Original Article

Pattern of Acute Coronary Syndrome

# Changing Pattern of Acute Coronary Syndrome, the Burden Shifting Towards Younger Age Group

**Bilal Ahmad, Hafiz ur Rahman, Abdul Hadi, Iftikhar Ahmad, Syed Javed Iqbal Bacha and Amjad Ali Shah**

## ABSTRACT

**Objective:** To determine the frequency of Acute coronary syndrome in young age group among patients admitted to Coronary Care Unit (CCU).

**Study Design:** Descriptive / observational study

**Place and Duration of Study:** This study was conducted at the Coronary Care Unit (CCU), Saidu Teaching Hospital, Saidu Sharif, Swat from November 2018 to May 2019.

**Materials and Methods:** This was a hospital based study, CCU admission data from June 2017 to April 2018 was reviewed and all patients admitted with diagnosis of ACS were identified, young age group was defined as 45 years or less. Total number of patients was 1327.The data of these patients was then recorded on a pre-design profarma, and then analyzed on SPSS for age, gender, and type of ACS.

**Results:** Data was available on 1327 patients admitted with ACS. 741(55.8%) were male and 586 (44.2%) were female. The age range of these patients was from 15 to 120 years, with mean of 60.21±13.2 years. 196 patients (14.8 %) were in younger age group, while 1131 (85.2%) patients were more than 45 years old. Patients in 50 years or below age group were 26.5%. In the young age group who were admitted with ACS 3.6% patients were 35 years or below, 0.5% were 25 years or below, while only one patient was 15 years old. Among the young patients 99 (51.3%) were male and 97 (48.7%) were female.30 were admitted with UA, 48 with NSTEMI, while 118 patient had STEMI. Among these patients 55 had Anterior wall MI, 55 had inferior wall MI, while 8 had lateral wall MI.45 patients (23%) in young age group were diabetic and 151(77%) were non-diabetic.

**Conclusion:** Acute coronary syndrome is common in young age group in our population as compared to the developed countries, which need further work to identify the risk factors in our population and adapt measure to stop this catastrophe.

**Key Words:** ACS, STEMI, NSTEMI, Unstable angina, young age group.

**Citation of article: Ahmad B, Rahman H, Hadi A, Ahmad I, Bacha SJI, Shah SS. Changing Pattern of Acute Coronary Syndrome, The Burden Shifting Towards Younger Age Group. Med Forum 2020;31(3):6-8.**

## INTRODUCTION

Coronary artery disease is broadly divided into Stable ischemic heart disease (chronic coronary syndrome), and Acute coronary syndrome which include unstable Angina, NSTEMI, and STEMI[1]. Risk factors for CAD include modifiable and non-modifiable risk factors. Modifiable factors are Hypertension, Diabetes mellitus, dyslipidemia, and smoking, while non-modifiable risk factors include Age, male sex, and family history[2].

Department of Cardiology, Saidu Teaching Hospital, Saidu Sharif Swat.

Correspondence: Dr. Bilal Ahmad, Senior Registrar, Department of Cardiology, Saidu Teaching Hospital, Saidu sharif Swat.
Contact No: 03005742696
Email: drbilalqayum@gmail.com

Received: October, 2019
Accepted: December, 2019
Printed: March, 2020

There is a strong association of increasing age with coronary artery disease, the incidence of CAD and other atherosclerotic diseases rise with increasing age[3], but in our routine practice we found increasing number of younger patients admitted with Acute coronary syndrome, while data also support our observation.

In ISACS-TC (International Survey of Acute coronary Syndrome in Transitional Countries) registry 14931 patients were studied, in which 8% were aged $\leq$ 45 years. Most of them were male, however female had worst outcome[4]. A study published in European heart journal shows that among patients admitted for ACS in coronary care unit 8.12% were aged <45 years, they were mostly male, and smokers, most of them were non diabetic[5]. In Framingham Heart study the incidence of MI was 12.9/1000 in men 30 to 34 years old, and 5.2/1000 in women aged 35 to 44 years. Autopsy study of young people with unnatural death showed advances CAD in 20% men 30 to 34 years old[6].

An Indian study shows 10.42% prevalence of ACS in patients younger than 40 years of age, most of them were male, and mostly had lesion in Left Anterior

Descending Artery (LAD)[7], Saumeya gupta and colleague looked for the risk factors in young patients and found that male sex and sedentary life style are the most common risk factors[8]. The global perspective of acute coronary syndrome shows that the burden of ischemic heart disease is increasing in Low-middle income countries as compared to high income countries and younger age group is affected more[9-11].

