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Original Research Article

An observational study on clinical profile of acute coronary syndrome among young adults attending a tertiary care institute in Maharashtra

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ABSTRACT

Background: ACS is most common cause of hospital admissions even in middle income countries like India. ACS in an early age is one of the important causes of sudden death. Incidence of ACS is positively correlated with age. But in the recent years, there is increased incidence of ACS among younger adults. In depth studies have been conducted in older adults but profile among younger patients is rarely reported.
Methods: An observational study was conducted among young adults with ACS admitted under department of medicine of Punjabrao Deshmukh memorial medical college. This study was conducted for one and half years (August 2019 to March 2021). All young patients of both sexes less than 35 years of age admitted with diagnosis of ACS were included in the present study. The questionnaire had demographic details like age, gender, address, occupation, etc. It also had detailed clinical history, physical examination findings, systemic examination findings and investigations in it.
Results: The most common chief compliant was chest pain (73.05%) followed by epigastric pain (53.30%) and sweating (53.90%). The most common risk factors were overweight/obesity (58.66%), tobacco chewing (38.32%) and smoking (34.73%). About 48.5% of the cases were STEMI, 32.9% were NSTEMI and 18.6% were UA in the present study. Among 167 cases studied, 1.19% cases had ventricular septal rupture, 3% had arrhythmia, 7.78% were in cardiogenic shock and 3.60% was the mortality rate.
Conclusions: Chest pain was present in more than 75% of the cases. The most common risk factors were overweight/obesity, tobacco chewing and smoking. Complications like cardiogenic shock, arrhythmia and ventricular septal rupture were noted. Minor patients suffered cardiac arrest. It is important to screen for ACS even in young adults. The time with a saying that ACS is a disease of older adults is gone.

Keywords: Acute coronary syndrome, Young adults, Clinical profile

INTRODUCTION

The basic pathophysiologic mechanism of acute coronary syndrome (ACS) is myocardial ischemia which comprises of ST segment elevation myocardial infarction (STEMI), non ST-STEMI and unstable angina (UA).[1,2] ACS is most common cause of hospital admissions even in middle income countries like India.[3,4] ACS in an early age is one of the important causes of sudden death.[3,4] It has catastrophic affects on the quality of life of the patients and their family members. Incidence of ACS is positively correlated with age.[5,6] But in the recent years, there is increased incidence of ACS among younger adults. Approximately 3 to 10% of ACS occurs among young adults (<45 years).[7-9] In depth studies have been conducted in older adults but profile among younger patients is rarely reported. Also, the clinical practice guidelines for diagnosis and management are clearly documented for older adults.[1,4-6] The profile among this subset appears to be different from the older adults in terms of clinical presentation, risk factors, clinical outcome and pattern of coronary artery involvement.

Hence, we conducted a study to find the various risk factors and the clinical profile of young adults with ACS attending our institute.

METHODS

An observational study was conducted among young adults with ACS admitted under department of medicine of Punjabrao Deshmukh memorial medical college. This study was conducted for one and half years (August 2019 to March 2021). All young patients of both sexes less than 35 years of age admitted with diagnosis of ACS were included in the present study. ACS was defined as patient having any two of three following criteria-Angina for 30 minutes, electrocardiogram evidence of ACS and rise/fall of cardiac biomarker troponin I. Those cases with stable angina, patients aged less than 18 years and those patients who were unwilling for the study were excluded from the study. The study was pre approved by the ethics committee of our institute.

Based on the previous studies, the prevalence of ACS among young was noted as 19%.[10] Using this with 90% confidence interval and 5% absolute error, we calculated the minimum sample size to be 167. Data was collected using pre validated, semi structured questionnaire. The questionnaire had demographic details like age, gender, address, occupation, etc. It also had detailed clinical history, physical examination findings and systemic examination findings in it. Complete blood count, lipid profile, cardiac marker-TROP I, serum creatinine, blood sugars, HbA1c, serum uric acid, homocysteine, urine routine, ECG, chest x-ray and echocardiography were done for each patient and findings were noted. Body mass index was calculated using standard formula using weight and height and a cut off for 23kg/m^2 was used to classify into normal and overweight/obese.

Statistical analysis

The data was collected and compiled using Microsoft excel. The analysis was done using Epi info (version 7.2; CDC, Atlanta). The qualitative variables were expressed in terms of percentages. Normality of the data was tested using Kolmogorov Smirnov test. Normal quantative data was expressed in terms of mean and standard deviation.

