



A Finding Of Myocardial Infarction In Younger Age Group 21-40 Years- An Autopsy Study

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Abstract

Background: Myocardial infarction is an irreversible necrosis of heart muscle secondary to prolonged ischemia. Recent study has shown that incidence of acute myocardial infarction in young adults is on increase in developing countries. Autopsy based studies have proven to be reliable and valuable method for studying this disease. We plan to study the myocardial infarction in autopsy specimen of younger age group 21-40 years, to determine its age-sex distribution.

Materials and Methods: It is retrospective study from June 2021 to November 2021 conducted at department of pathology, B.J Medical collage, Ahmedabad, Gujarat. Data taken from autopsy section, B.J Medical collage, Ahmedabad.

Results: In the present study it was observed that among the 127 cases, total 10 (7.27%) cases were show changes of myocardial infarction in the younger age group of 21-40 years, in which maximum cases were found in age group of 31-40 years. All the cases were males. As compared to that, 32 cases were found among the 115 cases of older age group of 41-80 years.

Conclusion: This study showed high prevalence of myocardial infarction in young age group. So screening for the same should begin at early age. therefore draws attention for early screening and preventive techniques. The incidence of myocardial infarction is more common in males compared to females.

Keywords: Autopsy section, Myocardial infarction, Younger age

Introduction

Myocardial infarction can occur at any age, but its frequency rises progressively with increasing age. Nearly 10% of myocardial infarcts occur in people under age 40, and 45% occur in people under age 65. Women are protected against MI and other heart diseases during the reproductive years. However, the decrease of estrogen following menopause is associated with rapid development of CAD, and IHD is the most common cause of death in elderly women [1].

Myocardial infarction (MI) is the lethal manifestation of CHD and can present as sudden death, Although

myocardial infarction mainly occurs in patient older than 45, young men or women can suffer MI. Fortunately, its incidence is not common in patients younger than 45 years [2]. However, the disease carries a significant morbidity, psychological effects, and financial constraints for the person and the family when it occurs at a young age. The protection offered by young age has been slowly taken away by the increased prevalence of risk factors for coronary heart disease in adolescents such as smoking, obesity, and lack of physical activity [3].

Necrosis of cardiomyocytes is a crucial finding at myocardial infarction autopsy (Figure-1), but earliest findings of myocardial injury including contraction

band necrosis may be subtle and/or nonspecific before evident neutrophilic infiltration occurring 6 to 12 h after the onset of the ischemic attack^[4].

The most frequent cause of acute myocardial ischemia is atherothrombotic occlusion of a coronary artery^[5,6]. The presence of a mural or totally occlusive thrombotic mass can be observed at autopsy in approximately 50–70% of sudden coronary deaths and is a reliable marker of myocardial ischemia, even in absence of microscopically visible necrosis^[6,7].

Materials And Methods :

This retrospective autopsy study was conducted from June 2021 to November 2021 at Department of pathology, B.J. Medical College, Ahmedabad, Gujarat. The deceased patients under the age group of 21-80 years who underwent autopsy at hospital and their were sent to our department for histopathological analysis. The hearts were grouped according to age and sex.

The specimen were fixed in 10% formalin solution for 2-5 days, weighed and then investigated for the presence of scars of MI, for any pale area. Measurements of right ventricle wall, left ventricular wall, intra ventricular septa were taken. The coronary arteries were identified, dissected and examined grossly. Each coronary artery was then sectioned by multiple closely spaced cuts with a scalpel. The exposed artery was carefully examined for any thickening or calcification. After routine processing and paraffin embedding 3 micro meter section were taken. All the histological sections were stained in H & E stain. All the histological sections were examined microscopically for the presence of changes of myocardial infarction.

Results:

A Total of 242 post-mortem hearts were studied under the age group of 21-80 years in autopsy section of B.J. Medical College, Ahmedabad over a period of 6 months.

Of 242 cases, 190 (78.5%) cases were males and 52 (21.4%) cases were female. Among the 242 cases 127 cases were under the age group of 21-40 years, remaining were under the age group of 41-80 years. (Table-1)

42 (17.35%) cases show changes of myocardial infarction, in which 10 (7.27%) cases show changes of myocardial infarction under the age group of 21-40 years among 127 cases as compared to 32 cases were under the age group of 41-80 years among the 115 cases.

It was observed that 40 cases were male and 2 were female (Table-2) show changes of myocardial infarction in the study.

In the present study it was observed that among the 127 cases, total 10 cases were show changes of Myocardial infarction in the age group of 21-40 years, in which maximum cases were found in age group of 31-40 years. All the cases were males. (Table-2)

The least number of cases were found in the 21-30 year age group. The youngest male in the study was 21 years old. The oldest male in the study was 79 years old.