There is no reliable data regarding the prevalence of CAD in young age group in our population, so we conducted this study to see the exact situation in our population. The reason for doing this study was to bring awareness in our community regarding this issue, as generally we don't take this as a serious matter, but once we come up with the exact statistics, it may help realize the real scenario, and this study will provide a ground for further work to look for new risk factors in this age group.

# MATERIALS AND METHODS

This study was conducted in Coronary care unit (CCU), Saidu Group of Teaching Hospital from 1/11/2018 to 25/05/2019. Data of 1327 patients admitted from June 1st 2017 to April 10th2018 was reviewed.

**Ethical issues:** Data was derived from ward admission register after taking permission from ward in charge, Identity or personal data of any patient was not disclosed to anyone through this study.

**Operational definitions:**

**Acute coronary syndrome (ACS) consists of unstable angina (UA), NSTEMI, and STEMI.**

1. UA was defined as typical ischemic type chest pain at rest for more than 20 minutes or with minimal exertion, with or without ST segment depressions or T wave inversions on ECG.
2. NSTEMI was diagnosed on the basis of typical chest pain, and elevated troponin levels, with no ST segment elevations on ECG.
3. STEMI was diagnosed on the basis of typical chest pain, and ST segment elevations on ECG.

**Young age group:** young age group was defined as age 45 years or less at the time of admission for both male and female.

**Subjects:** 1327 male and female patients of different ages who were admitted to CCU with acute coronary syndrome and their data were available in ward register.

**Inclusion criteria:** Patients of all ages admitted to CCU with ACS.

**Exclusion criteria:** Patients with old MI who were admitted this time with another diagnosis were excluded. Patients who had recent MI and then re admitted with post MI complications were also excluded.

# RESULTS

Data was available on 1327 patients admitted with ACS. 741(55.8%) were male and 586 (44.2%) were female. The age range of these patients was from 15 to 120 years. The mean age was 60.21±13.2 years. Age distribution among patients who presented with ACS is given in histogram.

196 patients (14.8 %) were in younger age group,which was defined as 45 years or less for this study while 1131(85.2) patients were more than 45 years old. Patients having 50 years or below were 26.5%.In the young age group who were admitted with ACS 3.6% patients were in 35 years or below, 0.5% were 25 years or below, while only one patient was 15 years old (figure 1).

Among the young patients 99 (51.3%) were male and 97 (48.7%) were female. Among these patients30 were admitted with UA, 48with NSTEMI, while 118 had STEMI, out of which 55 had Anterior wall MI, 55had inferior wall MI, while 8 had lateral wall MI (Table. 01). 45(23%) patients in young age group were diabetic and 151 (77%) were non-diabetic.

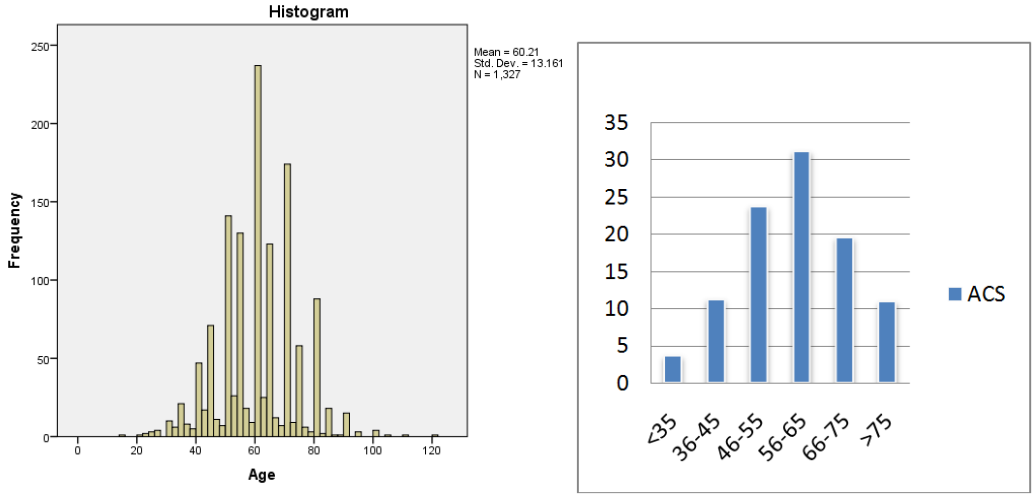


**Figure No.1: % Age distribution of ACS**

**Table No.1: Pattern of ACS in young age group**

| Type of ACS | UA | NSTE MI | Anterior MI | Inferior MI | Lateral MI |
|---|---|---|---|---|---|
| No. of patients | 30 | 48 | 55 | 55 | 8 |
| %age | 15% | 25% | 28% | 28% | 4% |

# DISCUSSION

Acute coronary syndrome can present in different forms with unstable angina at one end of the spectrum, and STEMI at the other end. In any form it has a major impact on patient's life. When it strikes in young age, it results in loss of more productive years of life, affecting both the individual patient and the society as well.

