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Identification of the Risk Factors of Acute Coronary Syndrome in Patients at PIMS Hospital Islamabad - A Cross-Sectional Survey.

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ABSTRACT:

The main Purpose of the present study is to assess the prevalence of various risk factors among patients of coronary syndrome presenting to Emergency Department of PIMS Hospital Islamabad. In the current study total of 115 patients admitted in Cardiology ward with diagnosis of acute coronary syndrome were included, using non-probability, consecutive sampling. All cases of acute myocardial infarction and unstable angina were considered as acute coronary syndrome (ACS). A written informed consent was taken from all these patients. A questionnaire was designed which includes demographic profile of the patient, symptoms experienced, and risk factors known to contribute to ACS. This questionnaire was filled by all patients who were diagnosed with ACS for the first time. In the current study out of 115 patients, 93 (80.9%) were male and 22 (19.1%) were females. The Mean age was53.16 ± 10.87 years. A total of 55.7% were smokers. Out of which 89.1% were current smokers. A total of 51.3% were hypertensive while 32.2% were diabetic. A

total of 47.4% had positive family history. Only 8.8% had a history of lack of physical exercise. Mean waist-hip ratio calculated was 0.99 ± 0.09. Mean BMI calculated was 28.02 ± 6.04 kg/m2.

Keywords: Risk factors, Acute coronary syndrome,

Introduction

Acute coronary syndrome is a group of conditions caused by sudden blockage of the blood supply to the heart. It ranges from a potentially reversible phase of unstable angina to irreversible cell death due to a myocardial infarction. It constitutes an important problem because of the devastating effect of this disease on the more active lifestyle of young adults. It is now becoming a leading cause of death throughout the world (1). Acute coronary syndrome is one of the major causes of morbidity and mortality in Western European hospitals (2). It is also on rise in South Asian countries. It has been predicted that in future more than half of the worldwide cardiovascular disease burden will be borne by south Asian countries (3). There is limited data available in the form of formal studies from Pakistan. However small, scaled studies conducted at different centers have investigated correlation of conventional risk factors with coronary artery disease. A study conducted in Islamabad, Pakistan showed that most reported risk factor was dyslipidemia, followed by hypertension, diabetes, smoking and family history.(4). Similar findings were reported from another study conducted at Pakistan Ordinance Hospital Wah, Pakistan (5). An increase in trend in the local population and involvement of younger ages has also been reported.6 Objective of current study was to identify risk factors in young patients with acute coronary syndrome admitted at emergency department of PIMS hospital Islamabad.

Material and Methods

This case series study included total of 115 patients admitted in cardiology ward with diagnosis of acute coronary syndrome (aged 18-40 years) who were diagnosed with Acute Coronary Syndrome (ECG and serum cardiac enzymes) and were admitted to coronary care unit PIMS hospital islamabad Pakistan from January to December 2021. Detailed information and history of patients included in this study were recorded on separate Performa sheets. Informed consent was taken from every patient. The study was approved by the Ethical Review Board of PIMS hospital Islamabad Pakistan. Patients diagnosed of ACS between age of 18-40 years with ST and Non-ST

elevated myocardial information and Unstable angina with electrocardiographic changes were included in the study. Patients of any other cardiac illness, pregnancy, stroke or cerebrovascular disease, stable angina, renal disease, liver disease and aged less than eighteen and more than forty were excluded. ECG obtained and serum cardiac enzymes and other tests required were performed on admission and repeated whenever required. Instrument of data collection was developed which contained risk. factors and variables of disease prognosis, sociodemographic risk, interventions and investigations. These data collection instruments were filled from the file of case history of the admitted patients. Data obtained was analyzed by using SPSS version 21 to generate cross tabulation after frequency distribution. Results are presented in the form of percentages to meet standardization.

RESULTS

Out of 300 patients of acute coronary syndrome, 100 were females (33.33%) and 200 were males (66.67%). Most of the patients 60% belonged to the age group of the 25-40 years. The risk factors identified included dyslipidemia, diabetes. Out of 115 patients of acute coronary syndrome, 45 were females (33.33%) and 60 were males (88.67%). Most of the patients 60% belonged to the age group of the 25-40 years. The risk factors identified included dyslipidemia, diabetes mellitus, hypertension, family history of ACS and smoking. 44 (31.33%) had diabetes mellitus and 70 (46.3%) were found to be hypertensive. A total of twenty out (20.6%) of 60 tested for hyperlipidemia had high cholesterol and HDL levels. Family history of ACS retrieved from patients files, was positive in 44(32.7%) and 56 (41.9%) had a history of smoking

