Original Article

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FACTORS CAUSING DELAYED PRESENTATION OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION TO THE HOSPITAL

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ABSTRACT

Objective: To determine the frequency of various factors of delayed arrival of patients with acute MI to the hospital.

Study Design: Descriptive.

Place and Duration of Study: Armed Forces Institute of Cardiology/ National Institute of Heart Diseases (AFIC/ NIHD), Rawalpindi, from October 2006 to January 2007.

Methodology: One hundred patients with acute MI were interviewed for information about the time of onset of symptoms and past medical history. The demographic data and the time of arrival to Emergency Room (ER) were noted from the hospital records. The nature of symptoms and the subsequent events up to the arrival at the ER of AFIC/ NIHD were inquired about and the cause of delayed arrival determined. All the data obtained was analyzed using SPSS version 10.0.

Results: Misinterpretation of symptoms was the chief factor for delayed hospital arrival (49%) followed by consulting a local medical practitioner (25%), living in an area far away from any hospital (10%), waiting for the symptoms to subside with treatment at home (8%), lack of transport (4%) and having no attendant to bring the patient to the hospital (4%).

Conclusion: Lack of awareness of ischemic symptoms, wasting time by going to local clinics and logistic difficulties are the chief factors causing delayed hospital arrival in patients of acute MI.

Keywords: Delay, Myocardial infarction, symptoms.

INTRODUCTION

Acute MI is the leading cause of death worldwide[1]. The mortality associated with MI has been falling in the western world over the decades as a result of better healthcare[2,3] but is expected to rise in the developing world[4].

Approximately 90% of patients with MI have a thrombotic occlusion of a coronary artery. It occurs as a result of an inflammatory process[5] known as atherosclerosis. The process of infarction takes several hours to progress. If intervention is done during this time, it is possible to salvage myocardium. Hence the phrase "minutes mean muscle".

The mainstay of treatment for ST elevation myocardial infarction (STEMI) is reperfusion therapy. It is done either by performing primary percutaneous coronary intervention (PCI) or by administering a fibrinolytic agent[6]. An important factor in management of acute MI is its timely administration[7]. Most of the deaths due to acute MI occur out of the hospital, before admission[8]. Various time goals have been set to ensure timely management in the hospital. The "door-to-balloon" time, that is, time taken from the entry into the hospital to PCI should be less than 90 minutes[9]. The "door-to-needle" time, that is, time taken from entry into the hospital facility to start of thrombolytic therapy should be less than 30 minutes[10]. Up to 50% reduction in mortality can be achieved if thrombolytic therapy is initiated within 3 hours of onset of symptoms[11]. The therapy remains of benefit up to 12 hours especially if Q waves have not been formed[12].

Although great stress is laid on early management in hospital, many patients end up being late for fibrinolytic therapy because of late presentation to the hospital[13]. The median time to reach hospital after initiation of cardiac symptoms is 4.5 hours[14] and 25-33% after more than 6 hours[15]. If this factor is dealt with, many more patients can benefit from treatment, saving many lives and improving the quality of life in many other cases by preventing complications. Some work has been done worldwide to address this issue but the local data is severely lacking. Such information is

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crucial for designing appropriate educational programs for the patients in particular and the community in general.

The aim of this study was to identify various factors causing delay in presentation of patients with acute MI to the hospital.

MATERIAL AND METHODS

This descriptive study was carried out in Armed Forces Institute of Cardiology/ National Institute of Heart Diseases, Rawalpindi. The permission to carry out the study had been sought from hospital authorities. One hundred cases of acute MI were included by non probability convenience sampling. The inclusion criteria were:

1. Patients fulfilling the European Society of Cardiology / American College of Cardiology diagnostic criteria of Acute MI.[16]
2. Patients arriving at the hospital Emergency Room more than three hours after the onset of symptoms.

The patients or the attendants were interviewed according to a preset questionnaire after taking informed consent. The interview covered the patients' symptoms, the time of onset of symptoms, the subsequent events and the past history. The patients' medical documents were used to note the demographic data and time of arrival to the hospital. Arrival time minus the time of symptom onset was calculated to be the pre-hospital delay and it was calculated in hours. The patients were inquired about the reason for delayed hospital arrival.

If the patients initially attributed the symptoms to causes other than heart disease, it was considered misinterpretation of the symptoms. If the patient had to travel more than 30 km or one and a half hour to reach the hospital, he/she was considered to live far away from it. The patients were categorized into three groups according to their education: matriculation and below, up to graduation and post-graduation. The chest pain was categorized into mild, moderate and severe. The mode of conveyance was classified as using an ambulance, own/ friend's or neighbor's car or a hired transport.

Both numerical and categorical data were analyzed. The frequency for the factors causing delay given by the patients was calculated. In addition, the frequencies for gender, age of patients, education, marital status, mode of transport, severity of pain, other symptoms, medical history and time of the day were also noted and any association of these variables with causes of delay was looked for. The associations between various categorical variables were analyzed using Chi square test and probability < 0.05 was considered significant. SPSS version 10.0 was used for statistical analysis.

RESULTS

The patients varied in age from 32 to 90 years. The mean age was 60.5 years (SD = 13.3) and 91% were more than 40 years old. There were 17 female patients (mean age 65.9 years, SD = 12.6) and 83 male patients (mean age 59.4 years, SD = 13.2).

The reasons / factors identified by the patients for late presentation to the hospital fell into seven categories as shown in Table I.

