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FACTORS LEADING TO DELAY HOSPITAL ARRIVAL TIME IN ACUTE MYOCARDIAL INFARCTION

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ABSTRACT

Objective: To determine pre hospital time (PHT) in our population and factors associated with this phenomenon **Materials and Methods:** This study was conducted at the Cardiology Department, Services hospital, Lahore.. One hundred and eighty five consecutive patients of acute ST segment elevation MI were recruited in this study. Both male and female patients of any age were included. Time from onset of symptoms till arrival at the hospital was noted for every patient and in case of delay the factors leading to this delay were inquired from every patient. Factors taken into consideration were, financial, long distance, lack of awareness, local general practitioners (GPs), no attendant at home, and others i.e. conveyance etc. **Results:** Mean age of the study population was 55±12 years, 30(70.30%)were male and 55(29.7were female. Among associated risk factors, smoking topped the list 102(55.1%) followed by hypertension 81(43.8%) and diabetes 52(28.1 ^{0}/0). The distribution of delay of presentation was as follows: 43.8% patients within 4 hours, 23.2% in 4Shours, 11.4% in 8-12 hours, 9.2% in 12-16 hours, 3.8% in 16-20 hours and 8.6% of patients presented to cardiac emergency more than 20 hours of the onset of symptoms. Anterior wall myocardial infarction was most frequent in our study whereas inferior wall MI was second in frequency 46(24.9%). Delayed presentation was observed more frequently in female population (72.72%). When clinical factors were taken into account, 58.02% hypertensives, 56.52% obese and 53.8% diabetics presented late. Local general practitioners were most frequent factor in 28% of 104 patients, followed by lack of awareness (10.8%). Long distance from emergency coronary care was a factor in 7.6% of the study population. **Conclusion:** The results of this population based study showed majority of the study population exhibited prolonged delay (>4 Hrs). Moreover local general practitioners and lack of awareness of ischemic symptoms were most common factors for pre-hospital delay. Pre hospital delay was much more frequent among female study population.

KEYWORDS: Phenomenon, hypertensives.

INTRODUCTION

Coronary artery disease is the leading cause of death in the world.[1] Even in this galactic age when man has developed state of the art interventions to cope this potentially fatal condition, time is still a big constraint. This is because in a setting of acute myocardial infarction, lifesaving benefits of thrombolytic agents are time dependent.[2]

Even before the clinical use of thrombolytic agents, factors associated with time to hospital presentation, and components of delay, were begin to be studied [3] Having life saving interventions in hand, the analysis of the temporal window between the onset of symptoms and reperfusion therapy as a determinant of treatment outcome is a key area of interest [4] Technical delay in intervention is, though involved, but the greatest two weeks before this admission and patients who were dead at the time of arrival were not included in this study.

Demographic and socioeconomic variable of interest were age, sex, living arrangement (alone or not alone), location of residence (urban or rural), employment status. Clinical characteristics noted at the time of admission included a history part of the pre hospital time (PHT) — as much as 75% of it—consists of the patient's own decision time.'

International studies have revealed that a very wide range of pre hospital delay times (a few minutes to several days) is a ubiquitous phenomenon 6-9 The PHT in the United States, the United Kingdom, and Germany is much high, but it is even higher in Asian countries. The median PHT is 3.5 hours (I .2 to 15.2 hours) in the

United States and 2.5 hours (1.5 to 8.7 hours) in the United Kingdom, but 4.4 hours (1.8 to 13.3 hours) in South Korea and 4.5 hours (2.0 to 16.3 hours) in Japan. The mean PHT in Germany is now 3.2 hours,[9] This study is conducted with an objective to determine PHT in our population and factors associated with this phenomenon.

MATERIAL AND METHODS

This study was conducted at the Cardiology Department, Services hospital, Lahore. One hundred and eighty five consecutive patients of acute ST elevation MI were recruited in this study. Both male and female patients of any age were included. Patients were included if they met two of the following clinical criteria

1. Typical symptoms of acute MI (ChestDiscomfort, arm or shoulder pain)
2. ECG findings compatible with acute MI
3. Elevated CPK and CK-MB levels that were above the upper limit of normal.

Patients with the history of MI during the last of hypertension, diabetes mellitus, hyperlipidemia.
Angina, previous MI, family history of IHD and any history of revascularization (PCI, CABG).

Time from onset of symptoms till arrival at the hospital was noted for every patient and in case of delay the factors leading to this delay were inquired from every patient. Factors taking into consideration were, financial, long distance, lack of awareness, local general practitioners (GPs), no attendant at home, and others i.e. conveyance etc. Relevant clinical examination of all the patients included in the study was done with emphasis on pulse, blood pressure, precordial examination and signs of congestive cardiac failure. ECG was done once daily in all patients. X-ray chest was done only in those patients having signs of left ventricular failure. Site of myocardial infarction was noted for all patients.

Statistical Analysis

Data were entered into SPSS (Statistical package for Social Sciences) Version 13.0 for Windows. Categorical variables were expressed as frequencies and percentages while continuous variables were presented as means±Standard deviations (SD). Frequencies of various predictors of delayed presentation were expressed in percentages.

RESULTS

Mean age of the study population was 55±12 years, 130(70.30%) were male and 55(29.7%) were female. Among associated risk factors, smoking topped the list 102(55.1%) followed by hypertension 81(43.8%), diabetes 52(28.1 ^{0}/0), obesity 46(24.9%), dyslipidemia 31(16.8%) and family history 23(12.4%) (Table-I).