DISCUSSION

This study showed a male predominance (66%) with the involvement of modifiable risk factors; most common was hypertension (46%) followed by smoking (42%), family history (32%), diabetes mellitus (31%), and dyslipidemias (21%). Results of similar studies from other centers of Pakistan showed high prevalence of modifiable risk factors as compared to this study. Major difference noted was dyslipidemia (91%) and (34%).4,5 The difference observed could be due to sample size as these studies had relatively small sample sizes compared to our study. Risk factors frequencies disclosed by this study were similar to study by Tamrakar R et al.7 However the results of our study were not consistent with the findings of the study conducted by Akhtar et al. with respect to positive family history (57%) and dyslipidemia (63.2%).8

A study conducted by Balakrishnan et al. at tertiary care level in India showed high prevalence of all the risk factors; Male gender (83%) smoking (82%), hypertension (57%), diabetes (63%), dyslipidemia (66%), and family history (66%). Results of this study were not comparable with our study (9). In another study conducted by Jafary et al (10). the frequencies of risk factors revealed were male 68%, hyperlipidemia 18% and diabetes mellitus 37.2%, these findings were close to the findings of study under discussion. However, risk factors for ACS identified by our study were relatively different from another study conducted in Spain. That study showed that incidence of ACS among young patients was associated with diabetes and unhealthy lifestyle that included cocaine use, smoking, and obesity. (11). Inconsistency observed in these studies might be due to difference in sample size, inclusion and exclusion criteria for the subjects of study. Looking further into the details of individual risk factors unveiled by current study, it was observed that male predominance concurrence was found with almost all regional and international studies. Frequency of hypertension (46.3%) as risk factor of ACS was also in agreement with studies by Akhtar et al. (47.6%)8 and Gupta et al (33%).12 Hypertension in young adults with Acute Coronary Syndrome had also been implicated as independent risk factor for muti-vessel coronary artery disease.13 Patients of ACS also having chronic kidney disease exhibited very high prevalence of hypertension (81.3%) and diabetes mellitus (63.8%). It might be the consequence of chronic renal failure. (14).

Current study revealed that patients of ACS having smoking history were 31.9%. This finding was close to Gupta et al.12 (30%) but unlike to study by Singh et al (65%) (15). Another study conducted in Pakistan by Muhammad F et al. (16) showed frequency of smoking as risk factor for ACS as 46%, that was close to our finding of 41.9%. A study conducted by Aram J et al. (17). reported prevalence of family history and diabetes as risk factors of ACS, and were 24%, 20% respectively. Another study by Kumar V et al.(18). showed prevalence of diabetes and family history as the risk factors of ACS/MI, 68.5%, 71.7% respectively. Findings of these studies and studies under discussion were not consistent with each other's. Reasons for these inconsistencies could be differences in sample size, inclusion and exclusion criteria for the studies. Dyslipidemia is one important modifiable risk factor for acute coronary disease. Its prevalence in study under discussion was 20.6%. A study by Ricci B et al.(19). about risk factors in ACS showed dyslipidemia 36.6%. Another study by Reda AA et al.20 about frequency of risk factors for ACS dyslipidemia was 38.5%. Possible explanation for these disparities' other than reasons given above could be different lifestyles of the study groups. ACS constitutes an important health problem because of the devastating effect of this disease on the more active lifestyle of young adults. As pointed earlier in the introduction that formal provincial/ national data on the risk factors of disease is limited in Pakistan. Though this study was conducted in a resource-limited setting, however it is anticipated that it will add to existing quantum of knowledge

regarding risk factors of the condition. Moreover, it will pave way for further multicenter studies and large level provincial or national surveys to establish the baseline for modifiable risk factors.

CONCLUSION

Hypertension, Diabetes Mellitus, Smoking, and hyperlipidemia were the major modifiable risk factors in our patients. However positive family history for ACS a non-modifiable risk factor studied was also a common finding. It is suggested that multicenter (hospital based) and provincial/national level community-based studies employing standardized methodologies be conducted to establish the baseline for modifiable risk factors. This will enable in formulating policies for promoting healthy lifestyles, and age specific preventive strategies.

REFRENCES:

Faisal AKF, Ayub M, Waseem T, Khan RSAT, Hasnain SS. Risk factors in young patients of Acute myocardial infarction. J Ayub Med Coll Abbottabad. 2011;23:12-14.

