

# Prodromal Symptoms In Acute Myocardial Infarction

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## SUMMARY:

One hundred consecutive cases of acute myocardial infarction patients admitted to the N.I.C.V.D., Karachi, were studied to determine the frequency and nature of prodromal symptoms in the 8 weeks prior to their infarction. Of these patients, 77% reported prodromata. 78% of these reported chest discomfort as the most frequent symptom. 46% had symptoms limited to one week prior to infarction. Only 3.9% of patients with prodromata were hospitalized for their symptoms. In conclusion, prodromal symptoms preceding an acute myocardial infarction are very common in our population. In the majority these are not recognized to be cardiac in origin. There is a dire need both for patient and physician education.

## Introduction:

Acute myocardial infarction is a very common medical emergency. Its prevalence in Pakistan is comparable to that in the West<sup>1</sup>. It has a very high mortality and of the 50% who die—30% of patients die before receiving medical care; the remaining 20% die over the following days to weeks. It is known that a majority of patients experience prodromal symptoms days to weeks prior to the impending myocardial infarction.<sup>2</sup>

Prodromata have been defined as a constellation of new symptoms, a sign of a health deviation, or a worsening in a stable pattern of symptoms that occurred within 8 weeks prior to the acute myocardial infarction.<sup>3</sup>

The objectives of this study were to ascertain the presence and nature of prodromata, and assess historical and epidemiologic data to identify prodromata in groups at high risk for acute myocardial infarction. Thus, a strategy may be evolved using prodromata to identify and aggressively treat these patients.

## Material and Methods:

One hundred consecutive non-selected patients admitted to the N.I.C.V.D., Karachi, from November 19—December 12, 1991 were interviewed. These patients were diagnosed as having an acute myocardial infarction according to the WHO criteria viz: a typical history, elevated serum cardiac enzymes, and evolutionary changes on ECG—two of these three criteria were necessary for diagnosis.<sup>4</sup> Data was obtained directly from patients within 48 hours of admission with a pretested and validated questionnaire, based on a study conducted by Simon, Alonzo and Feinleib in 1973.<sup>3</sup> The following characteristics were studied: age, sex, occupation, smoking, presence of diabetes mellitus or hypertension, previous episodes of acute myocardial infarction, the New York Heart Association pre-hospitalization Functional Classification<sup>2</sup>, Prodromal symptoms and their duration and severity, and action taken. The chi square test for 2 x n comparison was used for statistical analysis.

## RESULTS

### Patient Characteristics:

The mean age of the patient population was 55.5

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years with ages ranging from 20-85 years. The male: female ratio was 6.7:1. 24% patients were diabetic and 46% were hypertensive. 65% were smokers. 30% patients had a prior history of myocardial infarction. The patients were classified functionally according to the New York Heart Association criteria as seen in Table 1. The site of infarcts were as follows: anterior 46%; inferior 46%, lateral 4% and subendocardial 4%.

TABLE 1.

FUNCTIONAL CLASSIFICATION OF PATIENTS

NYHA FUNCTIONAL CLASS		PREVALENCE (%)
CLASS	I	53
	II	30
	III	12
	IV	05

Prodromal Symptoms:

Seventy-seven out of a 100 patients experienced prodromal symptoms within 8 weeks prior to the acute myocardial infarction. These symptoms lasted for 1 week in most patients. Out of these 77 patients, 78% complained of chest discomfort, 48% had fatigue, 44% experienced arm and other pain including epigastric, neck and jaw pain, 38% complained of dyspnea. (Figure 1).

Similarly, other symptoms like dizziness/syncope, emotional changes, anorexia/nausea and ankle edema were seen in fewer numbers.

A noteworthy observation is that anginal symptoms like chest discomfort, arm pain, and dyspnea were present alone or in combination in 88% of patients with prodromal symptoms, i.e., 12% of patients experienced non-specific symptoms prior to their myocardial infarction while 88% had symptoms relating specifically to the heart.

Prodromata in Sub-groups:

Different sub-groups were studied to see if any had a greater frequency of prodromata. There was

no difference in the incidence of prodrome between males and females. Likewise, no significant difference was found in different age groups, diabetics hypertensives, smokers, different functional classes, or those with a past history of myocardial infarction. In addition, the type of myocardial infarction was not related to the incidence of prodromata. (Table 2).