Myocardial infarct were seen in different areas of the heart involved. Apex was observed to be the most commonly affected (Table-3) by Myocardial infarction followed by interventricular septum and left ventricular wall.

FIGURE 1 : Coagulative necrosis of cardiomyocytes

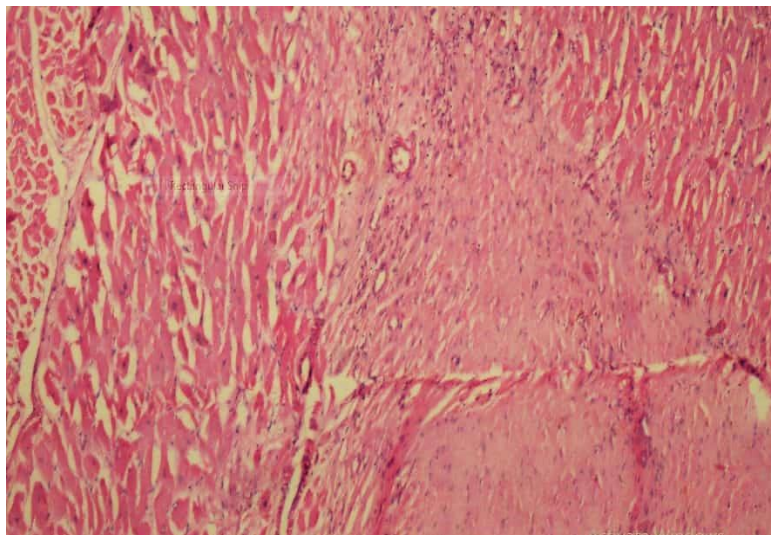


TABLE 1: Age and sex wise distribution

	Present study		
Age group	Male	Female	Total
21-30	39	26	65
31-40	54	8	62
41-80	97	18	115
Total	190(78.5%)	52(21.4%)	242(100%)

TABLE 2: Age and sex wise distribution of Myocardial infarction

Present study				
Age group	Total cases	Myocardial infarction cases		
		Male	Female	Total
21-30	65	2	0	2(3.07%)
31-40	62	8	0	8(12.90%)
41-80	115	30	2	32(28.57%)
Total	242	40	2	42(17.35%)

TABLE3:Area wise distribution of recent infarct

Area involved	No of cases
Right ventricular wall	1
Left ventricular wall	20
Interventricular septum	22
Apex	27
Right ventricular wall	1

Discussion:

This retrospective study was conducted in autopsy section of pathology department, civil hospital, Ahmedabad. A Total of 242 post-mortem heart of deceased patients under the age group of 21-80 years were included over a period of 6 months.

In the present study it was observed that total 10 cases were show changes of Myocardial infarction in the age group of 21-40 years, in which maximum cases were found in age group of 31-40, which are similar to Beelwal study[8], Alpana jain et al[9] and Udhreja et al[10] studies (Table-4).

In the present study total 10 case were found under the age group of 21-40 years as compared to the age group of 41-80 years, 32 cases were found, which are similar to Beelwal study[8], Alpana jain et al[9] and Udhreja et al[10]studies (Table-4).

Myocardial infarct were seen in different areas of the heart involved. Apex was observed to be the most commonly affected (Table-3) by myocardial infarction followed by interventricular septum and left ventricular wall.

TABLE 4 : Age and sex wise distributionof myocardial infarction and Compared study

Age group	Present study		Beelwal study[8]		Alpana jain study[9]		Udhreja et al[10]	
	Male	Female	Male	Female	Male	Female	Male	Female
21-30	2	0	13	2	3	1	3	1
31-40	8	0	15	2	7	0	12	0
41-80	30	2	40	3	10	1	30	5
Total	42(17.35%)		75(12.5%)		22(18.03%)		51(20.4%)	

Of 42 cases, 40 males and 2 females (Table-1) show changes of myocardial infarction in the study. Males are more commonly affected than female, which are more similar to the beelwal et al[8], Alpana jain et al[9] and Udhreja et al[10] studies (Table-4).

Conclusion:

In the present study it was observed that among the 127 cases, total 10 (7.27%) cases were show changes of myocardial infarction in the younger age group of 21-40 years. This study shows an increase in the

The reason is that males are bread earners and females usually doing household work, which makes the males more vulnerable to accidents, violence, and stress. Furthermore, males more indulge themselves in smoking; alcoholism, etc

number of myocardial infarction cases in young population and therefore draws attention for early screening and preventive techniques. The incidence of myocardial infarction is more common in males compared to females.

The heart is a vital organ and is very difficult to study in living persons so autopsy study provides a good platform for detailed study of atherosclerosis and various lesions. Although the number of cases in present study is small but the observations are correlated with many similar studies.

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