

Role of WBC count and neutrophil to lymphocyte ratio in predicting in-hospital outcome after acute myocardial infarction

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Background: Current evidence supports a central role for inflammation in all phases of the atherosclerotic process. Substantial biological data implicate inflammatory pathways in early atherogenesis, in the progression of lesions, and finally in the thrombotic complications of this disease.

Aims: To evaluate the role of total WBC count and Neutrophil to lymphocyte ratio as a predictor of in-hospital outcome for adverse events (death and heart failure) for the patients presented with AMI.

Methods: Patients were those who presented with us at least two of the following increase in the levels of myocardial necrosis (troponin I >1 ng/ml); new ST elevation from the J point in two or more contiguous leads with an elevation of at least 0.2 mV in leads V1, V2 and V3 or at least 0.1 mV Results on continuous measurements are presented on Mean \pm SD (Min-Max) and results on categorical measurements are presented in Number (%). Chi square (2) test was used to determine the association or relationship between 2 categorical variable.

Results: In our study, WBC count had statistically significant correlation with incidence of heart failure. There was strong statistically significant and strong association between level of tertile and incidence of heart failure with a p value of < 0.001 and average WBC count being 13329.30 ± 3321.78 in patients with heart failure and 10128.13 ± 2651.14 in those without heart failure. Neutrophil to lymphocyte ratio (NLR) had statistically significant correlation with incidence of heart failure. There was strong statistically significant, and strong association between level of tertile and incidence of heart failure with a p value of < 0.001 and average NLR being 4.02 ± 1.56 in patients with heart failure and 1.84 ± 0.63 in those without heart failure. WBC count had statistically significant correlation with incidence of mortality. There was strong statistically significant, and strong association between level of tertile and incidence of mortality with a p value of < 0.001 and average WBC count being 14588 ± 3384 in patients with mortality and 11020 ± 2944 in those without mortality. Neutrophil to lymphocyte ratio had statistically significant correlation with incidence of mortality. There was strong statistically significant and strong association between level of tertile and incidence of mortality with a p value of < 0.001 and average NLR being 4.86 ± 1.712 in patients with mortality and 2.45 ± 1.054 in those without mortality. In our study we found statistically significant and strong correlation between the level of Killip class and level of tertile. In our study patients with lower Killip class had lower WBC counts and those with higher Killip class had higher WBC counts and the difference was strongly statistically significant with a p value of < 0.001 with the average WBC count being 10128 ± 2651 in Killip I, 11754 ± 2630 in Killip II, 12727 ± 2790 in Killip III and 15166 ± 3640 in Killip IV. (table No.13,15). A strong correlation between the level of Killip class and level of NLR tertile. In our study patients with lower Killip class had lower NLR and those with higher Killip class had higher NLR and the difference was strongly statistically significant with a p value of < 0.001 with the average NLR being 1.85 ± 0.626 in Killip I, 2.6 ± 0.607 in Killip II, 3.84 ± 0.952 in Killip III and 5.27 ± 1.642 in Killip IV.

Conclusion: The present study was designed to determine predictive role of WBC count on admission for mortality in patients of ACS; where lack of resources keeps the access of so many to the best diagnostic methods, WBC count and NLR may become an additional parameter for the preliminary approach of patients with AMI. We finally conclude that WBC count and N/L are simple and cost effective tools of determining in hospital outcome in patients with acute MI.

Association between coronary artery disease and retinal artery changes

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Background: Data are limited supporting an association between retinal microvascular changes and cardiovascular mortality, but there is no convincing evidence of an independent or direct association with atherosclerosis in coronary artery disease (CAD) patients.

Objective: The present study examines the relationship between retinal microvascular changes and angiographic findings.

Methods: Patients who were candidates for angiography were, at first, referred to the ophthalmology department for the determination of the severity of retinal atherosclerosis based on the Scheie classification. Angiography was carried out afterwards. Each patient completed a questionnaire, also providing information on risk factors. For each patient, the Gensini score was calculated using angiography findings.

Results: A total of 85 patients (50 males and 35 females) with a mean age of 55.3 ± 11.9 years were included in this study. The results show a significant association between CAD severity and retinal artery atherosclerosis ($r = 0.47$, $p = 0.0001$). In multiple regression analyses with CAD severity (using TIMI FLOW RATE) as a dependent variable, we observed a significant association between atherosclerosis scores based on Scheie criteria ($\beta = 0.31$, $p < 0.0001$), diabetes mellitus (DM) ($\beta = 0.29$, $p < 0.0001$), hypertension ($\beta = 0.23$, $p < 0.0001$), smoking ($\beta = 0.20$, $p < 0.0001$), and age ($\beta = 0.15$, $p < 0.0001$).

Conclusions: The results demonstrate that fundoscopic changes might be a predictor of CADs.

Does successful thrombolysis change the arrhythmia spectrum in Acute Myocardial Infarction?

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Background: Streptokinase (STK) remains the commonest drug by far for acute myocardial infarction in most public hospitals in India. A myriad range of arrhythmias may occur during thrombolytic therapy, from the so-called benign reperfusion arrhythmias to more lethal ventricular arrhythmias. This study aimed at evaluating whether successful thrombolysis with STK changes the arrhythmia spectrum and burden.

Material and Methods: This was a prospective observational study. 133 patients with acute MI within 12 hours of index pain were included. The ECG was recorded at presentation and after 90 minutes of completion of STK. Successful thrombolysis was

defined as reduction by at least 50% of the ST elevation in the lead with the maximum ST elevation. Holter Monitoring for the first 24 hour was done and arrhythmias were documented.