RESULTS

Total 167 patients of ACS were included in the present study. The mean age of the subjects in the present sample was 27 years with male preponderance (67.10%) (Table 1).The most common chief compliant was chest pain (73.05%) followed by epigastric pain (53.30%) and sweating (53.90%) (Table 2). The most common risk factors were overweight/obesity (58.66%), tobacco chewing (38.32%) and smoking (34.73%). The least common risk factors noted were familial hypercholesterolemia (8.38%), dyslipidemia (14.97%) and hypertension (26.34%) (Table 3).

About 48.5% of the cases were STEMI, 32.9% were NSTEMI and 18.6% were UA in the present study (figure 1). Among 167 cases studied, 1.19% cases had ventricular septal rupture, 3% had arrhythmia, 7.78% were in cardiogenic shock and 3.60% was the mortality rate (Table 4).

Table 1: Demographic details of the present sample.

Demographic details	N	%
Age (Mean±SD)	27.00 ±5.39 years	
Gender		
Female	55	32.90
Male	112	67.10

Table 2: Distribution of the subjects based on the chief complaints (n=167).

Chief complaints	N	%
Chest pain	122	73.05
Dyspnoea	88	52.70
Epigastric pain	89	53.30
Sweating	90	53.90
Syncope	62	37.10

Table 3: Distribution of the subjects based on the risk factors (n=167).

Risk factors	N	%
Diabetes mellitus	52	31.13
Hypertension	44	26.34
Dyslipidemia	25	14.97
Familial hypercholesterolemia	14	8.38
Alcohol	53	31.73
Smoking	58	34.73
Tobacco	64	38.32
Overweight/obesity	98	58.66

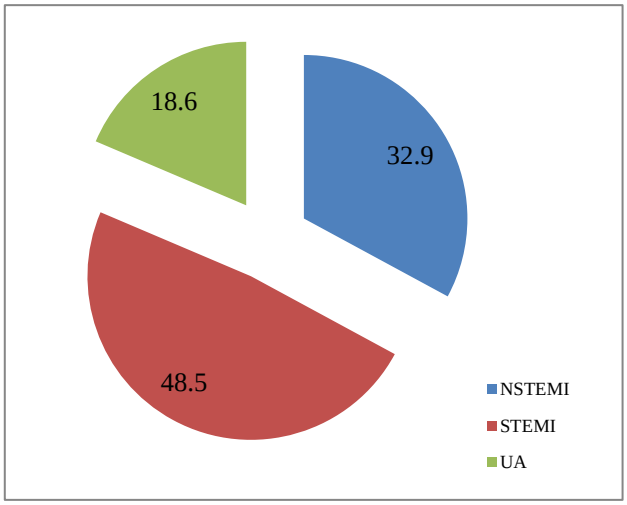

Figure 1: Distribution of the subjects based on the ACS type

Table 4: Distribution of the subjects based on the complications (n=167).

Complications	N	%
Ventricular septal rupture	2	1.19
Arrhythmia	5	3.0
Cardiogenic shock	13	7.78
Death	5	3.60

DISCUSSION

Cardiovascular accidents are the leading cause of morbidity and mortality across the world.[5] The burden of ACS has been increasingly noted in young adults in recent times.[9] This study was conducted in the view of understanding the clinical profile of ACS among young adults attending our institute. The mean age of the subjects in the present sample was 27 years with male preponderance. The most common chief compliant was chest pain (73.05%). Similar inferences were reported by Alapatta et al, Esteban et al, Iragavarapu et al and Gupta et al.[7,11-13] The most common risk factors were overweight/obesity (58.66%) and least common risk factors noted were familial hypercholesterolemia (8.38%) in the present study. A study conducted by Alapatt et al reported that most common risk factor was smoking (62.16%) and least common risk factor in their study was obesity (8.1%).[11] Another study conducted by Esteban et al reported that ACS cases in their study had smoking as the most common risk factor in 74.8% cases and diabetes mellitus (14.6%) as the least common risk factor.[7] A study conducted by Iragavarapu et al compared the risk factors based on their age.[12] Of those with age less than 40 years age, smoking (25.8%) was the most common risk factor noted along with family history (30%) and alcohol consumption (7.5%) was the least common risk factor reported. Another study conducted by Gupta et al reported that sedentary lifestyle (73%) was the most common risk factor noted in their sample of young adults.[13] Mirza and colleagues reported that obesity was the most common risk factor among the young adults with ACS in their study.[8] Majority of the cases were STEMI and NSTEMI in the present study. Similar results were reported by Alapatt et al, Esteban et al, Iragavarapu et al, Davidson et al and Gupta et al.[7,11-14] Among 167 cases studied, 1.19% cases had ventricular septal rupture, 3% had arrhythmia, 7.78% were in cardiogenic shock and 3.60% was the mortality rate.