We studied the prevalence of ACS in young age group and we found that the prevalence is high in our population when compared with studies from other part of the world, and the pattern is also different in our population. In our study 14.8% patients were 45 years old or younger among patients admitted with ACS, while in ISACS-TC the prevalence is 8%[1], in Europe it is 8.12%[2], Indian study shows 10.4%[3] but the age cut-off was 40 years in this study. If we define the young age group as 50 years or less then the prevalence is 26.5 % in this age group which is an alarming situation.

In all these studies ACS is common in male compared to female, while in our study the prevalence is equal in both male and female. So it appears that there are some new risk factors affecting male and female equally. The pattern of ACS is also different. In all other studies the common presentation is anterior MI, while in our study anterior and inferior MI's are equally common.

The global perspective of Acute coronary syndrome shows that the burden of ischemic heart disease is shifting towards the low-middle socio economic countries[6] which support our data when compared to high socio economic countries, and this data also support our study that ischemic heart is becoming increasingly common in young population. so we need further work to identify the new risk factors and slow down this process, save our population from this disease in their productive part of life.

# CONCLUSION

Acute coronary syndrome is common in young age group in our population as compared to the developed countries, which need further work to identify the risk factors in our population and adapt measure to stop this catastrophe.

**Author's Contribution:**

| | |
|---|---|
| Concept & Design of Study: | Hafiz ur Rahman, Bilal Ahmad |
| Drafting: | Bilal Ahmad, Iftikhar Ahmad |
| Data Analysis: | Amjad Ali Shah, Syed Javed Iqbal Bacha |
| Revisiting Critically: | Abdul Hadi |
| Final Approval of version: | Hafiz ur Rahman |

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

# REFERENCES


1. Sabatine MS, Cannon CP. Approach to the patient with chest pain. In: Braunwald E, Mann DL, Zipes DP, Libby P, Bonow RO, editors. Braunwald's Heart disease A textbook of cardiovascular medicine. 10th ed. Philadelphia: Elsevier Saunder; 2015.p.1062-1065.
2. Ridker PM, Libby P Buring JE. Risk markers and the primary prevention of cardiovascular disease. In: Braunwald E, Mann DL, Zipes DP, Libby P, Bonow RO, editors. Braunwald's Heart disease a textbook of cardiovascular medicine. 10th edition. Philadelphia: Elsevier Saunder; 2015. p.893-913.
3. Rachal H. Risk factors for coronary artery disease: Historical perspectives. Heart views 2017 jul-sep; 18(3) 109-114.
4. Bugiardini R, Badimon L. The International Survey of Acute Coronary Syndromes in Transitional Countries (ISACS-TC): 2010–2015. I J Card [internet] 2016 August; 217. S1-S6. Available form: https://doi.org/10.1016/j. ijcard. 2016.06.219.
5. Arantes C, Martins J, Braga CG, Ramos V, Vieira C, Gaspar A, et al. Acute coronary syndrome in young adults. Eur Heart J 2013 ;l34 (1): 3134.
6. Azar RR. Coronary heart disease and myocardial infarction in young men and women. In: Verheugt F, Saperia GM, editors. Up to date [internet]. United States. Wolters Kluwer. 2018 May. Available from: https://www.uptodate.com/ contents/coronary-heart-disease-and-myocardial-infarction-in-young-men-and-women.
7. Iragavarapu T, Radhakrishna T, Babu KJ, Sanghamitra R. Acute coronary syndrome in young - A tertiary care centre experience with reference to coronary angiogram. J Pract Cardiovasc Sci 2019;5:18-25.
8. Gupta S, Lakhani KK, Munshi H. A study of risk factors in young patients of acute coronary syndrome. IJCMR 2017;4(10):2144-2147.
9. Ricci B, Cenko E, Vasiljevic Z, Stankovic G, Kedev S, Kalpak O, et al. Acute coronary syndrome: The risk to the young women.J Am Heart Assoc [internet]. 2017;6. Available from:https://www.ahajournals.org/doi/10.1161/JA HA.117.007519.
10. Vedanthan R, Seligman B, Fuster V. Circ Res 2014;114:1959-1975.
11. Wani MI, Rashid A, Beig JR. Acute Coronary Syndrome in the Young: Angiographic Features and Risk Factor Analysis of Patients with ACS before the Age of 35 Years. Int J Sci Stud 2017;5(4):244-248.