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Medicine

Prevalence of Metabolic Syndrome in Patients present with Unstable Angina

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ABSTRACT

Objective: The main objective of this study was to determine the frequencyof metabolic syndrome in patients presesnting with unstable angina at DUHS.

Study Design: Cross-sectional observational study.

Place and Duration of Study: This study was carried out at all medical wards of a DUHS from January 2012 to July 2012.

Materials and Methods: 81 patients with Unstable Angina (UA) presented in medical ward that fulfilled the inclusion and exclusion criteria and gave informed consent were enrolled for the study. Metabolic syndrome was defined according to ATPIII criteria. Patients were evaluated for obesity, diabetes, hypertension, hypertriglyceridemia and low HDL.

Results: Total 81 patients with unstable angina were included in this study Out of them 43 (53.1%) were male and 38 (46.9%) were female. Mean age was 60.23 ± 8.7. Majority of patients (49.4%) were lying in 51 to 60 years age group. The frequency of metabolic syndrome was thirty nine (48.1%). Among them twenty three (53.5%) were male and sixteen (42.1%) were females, hence it shows insignificant p value of 0.018.

Conclusion: Metabolic syndrome is common with high frequency in our population. This study provides a quantitative estimate of the frequency of metabolic syndrome and suggests Diabetes, low HDL, hypertension, hypertriglyceridaemia and obesity strongly correlates with unstable angina.

Key words: Unstable angina, obesity; hypertriglyceridemia; metabolic syndrome

INTRODUCTION

Metabolic Syndrome is a cluster of metabolic and hemodynamic disorders also referred to as Insulin Resistance Syndrome.[i] Metabolic Syndrome is defined both by NCEP/ATP III[ii] and International Diabetes Foundation.[iii] Most widely used definition is that of NCEP/ATP III. This definition incorporates thresholds for the five variables (waist circumference, triglycerides, HDL, Fasting blood sugar & Blood pressure).

If 3 or more are deranged, individual is said to have metabolic syndrome.

Metabolic Syndrome is highly prevalent in general population and has increased the risk of cardiovascular disease. It is also very prevalent after Acute Coronary Syndrome.[iv] Women[v] and young patients[vi] (≤45 years of age) with acute Myocardial Infarction (MI) also have increased prevalence of Metabolic Syndrome.

Recent analysis has estimated that 25% of adults in U.S. have Metabolic Syndrome[vii] and that patients who have Metabolic Syndrome are at increased risk of developing cardiovascular disease and diabetes.[viii] Prevalence of Metabolic Syndrome also correlates with extent of vascular damage.[ix] Hyperglycemia has the strongest relation to increased incidence of coronary heart disease in patients with Metabolic Syndrome and acute MI. Metabolic Syndrome is associated with increased case fatality rate and mortality. [x]

Primary treatment for the metabolic syndrome is life style therapy i.e. weight loss, increased physical activity and anti-atherogenic diet. As the condition progresses, drug therapies may be required to ameliorate the individual risk factors. [xi]

Patients with Coronary Artery disease who have Metabolic Syndrome should be routinely identified and vigorously referred to formal cardiac rehabilitation and exercise training as it is really effective initial management approach. [xii]

Role of health professional is early and intense management of these modifiable risk factors so that its frequency can be decreased, Moreover magnitude of this rapidly rising and serious global health issue in our setup could be estimated and find out the ways and means to prevent this constellation of syndrome. We believe that the seriousness of this problem has largely been underestimated in Pakistan. Therefore we assessed the frequency of this disease specifically in patients with unstable angina which is a type of acute coronary syndrome and that has not been assessed so far.

MATERIALS AND METHODS

This study was conducetd in medical ward of DUHS Karachi from January 2012 to July 2012.This was a cross sectional study 81patients were included in this study and sample size is calculated scientifically with confidence interval 95% and sample technique were Non-probability purposive sampling. The patients were included in this study who were diagnosed cases of unstable angina with age more than 15years. Patients were labeled unstable angina positive if ECG showed no ST segment elevation and cardiac enzymes levels were not raised and the patients were excluded frome the study who were already had type 1 diabetes, renal failure, Cushing syndrome, known Hypertension, patients were taking lipid lowering drugs & ECG changes not consistent with unstable angina.

Data Collection Procedure: Data was collected on a pretested self administered Performa after taking permission from ethical committee of the hospital. The purpose, procedure risks and benefits of the study were explained to the patients and informed consent was taken. 81 patients admitted with unstable angina fulfilling inclusion criteria were included in the study. Patient were interviewed and screened for the metabolic syndrome according to ATP III guidelines. The socio demographic data including age and sex was recorded as well. All data was collected by the researcher on structured Performa.Blood Pressure was measured at the time of admission by taking 2 readings after 5 minutes interval by the same doctor (to reduce observer bias) and mean of both the readings was calculated, making patient sit comfortably back straight and arm at heart level, no coffee, tea, cigarette smoking half hour before.