Results: Arrhythmias occurred more frequently with successful reperfusion (82% versus 63%) ($p=0.04$). The occurrence of AIVR with successful reperfusion was highly significant ($p=0.015$) Though AIVR was found to have low sensitivity (47%) and specificity (77%) as a predictor of successful thrombolysis, early AIVR was much more common ($p=0.019$) with successful thrombolysis. Successful thrombolysis did not change the incidence of sustained ventricular tachycardia, frequent PVC, AV blocks and A fib.

Conclusions: Successful thrombolysis with STK causes more frequent AIVR. Early AIVR is highly predictive for successful thrombolysis. Serious arrhythmias are unaffected by streptokinase. Pre-hospital administration of STK should be safe, thus saving critical time in acute MI. This is especially relevant in large parts of India.

Table 1 Arrhythmias in Group A (Successful Thrombolysis) and Group B (Failed Thrombolysis)

Arrhythmia	Group A	Group B	P Value
AIVR	24 (47%)	14 (23%)	0.015
Frequent VPC's	16 (31%)	12 (20%)	0.248
Sustained VT	2 (3.9%)	9 (15%)	0.104
Ventricular Fibrillation	3 (5.9%)	3 (5.0%)	1.00
Atrial Fibrillation	2 (3.9%)	2 (3.3%)	1.00
Sinus Pauses	2 (3.9%)	2 (3.3%)	1.00
AV Blocks	4 (7.8%)	2 (3.3%)	0.415

Transfer of patients for primary angioplasty from non PCI capable satellite centres - A single operator experience

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Aim and objective: To assess the safety and efficacy of primary PCI by transfer from satellite centres to PCI capable tertiary centre.

Method: A total of 57 cases of STEMI shifted from 2 Non PCI capable satellite centres located 3 and 12 km away from the tertiary centre during a period of 18 months Jan 2013 to July 2014 were included in the study. NSTEMI, patients given lytic therapy, presenting with MI beyond 24 hours were excluded. Study cohort included 42 males, 15 females. The age range of pts was 27-81 yrs. All patients were given loading dose of 600 mg clopidogrel/180 mg ticagrelor/60 mg prasugrel, aspirin 325 mg, atorvastatin 80mg, intravenous enoxaparin 0.3 mg, preparation done, stabilized haemodynamically and transported by fully supported ambulance.

Results: The location of MI was anterior in 29 cases, inferior in 20 cases, lateral in 6 cases. The door to balloon time was 40-150 minutes, average of 102 mts. 7 pts presented with cardiogenic shock, 6 pts with pulmonary edema. IABP support was used in 3 patients, ventilatory support in 3, thromboaspiration in 10 pts. Survival was 56/57 pts. 1 pt with DM, CKD, extensive AWM, CHB, cardiogenic shock died during procedure, 2 pts with LM disease, 1 pt with failed PCI sent for CABG. PCI was successful in 53/55 pts. Radial access was used in 10 pts. All pts underwent single culprit vessel

angioplasty. One pt with double MI underwent sequential RCA, LAD PPCI. 30 day mortality of the entire cohort was 1.75% with a survival rate of 98.2%.

Conclusion: It is safe and rewarding to transfer patients PPCI from satellite centres.

Outcomes of Primary PCI comparing femoral versus Radial arterial access in STEMI – OPERA study

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Background: Effective reperfusion in STEMI can be achieved by either fibrinolytic therapy or primary percutaneous coronary intervention (PCI) without antecedent fibrinolysis (also generally known as primary angioplasty. Primary PCI can be done either via the femoral access or the arterial access. Radial arterial access is reported to have better outcomes as compared to femoral arterial access.

Methods: This is a retrospective intermediate term follow up study of consecutive patients with acute myocardial infarction admitted to MCH Trivandrum and underwent Primary PCI from October 2012 to April 2014.

Results: A total of 667 patients were admitted with a diagnosis of STEMI. The mean age was 57.17 ± 11.22 years. Males were predominant, accounting for almost 85.6 % of the study population. CAD Anterior wall Myocardial infarction (48.42 %) and Inferior wall myocardial infarction (51.58 %) were equally represented in the study cohort (NS). Of the total cohort of STEMI population, primary PCI was performed via the femoral arterial access in 53.8 % and via radial access in 46.2 %. ST resolution was slightly higher in the femoral group, but was not statistically significant [radial 49.33 ± 35.8 % vs. femoral 54.15 ± 34.51 %]. $p=0.079$]. The amount of contrast volume used for the Primary PCI was slightly higher in the femoral group, but was not statistically significant [radial 163.47 ± 57.7 ml vs. femoral 167.03 ± 76.11 ml; $p=0.51$]. The mean fluoroscopic time required for completion of the Primary PCI was slightly higher for the radial group, but was not statistically significant [radial 10.82 ± 6.42 min vs. femoral 10.61 ± 10.03 min; $p=0.75$]. There were 4 (1.1 %) femoral pseudo aneurysms in the femoral group & 1 (0.2 %) femoral Arterio-venous fistula in the femoral group. The incidence of in hospital death was higher in the femoral arterial group [radial 1(0.3%) vs. femoral 14(3%); $p=0.002$], this was a statistically significant finding. The incidence of stent thrombosis was slightly higher in the radial arterial access group but even though the difference was not statistically significant. [Radial 6(1.9%) vs. femoral 4(1.1%), $p=0.5$].

Conclusions: In this study, femoral arterial access in the setting of a Primary PCI was associated with a higher in hospital mortality. None of the individual primary end points in itself were statistically significant to explain the increased in hospital mortality in the Femoral group. This observation could probably be due to the selection bias towards Femoral arterial access in the unstable group of patients. In experienced hands, the Radial approach should be the favored route for primary PCI.