

Incidence of 'Precordial ST- Segment Depression' in Acute Inferior Myocardial Infarction.

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Abstract

Patients of acute inferior myocardial infarction, in addition to the ST segment elevation in inferior leads often have ST segment depression in the precordial leads. This study was performed to observe the incidence of these 'reciprocal' ST changes. One hundred consecutive acute inferior myocardial infarction patients were included in the study. They were further allocated to two electrocardiographic groups. Group 1 consisted of patients of acute inferior myocardial infarction with precordial ST segment depression & Group 2 consisted of patients of acute inferior myocardial infarction without precordial ST segment depression. Among the 100 consecutive patients, a large number of patients were included in group 1 (76%). Significant number of patients of group 1 belonged to the age group of above 60 years compared to group 2 (27.6% vs. 4.2% ; $p < .02$). Conversely significantly higher number of younger patients ≤ 40 years belonged to group 2 (41.7% vs. 11.9% ; $p < .01$). Mean ST segment elevation (mm) was also significantly higher in group 1 than group 2 (4.07 ± 1.93 vs. 2 ± 0.78 ; $p < .001$). The patients of acute inferior myocardial infarction thus show a significant number of ST segment depression in their precordial leads. In different studies these subset of patients showed increased morbidity and mortality.

Key words: acute inferior myocardial infarction, precordial ST segment depression.

Introduction

Myocardial infarction is the term applied to myocardial necrosis secondary to acute interruption of coronary blood supply.¹ The earliest changes seen with an acute transmural infarct are usually in the ST-T complex.² In acute transmural infarct, ECG shows typical ST segment elevation (termed "indicative" changes) in the leads facing the area of infarction. Apart from these ST segment elevation changes, the leads remote from the area of infarct often show ST segment depression, which is not always present even when the ST elevation is extreme. Again when reciprocal ST segment depression is present, it does not always have the same time course as the ST segment elevation. This observation makes the issue more controversial.³ Reciprocal ST-segment depression during acute myocardial infarction is a common finding occurring in about 54-82 %. Although such ST segment depression reflecting the remote non infarcting myocardial wall was described 49 years ago, the pathogenesis of such electrocardiographic changes still remains controversial. The aetiology and significance of these reciprocal ST segment changes has been the subject of several conflicting reports over the years.⁴

Material and Methods

This study involved 100 consecutive patients of acute inferior myocardial infarction, admitted to the department of cardiology, NICVD, Dhaka. Duration of study January 1994 to December 1994.

Grouping of Patients

On the basis of ECG findings all the patients were divided into 2 groups.

- I. Group 1 : Patients of acute inferior myocardial infarction with ST- Segment depression in the precordial leads.
- II. Group 2 : Patients of acute inferior myocardial infarction without ST-segment depression in the precordial leads.

ECG evaluation

The earliest ECGs obtained were evaluated. Standard 12 lead ECGs were performed on all the 100 patients during their admission. All ECGs were recorded at 25 mm / sec. The magnitude of ST-segment deviation was measured from base line (TP – segment). For the diagnosis of acute inferior

myocardial infarction, patients should have ≥ 1 mm of ST-segment elevation (measured 80 ms after the J point of QRS complex) in leads II, III, avF. Significant ST depression was defined as 1 mm or greater horizontal or downward ST-segment depression measured at 80 ms after J point in leads V_1 - V_6 . The maximal ST-segment elevation in any inferior lead and maximal ST-segment depression in any precordial lead were recorded. The inferior ST-segment elevations were summed and mean was calculated.

Results

Patient’s characteristics

Total 100 acute inferior myocardial infarction patients were included in the study. The age of the patients remained from 31-81 years. Mean age was 51.22 ± 10.8 (mean \pm SD). Precordial ST segment depression was observed in 76 patients (76%), and they were included in Group 1, where as 24 patients (24%) did not show any precordial ST segment depression (Group 2). Significant number of patients of Group 1 were above 60 years, conversely significant number of younger patients (40 years or below) belong to Group 2. Male predominated in both the groups (Table 1).

Table 1: Patients characteristics

	Group 1 (n = 76)	Group 2 (n = 24)	p
No. of patients	76 (76)	24 (24)	
Age (years)			
>60	21 (27.6)	01 (4.2)	<.02
≤ 40	09 (11.9)	10 (41.7)	<.01
Male : female	6 :1	7 : 1	

() = percentage.

Magnitude of mean of maximum ST- segment elevation in any inferior leads:

In Group 1 patients, the mean of maximum ST-segment elevation in any inferior leads was 4.07 ± 1.93 mm (mean \pm SD). In contrast, the ST-segment elevation in Group 2 patients was 2 ± 0.78 mm, a value that was less than that of Group 1 ($p < .001$, Table 2).

Table: 2 Magnitude of mean of maximum ST- segment elevation in any inferior leads among the groups

Group	Mean ST-Segment elevation (mm) mean \pm SD
1 (n = 76)	4.07 ± 1.93
2 (n = 24)	2 ± 0.78

Z = 7.39, p < .001

Discussion

The acute inferior myocardial infarction patients may often show precordial ST-segment depression in addition to their ST-segment elevation in the inferior leads. With this background, the current observation reveals a large number of patients showed precordial ST-segment depression (76 % vs. 24 %). Similar incidences of precordial ST-segment depression were found in other studies. Ketz et al (1986) found it to be 72 % .⁵ Roubin et al (1984) found 63 % .⁶ Our patients of acute inferior myocardial infarction with precordial ST-segment depression were associated with older age group; on the other hand significant number of younger patients (< 40 years) did not show any concomitant precordial ST-segment depression. This is similar to the findings of Gelmen and Saltups (1982).⁷ Patients of acute inferior myocardial infarction with precordial ST-segment depression also had significantly higher mean of maximum ST-segment elevation in the inferior leads (4.07 ± 1.93 mm Vs 2 ± 0.78 mm).This observation coincides with the findings of Ruddy et al (1984).⁸

Conclusion

From the present study it reveals that a large number of patients of acute inferior myocardial infarction have the ST-segment depression in their precordial leads. This observation deserves further evaluation regarding patient’s morbidity, mortality and clinical management.

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