Waist circumference was measured by measuring the smaller circumference of the waist, usually just above the belly button, and dividing by the hip circumference at its widest part of the hip i.e. waist circumference >102 cm in men and> 88 cm in women was taken as central obesity.Blood was taken at the time of admission for lipid profile and rechecked after 14 hrs fast along with fasting glucose level. Strict aseptic measures were taken to reduce systematic bias.

Data Analysis: The data was entered by two people to control the bias and analyzed with the help of SPSS Program version 13.0.Mean and standard deviation of numerical variables like age, waist circumference, systolic and diastolic blood pressure, triglyceride level, High-density lipoprotein levels and fasting blood sugar was taken.

Frequency and percentage was computed for categorical variables like Age group, sex, and presence of metabolic syndrome. Confounding effect was controlled through stratification of age and gender.Results were described and also presented in form of tables and graphs.

RESULTS

Total 81 patients with unstable angina were included in this study. Out of them 43 (53.1%) were male and 38 (46.9%) were female (table no: 1). Mean age was 60.23 ± 8.7. Majority of patients (49.4%) were lying in 51 to 60 years age group (figure no: 1).

Out of 81 patients with unstable angina thirty nine (48.1%) subjects have metabolic syndrome. Among them twenty three (53.5%) were male and sixteen (42.1%) were females, hence it shows insignificant p value of 0.018 (table no: 2).

Age group and its relationship with metabolic syndrome was analyzed with univariant analysis, which shows 12 patients were of age less than 40 years, out of them 3 (25%) were having metabolic syndrome and 9 (75%) have no metabolic syndrome. Twelve patients were also lying in between age group 41- 50 years, out of them 4 (33.3%) were having metabolic syndrome and 8 (66.6%) have no metabolic syndrome. Forty patients were lying in between age group 51- 60 years out of them 20 (50%) were having metabolic syndrome and remaining 20 (50%) had no metabolic syndrome. In age group 61- 70 years there were total of 11 patients out of them 7 (63.0%) were having metabolic syndrome and 4 (37.6%) have no metabolic syndrome. Finally, subjects age group more than 70 years, there were total of 7 patients out which 5 (71%) have metabolic syndrome and rest of 2 (29%) have no metabolic syndrome. Hence it shows significant p-value of 0.007(table no: 3).

Mean triglycerides level of the study population was 148.95+- 26.47(95-223). Thirty one (38.5%) patients with unstable angina had hypertriglyceridemia among them 18(58.1%)were males and 13(41.1%)were females this difference was not statistically significant(p value- 0.480). Among 31 patients 15(48.4%) were in age group between 51- 60 years and that shows statistically significant (p value- 0.007) table no: 4& 5. Mean HDL level was 45.16+- 10.37(26- 68). Fourty three patients had low HDL among them 26(60.5%)were males and 17(39.5%) were females that shows stastically in significant (p value- 0.157).Among 43 patients 24(55.8%)were in 51-60 years of age group and that shows statistically significant pvalue- 0.010. table no: 4&5. Mean FBS was 137.42+- 65.078(61-334). Fifty one(63%) were had hyperglycemia among them 30(58.8%) were males and 21(41.2%) were females and that shows statistically insignificant p value- 0.177 and out 51 patients 18(35.3%) patients were in age group of 51- 60 years and that shoes statistically significant p value- 0.019. table no: 4&5. Mean Systolic blood pressure of the study population was 139.20+- 24.3(100-200) and mean diastolic blood pressure was 87.47+- 13.1(60-115). Fourty six patients had high blood pressure among them 23(50%) were

males and 23(50%) were females with insignificant p value- 0.523.

Table No.1: Frequency of Gender: Total no: 81

Sex	Frequency	P- value
Male	43(53.1%)	0.018
Female	38(46.9%)	

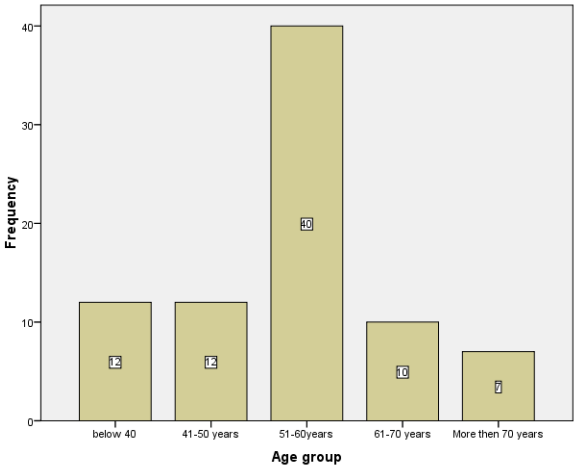

Figure No.1 Age Distribution

Table No. 2: Frequency of Gender and metabolic syndrome: (n-81)