A study conducted by Esteban MR et al[7] reported that the intra hospital mortality rate in their study was 1.6% which was almost same as our study. Another study conducted by Norsa'adah et al reported about 10.2% suffered cardiac arrest in their study.[15,16] Another study on Iranian young adults reported that the mortality rate was 7.8%.[16] Other complications notably were heart failure in 35.4%, arrhythmia in 18.4% cases and cardiogenic shock in 14.9%.

Limitations

Limitations of current study were; it was a single center study. Secondly it was a cross sectional study. Prospective studies with different centers would yield better results. Nevertheless, this study will add up to the pool of research on ACS among young adults.

CONCLUSION

Chest pain was present in more than 75% of the cases. The most common risk factors were overweight/obesity, tobacco chewing and smoking. The least common risk factors noted were familial hypercholesterolemia, dyslipidemia and hypertension. Majority of the ACS were STEMI and NSTEMI among the present sample of the patients. Complications like cardiogenic shock, arrhythmia and ventricular septal rupture were noted. Minor patients suffered cardiac arrest. It is important to screen for ACS even in young adults. The time with a saying that ACS is a disease of older adults is gone.

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REFERENCES

1. Davies MJ. The pathophysiology of acute coronary syndromes. Heart. 2000;83(3):361-6.
2. Kotecha T, Rakhit RD. Acute coronary syndromes. Clin Med. 2016;16(6):s43-8.
3. Vedanthan R, Seligman B, Fuster V. Global perspective on acute coronary syndrome: a burden on the young and poor. Circ Res. 2014;114(12):1959-75.
4. Sidhu NS, Rangaiah SKK, Ramesh D, Veerappa K, Manjunath CN. Clinical characteristics, management strategies, and in-hospital outcomes of acute coronary syndrome in a low socioeconomic status cohort. Clin Med Insights Cardiol. 2020;14:117-24.
5. Sanchis-Gomar F, Perez-Quilis C, Leischik R, Lucia A. Epidemiology of coronary heart disease and acute coronary syndrome. Ann Transl Med. 2016;4(13): 256.
6. Dai X, Busby-Whitehead J, Alexander KP. Acute coronary syndrome in the older adults. J Geriatr Cardiol. 2016;13(2):101-8.
7. Esteban MR, Montero SM, Sánchez JJA, Hernández HP, Pérez JJG, Afonso JH, et al. Acute coronary syndrome in the young: clinical characteristics, risk factors and prognosis. Open Cardiovasc Med J. 2014; 8:61-7.
8. Mirza AJ, Taha AY, Khdhir BR. Risk factors for acute coronary syndrome in patients below the age of 40 years. Egypt Hear J. 2018;70(4):233-5.
9. Gulati R, Behfar A, Narula J, Kanwar A, Lerman A, Cooper L, et al. Acute Myocardial Infarction in Young Individuals. Mayo Clin Proc. 2020;95(1):136-56.

10.Chen Y-L, Bhasin A, Youssef AA, Wu C-J, Yang C-H, Hsieh Y-K, et al. Prognostic factors and outcomes in young chinese patients with acute myocardial infarction undergoing primary coronary angioplasty. Int Heart J. 2009;50(1):1-11.
11.Alappatt N, Sailesh K, Mukkadan J. Clinical Profile of Acute Coronary Syndrome in Young Adults. J Med Sci Heal. 2016;1(2):5-10.
12. Iragavarapu T, Radhakrishna T, Babu K, Sanghamitra R. Acute coronary syndrome in young - A tertiary care centre experience with reference to coronary angiogram. J Pract Cardiovasc Sci. 2019;5(1):18-25.
13.Gupta S, Lakhani K, Munshi H. A study of Risk Factors in Young Patients of Acute Coronary Syndrome. Int J Contemprorary Med Res. 2017;4(10): 2144-6.
14.Davidson L, Wilcox J, Kim D, Benton S, Fredi J, Vaughan D. Clinical features of precocious acute coronary syndrome. Am J Med. 2014;127(2):140-4.
15.Norsa'adah B, Che-Muzaini CM. Association of co-morbidity and treatment with the complications of acute coronary syndrome in young patients less than 45 years. Malays J Med Sci. 2018;25(1):42-52.
16.Che-Muzaini CM, Norsa'adah B. Complications of acute coronary syndrome in young patients. Iran J Public Health. 2017;46(1):139-40.

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