2. Yadav P, Joseph D, Joshi P, Sakhi P, Jha RK, Gupta J. Clinical profile and risk factors in acute coronary syndrome. N J Community Med. 2010;1:12-18

3. Chan MY, Du X, Eccleston D, Ma C, Mohanan PP, Ogita M, et al. Acute coronary syndrome in the Asia-Pacific region. Int J Cardiol. 2016;202:861-869.

4. Majeed A, Rehan A, Waseem N, Iqbal U, Saleem H, Ali MA, et al. Prevalence of conventional risk factors and evaluation of baseline indices among young and elderly patients with coronary artery disease. J Clin Diagn Res. 2017;11(7):OC34- OC39. doi: 10.7860/JCDR/2017/27504.10281

5. Nadeem M, Ahmed SS, Mansoor S, Farooq S. Risk factors for coronary heart disease in patients below 45 years of age. Pak J Med Sci. 2013;29(1):91-96. doi: 10.12669/pjms.291.2828

6. Noor L, Adnan Y, Khan SB, Rehman H, Ahmad F, Hafizullah M. Changing Trend of Presentation of Acute Coronary Syndrome in Peshawar Over the Last Sixteen Years. J Ayub Med Coll Abbottabad. 2011;23(2):136-139.

7. Tamrakar R, Bhatt YD, Kansakar S. Acute Myocardial infarction in young adults: study of risk factors, angiographic features and Clinical outcome. Nepalese Heart J. 2013;10:12- 16. doi: 10.3126/njh.v10i1.9740

8. Akhtar J, Islam N, Khan J. Risk factors and outcome of ischemic heart disease in young Pakistani adults. Specialist (Pak J Med Sci.). 1993;9:123-126.

9. Balakrishnan VK, Chopra A, Muralidharan TR, Thanikachalam S. Clinical Profile of Acute Coronary Syndrome among Young Adults. Int J Cardiol Cardiovasc Res. 2018;4(1):52-59.

10. Jafary MH, Samad A, Ishaq M, Jawaid SA, Ahmad M, Vohra EA. Profile of Acute Myocardial Infarction (AMI) In Pakistan. Pak J Med Sci. 2007;23(4):485-489

11. Esteban MR, Montero SM, Sanchez JA, Hernandez HP, Perez JZ, Afonso JH, et al. Acute Coronary Syndrome in the Young: Clinical Characteristics, Risk Factors and Prognosis. Open Cardiovasc Med J. 2014;8:61-67.

12. Gupta S, Krishna KL, Hirava M. A study of risk factors in young patients of acute coronary syndrome. Int J Contemporary Med Res. 2017;4(10):2144-2147.

13. Junhua G, Jian L, Haichu Y, Bo H. Hypertension Is an Independent Predictor of Multivessel Coronary Artery Disease in Young Adults with Acute Coronary Syndrome. Int J Hypertens. 2018;Article ID: 7623639. doi: 10.1155/2018/7623639

14. Sattar S, Ahmed N, Akhter Z, Aijaz S, Lakhani S, Malik R, et al. In-Hospital outcomes in acute coronary syndrome patients with concomitant severe chronic kidney disease undergoing percutaneous coronary intervention. Pak J Med Sci. 2019;35(2):291-297. doi: 10.12669/pjms.35.2.276

15. Singh PS, Singh G, Singh SK. Clinical profile and risk factors in acute coronary syndrome. J Indian Acad Clin Med. 2013;14:23-28.

16. Muhammad F, Abid AR, Ahmad A, Imran S, Mallik NH. Coronary artery disease: pattern of clinical and angiographic findings of young males. Professional Med J. 2009;16(2):192- 197.

17. Aram J, Mirza A, Abdulsalam Y, Taha B, Bahar R. Khdhir C. Risk factors for acute coronary syndrome in patients below the age of 40 Years. Egypt Heart J. 2018;70:233–235.

18. Kumar V, Balakrishnan, Chopra A, Muralidharan TR, Thanikachalam S. Clinical profile of acute coronary syndrome among young adults. Int J Cardiol Cardiovasc Res. 2018;4(1):052-059.

19. Ricci B, Cenko E, Vasiljevic Z, Stankovic G, Kedev S, Kalpak O, et al. Acute Coronary Syndrome: The Risk to Young Women. Am Heart Assoc. 2017;6(12):e007519. doi: 10.1161/JAHA.117.007519