Sex	Metabolic syndrome Yes	Metabolic syndrome No
Male	23(53.1%)	20(46.5%)
Female	16(42.1%)	22(57.9%)

Table No.3: Frequency of Age and metabolic syndrome: (n-81)

Age group	Metabolic Syndrome Yes	Metabolic Syndrome No
Less than 40 years	3 (25%)	9 (75%)
41-50 years	4 (33.3%)	8 (66.6%)
51- 60 years	20 (50%)	20 (50%)
61-70	7 (63%)	4 (37%)
More than 70 years	5 (71%)	2 (29%)

Table No. 4: Frequency of individual components of MS in patients with unstable angina. n: 81

Variables	Mean	Male	Female	P-value
Trigly cerides	148.95+-26.47	18(58.1%)	13(41.9%)	0.480
HDL	45.16+-10.37	26(60.5%)	17(44.7%)	0.157
FBS	137.42+-65.078	30(58.8%)	21(41.2%)	0.177
HTN	SBP 139.20+-24.3% DBP 87.47+-13.1	23(50%)	23(50%)	0.523
Obesity		16(59.3%)	11(40%)	0.431

Out of 43 patients 14(30.4%) were in age group of 51-60 years and that shows siginificant p value- 0.001. table no: 4&5. Mean Waist was 92+- 11.24(71-113). Twenty seven patients were obese 16(59.3%) were males and 11(40.7%) were females that show insignificant p value- 0.431. Eleven patients (40.7%) out of 27 obese patients were in age group of 51-60 years and that shows statistically significant p value- 0.001. table no: 4&5.

Table No.5: Frequency of Different variables of metabolic syndrome in patients with unsable angina in age group of 51-60 years.

Variable	Total No:	Patients of age group 51-60 years	P-value
Hypertrigly-ceridaemia	31 (38.5%)	15(48.4%)	0.007
Low HDL	43 (53.1%)	24(55.8%)	0.010
Raised fasting blood sugar	51 (63%)	18(35.3%)	0.019
HTN	46 (56.8%)	14(30.4%)	0.001
Obesity	27 (33.3%)	11 (40.7%)	0.001

DISCUSSION

The metabolic syndrome, a highly prevelant entity is a clustering of risk factors of metabolic origin that are accompanied by increased risk of cardiovascular disease& type 2 diabetes mellitus. These risk factors are atherogenic dyslipidemia, elevated blood pressure, raised plasma glucose; two other major underlying risk factors are obesity & insulin resistance exacerbated by physical inactivity, advancing age, endocrine & genetic factors. Presence of metabolic syndrome increases the risk of cardiovascular disease twice in next 5 to 10 years[13]. Our study demonstrated the frequency of metabolic syndrome in patients with unstable angina. Thirty nine(48.1%) patients had metabolic syndrome among 81 patients, prevalence rates compareable with previous study bt sohail A et al which shows 46.1% 0f the study population[14] and on these results we can say that it has increasing with passage of time. In our study metabolic syndrome was more prevalent in males 43 (53.1%) as compares to females 38(46.9%) and these results comparable to previous study by Muhammad Tahir et al[15] which shows 32% in males & 28% in females, in other studies[16,17] shows metabolic syndrome more prevalent in females thus we can conclude noe it is also increasing in males as well. In this study majority of the patients were above 50 years especially between 51- 60 years of age these results are similar to study by M.Asif et al[18,16] and we can say that metabolic syndrome has more prevalent age above 50 years

especially 51-60 years group. Diabetes mellitus, obesity, hypertension, dyslipidemia are metabolically linked together and all of these are clustered together quite frequently. In our study we find out all of these components of metabolic syndrome & these components are more prevalent in age group 50-60 years . In this study diabetes mellitus was in 51(63%) of patients with males predominant as compared to females and age group 50- 60 years, these results are similar to previous study[15] though the results of the reference study were on higher side & the reason of these difference are large sample size, life styl& dietary habits. Hypertension was the second more prevalent component in our study it was in 46(56.8%) of patients with equally distributed in males& females these results are similar to previous study[15]but the difference were in gender distribution as previous studies[16,17] shows females dominancy. Low HDL, hypertriglycerdemia and obesity were the other compnonts of metabolic syndrome according to the percentage and these were more prevalent in males with age group 50-60 years(table 4&5) and these results are similar to previous studies[15,18] except that obesity, as obesity in our study were 27(33%) of patients with males more prevalent in comparison to previous studies[16,17] which shows females more prevalent & obesity were on higher side this might because of using different criteria for waist circumference& the reason gender difference are lack of exercise, dietary habits may be.

CONCLUSION

Metabolic syndrome with complex conditions and risk factors is a major problem which needs the concern and attention of primary care physicians and patients alike, as more and more patients of South Asian origin are dying from accelerated cardiovascular disease. Unstable Angina is associated with a high prevalence of diabetes, hypertension, low HDL, hypertriglyceridemia and obesity.

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