al. Factor analysis of the metabolic Chaudhary GM. Metabolic syndrome X in diabetic patients experience in 3275 diabetic patients at Jinnah Hospital, Lahore. J Coll Physicians Surg Pak 2000; 10: 278-80. [Available at: http://www.idf.org/webdata/docs/IDF_Meta_def_final.pdf] syndrome: obesity vs insulin resistance as the central abnormality. International.

7. Journal of Obesity 2001; 25: 1782. [Avalaible at: http://www.idf.org/webdata/docs/IDF_Meta_def_final.pdf]

8. Chaudhary GM. Metabolic syndrome X in diabetic patients experience in 3275 diabetic patients at Jinnah Hospital, Lahore. J Coll Physicians Surg Pak 2000; 10: 278-80. [Available at: http://www.idf.org/webdata/docs/IDF_Meta_def_final.pdf

9. http://www.idf.org/webdata/docs/IDF_Meta_def_final.pdf

10. http://www.ncbi.nlm.nih.gov/pubmed/15064114

11. http://jfi.sagepub.com/content/31/9/1211.short

12. http://eurheartj.oxfordjournals.org/content/25/2/121.full

13. http://www.scirp.org/journal/PaperInformation.aspx?paperID=22196

14. http://www.ncbi.nlm.nih.gov/pubmed/21751607

15. http://www.biomedcentral.com/1471-2261/7/32

16. http://www.biomedcentral.com/1471-2261/7/32

17. http://www.annfammed.org/content/8/4/327.full.pdf

18. http://www.sciencedirect.com/science/article/pii/S0002870