TABLE 2.

PRODROMATA IN SUB-GROUPS

	PRESENT	ABSENT
Male/Female	66/11	21/2
<55 Yrs/≥ 55 Yrs	38/39	12/11
DM/No DM	18/59	06/17
HBP/Normal	37/40	09/14
Smokers/Non-Smokers	59/18	15/08
F.C. I & II/III & IV	63/14	21/02
Prior MI/No Prior MI	57/20	13/10

Physician Consultation:

During the prodromal period, females were significantly more likely to consult a physician for their symptoms than were males. However, there were no significant differences in physician consultation in the other sub-groups: age, diabetes, hypertension, smoking, functional classes, and history of prior myocardial infarction. (Table 3).

TABLE 3.

PATIENT RESPONSE TO PRODROMATA

	PHYSICIAN CONSULTED	NO CONSULTATION
M/F	35/10*	31/01*
<55 Yrs/≥55 Yrs	20/25	18/14
DM/No DM	07/38	12/20
HBP/Normal	27/18	12/20
Smokers/Non Smokers	29/16	22/10
F.C. I & II/III&IV	33/12	31/01
Prior MI/No Prior MI	35/10	26/06

Appropriation of Action Taken

It is important to correctly recognize prodromata so that appropriate action can be taken by a patient

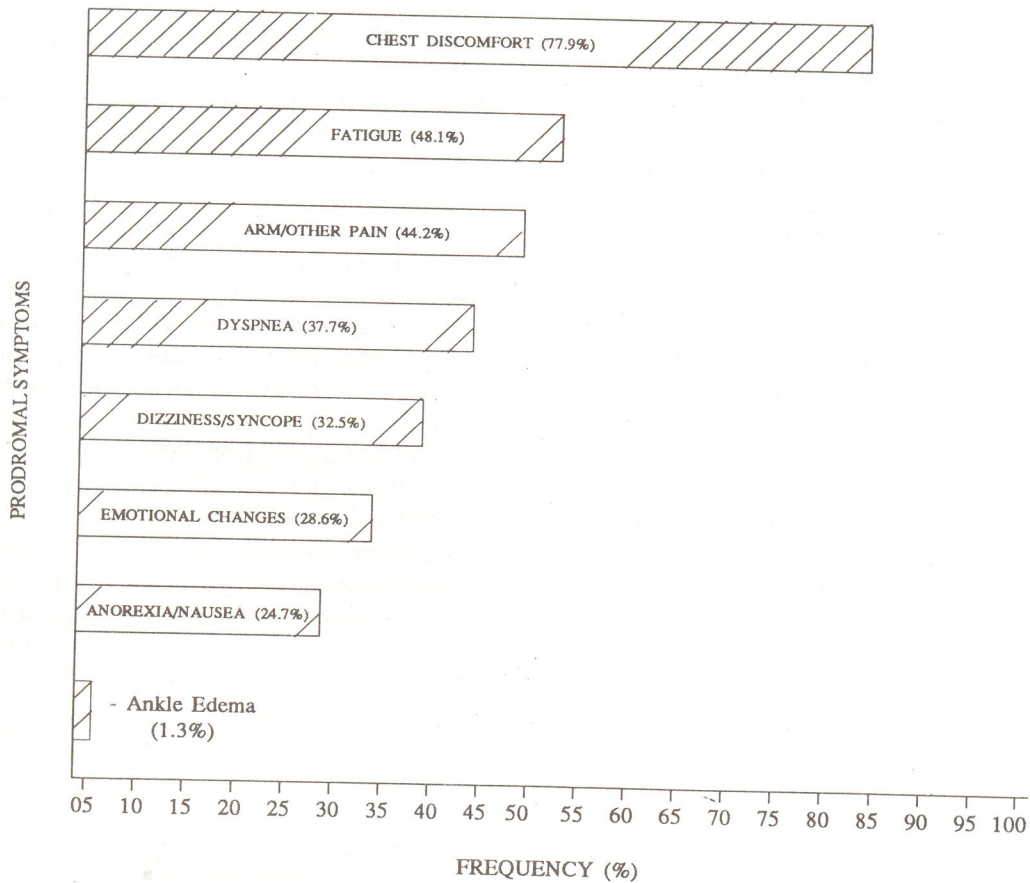


Figure 1: Frequency of Prodromal Symptoms.

and/or a physician, i.e., hospitalization. It was found that only 27.3% of patients who had prodromal symptoms recognized them to be cardiac in origin and only 15.6% visited a hospital for their prodromal symptoms. However, only 3.9% were actually admitted to hospital whereas the remainder were sent home after evaluation of their symptoms (without being told that they had a cardiac problem). (Table 4).

