

PROGNOSTIC IMPORTANCE OF WBC COUNT IN ACUTE MYOCARDIAL INFRACTION

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Abstract

Background: Coronary artery disease is a major cause of death and is a global health problem becoming an epidemic in both developed as well as in developing countries.

Methods: 100 patients presenting to hospital within 24hrs with Acute MI and qualifying inclusion criteria were enrolled and written consent was taken regarding participation in the study.

Results: In a total of 100 patients participated in our study 69 patients were male and 31 patients were females. Out of 100 patients 26 had LV dysfunction, among these 23 patients 17 were having elevated WBC count and 9 had normal WBC count. Among 100 patients 11 had cardiogenic shock, among these 11 patients 8 had elevated WBC count and 3 had normal WBC count.

Conclusion: Elevated WBC count within 24 hours was associated with high rate of complications after acute myocardial infarction.

Keywords: STEMI, NSTEMI, WBC

Introduction

Coronary artery disease is a major cause of death and is a global health problem becoming an epidemic in both developed as well as in developing countries. In India there has been fourfold increase in prevalence of coronary heart disease in last 40 years.¹

Acute Myocardial infarction manifests as either ST segment elevation myocardial infarction (STEMI) or Non ST segment elevation myocardial infarction(NSTEMI).

Acute myocardial infarction is frequently associated with leukocytosis and relative increase in neutrophil counts. WBC count is a simple marker of inflammation, which plays an important role in acute myocardial infarction.²⁻⁴ The white blood cell (WBC) count is a simpler and more readily available marker of inflammation. Patients with acute myocardial infarction who have elevated WBC counts appear to be at higher risk of mortality and recurrent acute myocardial infarction (AMI).⁵ Recent studies have supported the prognostic value of the WBC as a predictor of the development of heart failure and death in both the short term and long term following ACS, particularly following acute myocardial infarction (AMI).^{6,10}

Objective

To study the association of WBC counts with complications following acute myocardial infarction.

Methods

100 patients presenting to hospital within 24hrs with Acute MI and qualifying inclusion criteria were enrolled and written consent was taken regarding participation in the study.

Inclusion criteria

Patients of age of more than 18 years with ST segment elevation acute myocardial infarction (STEMI) or non-ST segment elevation acute myocardial infarction (NSTEMI) on the basis of clinical history, examination, ECG changes and biochemical markers like Troponin T, CK-MB presenting to hospital within 24 hours.

Exclusion criteria

Patients with prior history of infarction, known case of cardiomyopathies were excluded. Similarly, presentation with fever, recent infection with 1 week, history of trauma, malignancy, myeloproliferative disorders, and recent surgical intervention that might have altered the leukocyte count, were excluded.

Results

In a total of 100 patients participated in our study 65 patients were male and 35 patients were females. This distribution shows the predominance of acute myocardial infarction among males.

Table 1: Association between WBC counts and complications of acute myocardial infarction

Complications	WBC count <11000/mm ³ (n=56)	WBC count >11000/mm ³ (n=44)	Total	P-value
Left ventricular failure	9	17	26	0.05
Cardiogenic shock	3	8	11	0.04
Long hospital stay (>6days)	13	24	37	0.001
In hospital mortality	1	6	7	0.02

Out of 100 patients 26 had LV dysfunction, among these 23 patients 17 were having elevated WBC count and 9 had normal WBC count.

Among 100 patients 11 had cardiogenic shock, among these 11 patients 8 had elevated WBC count and 3 had normal WBC count.

Among 100 patients 7 patients died, among these 7 patients 6 patients had WBC count and 1 patient had normal WBC count.

Total 37 patients admitted for more than 6 days, among these patients 24 had elevated WBC count and 13 had normal WBC count.

Discussion

The leukocyte response that occurs following AMI is a central part of the inflammatory reparative response that is initiated to replace the necrotic tissue with scar tissue. This may suggest that the greater the amount of necrosis, the larger the leukocyte response, an assertion based on experimental studies that show a direct relationship between the extent of necrosis and the level of both the local and the systemic leukocyte response^{11,12}.

In our study, we found that 44% patients were having high WBC count (>11000). Association between WBC count and acute cardiogenic shock first described by Friedman et al.¹³ in 1974

In our study we found that high WBC count was associated with more complications like left ventricular dysfunction, cardiogenic shock, long hospital stay, in hospital mortality after myocardial infarction. Same results were found by Furman et al.¹⁴.

WBC count can be a useful biochemical tool for risk stratification of acute myocardial infarction. It is readily available and rather a cheaper investigation.

Conclusion

Elevated WBC count within 24 hours was associated with high rate of complications after acute myocardial infarction.

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