The distribution of delay of presentation was as follows: 43.8% patients within 4 hours, 23.2% in 4-8 hours, 11.4% in 8-12 hours, 9.2% in 12-16 hours, 3.8% 16-20 hours and 8.6% of patients presented to cardiac emergency >20 hours of the onset of symptoms. Anterior wall myocardial infarction was most frequent I l I (60%) in our study whereas inferior wall MI was second in frequency 46(24.9%). Twelve (6.5%) patients had lateral wall MI, 9(4.9%) had inferior and posterior wall Ml and had global Ml. The frequency of inferior wall MI along with RV infarct was 2(1.1%) (Table 1).

Table-I: Demographic Criteria of Patients.

Demographic Characteristics	Numbers (Percentages) n=185
A e mean ears	55 ± 12 Years
Gender Male Female	130 (70.30%)
Major Risk Factor of Ml Hypertension Diabetes Mellitus Smoking Family History Obesity D slipidemia	81 (43.8%) 52(28.1%) 102(55.1%) 23(12.4%) 46(24.9%) 31(16.8%)
Time of presentation Within 4 hrs 4-8 hrs 8-12 hrs 12-16 Hrs 16-20 Hrs > 20 hrs	81 (43.8%) 43(23.2%) 21(11.4%) 17(9.2%) 7(3.8%) 16(8.6%)
Type of Ml	

Anterior Wall MI Inferior Wall Ml Inferior wall + RV Ml Inferior wall + Post Wall Ml Lateral Wall Ml Global Ml	11 1 (60.0%) 12(6.5%) 5(2.1 ^{O}h)

Delayed presentation was observed more frequently in female population (72.72%). When clinical factors were taken into account, 58.02% hypertensives, 56.52% obese and 53.8% diabetics presented late. Advanced age was also associated with delayed presentation as 52.7% patients with age more than 60 years presented late (Table 2).

Table-2: Risk factors of ischemic heart disease in patients presenting late.

Risk factor	Numbers (Percentages) n=104
Female	72.7%
Hypertensive	58.02%
Obesity	56.52%
Diabetics	53.8%
Age >60 years	52.7%

When factors associated with delay were analyzed, local general practitioners were found to be most frequent factor in 28% of 104 patients, followed by lack of awareness (10.8%). Long distance from emergency coronary care was a factor in 7.6% of the study population. Other factors like conveyance, hesitation in seeking medical advice etc were found in 7.6% of population. Financial constraints were a delay factor in 1.1% and lack of attendant at home in 1.1%. Eighty one patients were not able to give proper history regarding exact time of onset of symptoms; therefore, they were excluded from the analysis (Table 3).

Table-3: Factors leading to Late Presentation.

Factors	Numbers (Percentages) n=104
Local Clinics (GPs, Hakims, Quaks etc)	
Lack of awareness	
Long distance	
Others (Conveyance etc.)	14(76%)
Financial	
No attendant at home	

GP=General Practitioner

DISCUSSION

The results of our study showed a grim picture as a major proportion is "late comers" for the so called "golden hour" after the onset of symptoms. This is in consonance with studies conducted in other countries. According to ARIC study in the USA, with data on 18928 patients, revealed that the PHT did not shorten over the period of thirteen years (from 1987-2000), although the percentage of patients who called the emergency medical services increased significantly.[8] Similarly, MITRAplus registry in Germany: The American NRMI-2 myocardial infarction registry[11] and Worcester Heart Attack Study.[12] at Massachusetts showed no improvement in the time from symptom onset to treatment. This PHT is a product of multitude of factors as investigated in different studies so far. Meischke et al studied a possible effect of patient sex and symptoms on the PHT: although sex differences existed in the frequency of three different symptoms (women had cold sweats less frequently, but nausea and dyspnea more frequently), interestingly, it was only the more frequent sweating among men that led to a shortening of the pre-hospital delay. Nonetheless, most studies conclude that the PHT is significantly longer among women than among men[5,7] Most studies have found hypertension and diabetes as factors for pre-hospital delay due to less sensitivity to pain as proposed explanation According to different studies, the greatest part of the prehospital time (PHT) — as much as 75% of it — comprised ofthe patient's own decision time,[6,5] in our study however, it was local general practitioners (GP clinics, Hakims, Quacks etc.) who were responsible for keeping the patient from ideal coronary care to the major extent. The reasons for that could be incompetence to analyze symptoms, financial motives as GPs and quacks are fond of "admitting" the patients and treating them whatsoever IV infusion they have. Different studies showed patients subjective reasons responsible for pre-hospital delay:

The patient does not feel ill enough to call the emergency medical services.[16]

The patient believes the family physician is on his or her side.[17]

The patient desires the family physician's permission to call the emergency medical services.[17]

The patient believes calling the family physician first is the right thing to do, so that the family physician can then notify the emergency medical services.[17]

Most people do not know much about heart attacks. Many however, do know that chest pain is an important symptom, but only a few can correctly name more than two further symptoms.[18] Thus, a number of studies have conducted to answer the question whether pre-hospital delays might be shortened by public education in the print and electronic media, public events, and in special

training courses. According to a review of ten studies on the influence of such efforts on the PHT,[19] few studies showed significantly shorter pre-hospital times than before the intervention,20,21 while others revealed no change.[22,25] However, there is a dire need for continued medical education of general practitioners so that they can better evaluate cardiac symptoms and make early referral possible. Moreover, concerted efforts are needed at both the government and community levels to stamp out the curse of quakes.

CONCLUSION

The results of this population based study showed majority of the study population exhibited prolonged delay (>4 Hrs). Moreover local general practitioners and lack of awareness of ischemic symptoms were most common factors for pre-hospital delay. Pre hospital delay was much more frequent among female study population.

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