Fifty five patients were educated up to matriculation and forty had done graduation. Five had had higher education.

A total of 65% patients were married. Six were unmarried, four had been divorced whereas 25 had been widowed. The mean delay time was greatest for divorced patients (9.5 hours).

Sixty six percent patients used their own conveyance or asked a friend or a relative to take them to the hospital while 17% used hired transport like a taxi or a wagon. Only 17% used an ambulance to reach the hospital.

The majority of the patients (53%) suffered from moderate, 34% from mild and 13% suffered from severe chest pain. The mean delay time was longest i.e. almost 9 hours for patients with mild chest pain.

At least one other symptom besides chest pain was present in 74% patients. The common

symptoms mentioned by the patients were sweating (26%), breathlessness, vomiting, nausea and anxiety. Some patients also suffered from a feeling of suffocation, dizziness, bloating and pain in the back.

The record of significant past medical history was sought. It was found that 81% patients had one or more than one risk factors for coronary artery disease. Hypertension and diabetes mellitus were present in 37% and 32% respectively whereas 19% were already being treated for ischemic heart disease. Twenty percent patients (all men) were smokers.

The time of onset of symptoms was analyzed to determine if there was any association with the time of the day. The symptoms started during day hours in 51% patients.

DISCUSSION

The patients differed in age from the young to the very old but the majority was over 40 years old. This is partially because IHD is predominantly a disease of the elderly and also because older people delay more in reaching the hospital as compared to young ones[17, 18].

The patients identified various factors which resulted in delay in their arrival to the hospital. A staggering 49% misinterpreted the symptoms as being muscular in origin or thought that they had "gas" (indigestion and bloating). Though misinterpretation of symptoms has been mentioned in other studies as a factor causing delay, this study shows it to be a dominant factor. Furthermore, the majority misinterpreting angina as "gas" is something not commonly documented. This study signifies that the dyspeptic symptoms may be occurring due to ischemic heart disease. We need to ascertain how many patients presenting in our hospitals with indigestion are, in fact, suffering from angina. It has also been studied that those who misinterpret their cardiac symptoms tend to present late to the hospital[19].

Going to the nearest clinic for treatment of chest pain caused 25% patients to present late to the hospital. Patients lose precious time by consulting general practitioners. Thus, it is better for the patients suffering from chest pain to try to go directly to a hospital equipped with cardiac care facilities and expertise. The medical infrastructure in our country starts with Basic Health Units. A step up the ladder is Rural Health Centers, then Tehsil Headquarter hospitals and then come the District Headquarter (DHQ) hospitals. DHQ hospitals have the provision of streptokinase administration. At the end of this chain are the tertiary care/ teaching hospitals where PCI and coronary artery bypass surgeries are performed. There are only 31 cath labs in the country out of which 23 are concentrated in only three cities, that is, Lahore, Karachi and Rawalpindi/ Islamabad. As a result, people living in rural areas have to travel great distances to reach a tertiary care hospital. Among the patients studied, 10% arrived later than three hours because they lived in some distant area. Arrangements should be made to provide better medical infrastructure in rural areas too.

The logistic difficulties came into play when some patients were unable to find any conveyance and others could not find any relative or a friend to take them to the hospital. Only 17% patients used an ambulance to reach the hospital. This shows the deplorable condition our emergency medical services are in. In France, almost 62% patients used an ambulance to reach the hospital[20]. In our country, relying on emergency ambulance service is not a viable option at present. Therefore, in the guidelines of Pakistan Cardiac Society for the management of STEMI, patients have been encouraged to use their own means to get to a hospital[21]. Lately, emergency ambulance service has been started in a few cities of Pakistan but considering the magnitude of the problem, we still have a long way to go.

According to some studies, making the decision to call for help is the critical factor causing delay in reaching the hospital[22]. Others think that only severe chest pain warrants going to a large hospital[23]. Those with mild to moderate chest pain or those who do not perceive their symptoms to be of cardiac origin

are more likely to consult a doctor in a clinic/ small hospital. Eight percent of the patients got delayed for treatment because of this reason. It makes it important that the health care providers educate them about the proper course of action in case of angina. Furthermore, those patients who had classified their chest pain as mild took the longest time to reach the hospital. They took the usual route of procrastination, self-medication or visiting the local clinic for it. Only when the pain continued did they take it seriously and went to the cardiac care facility.

Awareness about coronary artery disease is lacking in all the segments of our society as 55% patients had had less than ten years of formal education and 45% were graduates or more qualified. Thus, an awareness campaign is called for to improve the knowledge about this important public health issue.

The majority of patients (65%) were married. People who consult their spouses when they suffer from chest pain have been noted to present late to the hospital[24]. This may well be the cause of late arrival of married patients in this study too.

Many diseases predispose to ischemic heart disease. In an Indian study, the most common risk factors for myocardial infarction were hypertension (55%) and smoking (36%) followed by diabetes mellitus, dyslipidemia and family history[25]. Hypertension and diabetes mellitus were common in the patients in this study too.

CONCLUSION

Lack of awareness of the symptoms of ischemic chest pain, going to local clinics, medication at home and logistic difficulties are the factors causing delayed hospital arrival in patients of acute myocardial infarction. The patients around Rawalpindi/ Islamabad are relatively well educated and means of communication and infrastructure are well developed so the results may not apply everywhere in Pakistan. However, they do provide material for further studies to identify and tackle the factors that delay provision of cardiac care.

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