TABLE 4.

## APPROPRIATENESS OF ACTION TAKEN

Recognition of Prodromata	
As Cardiac	21(27.3%)
Hospital Visit for Prodromata	12(15.6%)
Hospitalization for Prodromata	03(3.9%)

## Discussion:

Previous studies indicate that the incidence of prodromal symptoms in patients hospitalized for acute myocardial infarction ranges from 20-70%. The higher incidences which have been reported more recently in the literature reflect the direct interviewing of patients and relatives rather than obtaining data from hospital records.<sup>5,6,7</sup> Similarly, this study indicates that prodromata are very common (77%) in patients hospitalized for acute myocardial infarction at NICVD, Karachi. However, they continue to be ignored or misinterpreted both at the patient and physician levels.

This study sheds some light on the possible reason for such apathy. Lack of awareness regarding the presence of a prodromal syndrome plays an important role. A large number of patients (40%) did not consult a physician for prodromal symptoms. Moreover, patients with a past history of myocardial infarction and those with greater functional impairment—all groups which may have been expected to



respond appropriately, did not do so. Despite physician consultation the majority of patients with prodrome (96%) were not hospitalized, as the doctors were unable to appreciate the potentially serious nature of the symptoms. It is noteworthy that three-fourths of these patients were seen by community physicians but not referred to a hospital. Likewise, of those few who reached the hospital, only one-fourth were admitted. Thus, patients as well as physicians in both community and tertiary care settings require education regarding recognition and management of prodromal symptoms. However, two additional features need to be kept in mind. Firstly, the patients who visited primary physicians may have obtained symptomatic relief either spontaneously or secondary to medications given to them. (The prescriptions were not available to the authors). Secondly, overburdened health care systems often cannot accommodate patients who genuinely require prompt medical intervention.

Can ignorance alone explain the lack of recognition and treatment of prodromal symptoms? It seems that the nature, severity and duration of the symptoms also determine whether health care was sought or not. For example, 75% of patients experienced mild and moderate symptoms, and only 6.5% had an acute onset (limited to 1 day). In addition, substantial numbers reported vague, non-specific symptoms such as emotional changes, anorexia and nausea. As a result, prodromata were often not perceived as requiring urgent medical attention by patients or physicians.

An outstanding feature of this study was that females with prodromal symptoms tended to consult a physician significantly more often than males. This trend is comparable to Western studies<sup>3</sup> although women in Pakistan would be expected to be at a greater disadvantage in obtaining medical care. It is possible that financial and job constraints of working men forced them to ignore serious though tolerable prodromal symptoms more often than housewives.

This study was limited by the unavailability of prescriptions and medications and did not permit one to clearly identify what interventions were undertaken by the physicians in response to prodromal symptoms. The high frequency of prodromata seen in hospitalized patients may not accurately reflect its incidence in communities, since it represents the population that is more likely to seek medical care. Also, there is no data available on the incidence of

prodromata in higher risk patients who had sudden cardiac death and hence remained unidentified.

### Conclusions and Recommendations:

As prodromal symptoms occur very commonly in patients hospitalized for acute myocardial infarction and are not recognized by doctors or patients as an **emergency**, it is imperative that this prodromal syndrome be explained to the community and physicians<sup>8</sup>. Before a large scale educational program is launched, we need wide scale community-based studies to more clearly define the pattern, timing and frequency of prodromata for early detection and prompt hospitalization. Although the exact outcome of rigorous intervention during the prodrome is not known, evidence exists that "two thirds of those who experience an acute myocardial infarction or fatal arrhythmias have had prior prodromata." Consequently, there is a dire need for patient and physician education as for as recognition and aggressive treatment of prodromata of acute myocardial infarction is concerned.

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