

Original article:

Study of morbidity and mortality in AMI patients with special reference to the serum uric acid levels on day 0,3,7 and its comparison with killip's classification

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Abstract:

Introduction: There is strong & significant association between borderline serum uric acid levels & risk of both coronary heart disease & stroke. Hyperuricemia has been associated with elevated circulating endothelin level and one of the major sites for production of uric acid in cardiovascular system is the vessel wall and particularly endothelium.

Methodology: MI who presented to hospital within 24 hours of onset of symptoms were included in the study. Acute MI was defined as, 'increased myocardial enzyme concentrations with typical chest pain persisting more than 30 minutes or electrocardiographic changes (including ischemic ST-segment depression, ST-segment elevation or pathologic Q waves). Increased enzyme concentrations were defined as peak creatine phosphokinase level more than 2 times upper limit of normal.

Results: It is observed that there is no correlation between serum uric acid level after acute myocardial infarction and sex of the patients.

Conclusion: It is observed that there is no correlation between serum uric acid level after acute myocardial infarction and sex of the patients.

Introduction:

There is strong & significant association between borderline serum uric acid levels & risk of both coronary heart disease & stroke. Hyperuricemia has been associated with elevated circulating endothelin level and one of the major sites for production of uric acid in cardiovascular system is the vessel wall and particularly endothelium. Uric acid may have direct role in atherosclerotic process because atherosclerotic plaque contains more uric acid than control arteries. Hyperuricemia via purine metabolism may also promote thrombus formation.^{1,2}

The relation between uric acid and cardiovascular disease is observed not only with frank hyperuricemia (defined as more than 6mg/dl in women & more than 7 mg/dl in men) but also with uric acid levels

considered to be normal but at high range.¹² This study was done to determine whether raised serum uric acid levels were an independent risk factor for acute MI and to determine its prognostic importance if any.

Methodology:

This hospital based case study was performed in the parent institute from October 2009 to September 2011. A total of 75 cases of Acute MI were studied. All the subjects were interviewed, examined and investigated as per the predesigned proforma.

The study was approved by the institutional Ethics committee.

Study design: Case study.

Selection of cases: Patients more than 18 years of age diagnosed to have acute MI who presented to hospital within 24 hours of onset of symptoms were included in the study. Acute MI was defined as, 'increased myocardial enzyme concentrations with typical chest pain persisting more than 30 minutes or electrocardiographic changes (including ischemic ST-segment depression, ST-segment elevation or pathologic Q waves). Increased enzyme concentrations were defined as peak creatine phosphokinase level more than 2 times upper limit of normal.

Results:

It is observed that there is no correlation between serum uric acid level after acute myocardial infarction and sex of the patients.

It is observed that there is no correlation between serum uric acid level after acute myocardial infarction and hypertension.

It is observed that there is no correlation between serum uric acid level after acute myocardial infarction and diabetic status of patients.

Discussion:

In the present study, there were 53 patients with BMI <24.9 and 22 patients with BMI >25. Mean SUA in patients with BMI < 24.9 was 4.69 ± 1.20 mg/dl, whereas it was 6.49 ± 1.39 mg/dl in patients with BMI ~ 25. The difference was found to be statistically significant ($p = <0.05$)

It is observed that there is statistically significant correlation between serum uric acid level after acute myocardial infarction and previous history of myocardial infarction. Patients who had myocardial infarction in past had higher serum uric acid level at time of presentation as compared to patients who don't have history of myocardial infarction.

It is observed that patients have shifted from class 2 and 3 to class 1 and 4. One patient expired till day 3, and still day 7, total 6 patients died during 7 day follow up. In our study, there were 22 diabetic subjects and 53 non diabetic subjects among cases. After applying T-test P value = 0.186. (5.6 ± 1.687 v/s 5.14 ± 1.511) From table 8, it is observed that there is no correlation between serum uric acid level after acute myocardial infarction and diabetic status of patients.

These findings were in accordance with study done by M. Y. Nadkar & et al (2008)⁴² showed that non-diabetic and diabetic patients had comparable serum uric acid levels on the day of admission.

Jaakko Tuomilehto et al studied plasma uric acid in a population survey on diabetes and cardiovascular risk factors among Melanesians and Asian Indians in Fiji in 1980. Plasma uric acid levels were elevated in men and women with impaired glucose tolerance in both ethnic groups.³ But plasma uric acid levels were found to be lower in diabetic patients as compared to those with impaired glucose tolerance or those without diabetes (4.7 ± 1.7 vs. 5.9 ± 1.4 mg/dl, $p < 0.05$).

However study done by Longo-Mbenza et al⁵ observed significantly higher frequency of hyperuricemia among diabetic patients. Christoph Bickel et al⁴ (2002) also found that as compared with the lowest quartile of uric acid, the highest quartile was associated with a significant increase in the percentage of diabetic patients (19.9% vs. 27.3%, $p = 0.045$). Study by Safi et al also showed that hyperuricaemia is significantly associated with type Since the sample size of the diabetic patients was very small, it needs further evaluation. Relationship of smoking with Killip's class. In our study, there were 44 smokers and 31 non smokers on applying chi-square test ($P = 0.773$ no correlation) it is observed that there is no association between smoking status and Killip's class at the time of admission. It is in accordance with study done by M. Y. Nadkar & et al (2008)⁵ also showed there was no association between smoking and Killip's class at the time of admission. Along with advances in healthcare, we can collect data from more other sources for its greater validity.^{7,8}

Conclusion:

It is observed that there is no correlation between serum uric acid level after acute myocardial infarction and sex of the patients.

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