

Study of Uric Acid in Patient With Acute Myocardial Infarction



Medicine

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ABSTRACT

• Cardiovascular disease has been known as major health burden worldwide. Incidence of CAD is rapidly increasing in India and other developing countries. CAD is leading cause of cardiovascular mortality worldwide.

• There is evidence that high uric acid level is a negative prognostic factor in patients with mild to severe heart failure. Some evidence suggest that uric acid may exert a negative effect on cardiovascular disease by stimulating inflammation, which is clearly involved in pathogenesis of cardiovascular disease. Recent study shows that there was a close co relation between serum uric acid concentration and killip classification in patients of acute myocardial infarction.

AIMS AND OBJECTIVES

- 1) To asses serum uric acid levels in acute myocardial infarction patients
- 2) To study changes in serum uric acid levels over a period of 3 days, on day0-at time of admission, day 3-36 to 54 hours after collecting the first sample
- 3) To associate changes in serum uric with clinical prognosis

MATERIALS AND METHODS

We studied 100 patients of age more than 18 years who were diagnosed as ST segment elevation acute myocardial infarction (STEMI) on the basis of clinical history, examination, ECG changes, biochemical markers and admitted in ICCU in our hospital during year 2010-2012.

All patients were treated with anti IHD treatment and thrombolysed with Streptokinase, if no contraindication present.

Serum uric acid level of all the patients was measured on day 0 and day 3.

CONCLUSION

Serum uric acid level is increased in patients of acute MI. From our study, we can conclude that serum uric acid level in MI patients correlates significantly with the killip grading of the patient and it can be used as a prognostic marker in patients with acute MI.

INTRODUCTION

- Cardiovascular disease has been known as major health burden worldwide. Incidence of CAD is rapidly increasing in India and other developing countries. CAD is leading cause of cardiovascular mortality worldwide.
- Epidemiological studies have recently shown that uric acid may be a risk factor for cardiovascular disease and a negative prognostic marker for mortality with pre existing heart failure. Elevated serum uric acid level is highly predictive of mortality in patients with heart failure or coronary artery disease and of cardiovascular events in patients.
- There is evidence that high uric acid level is a negative prognostic factor in patients with mild to severe heart failure. Some evidence suggest that uric acid may exert a negative effect on cardiovascular disease by stimulating inflammation, which is clearly involved in pathogenesis of cardiovascular disease. Recent study shows that there was a close co relation between serum uric acid concentration and killip classification in patients of acute myocardial infarction.

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OBSERVATION

1) AGE DISTRIBUTION IN STUDY GROUP

SR. NO.	AGE GROUPS	NUMBER	PERCENTAGE
1)	25-40 YEARS	10	10%
2)	41-55 YEARS	32	32%
3)	56-70 YEARS	39	39%
4)	>71 YEARS	19	19%
TOTAL		100	100%

Among 100 cases of acute mi, the maximum 39 cases (39%) were in 56-70 years of age group, the youngest patient in this study was 28 years old while the oldest was 84 years old. It is clear from the above table that acute myocardial infarction was more common in 5th, 6th and 7th decade.

2) Sex distribution

SR. NO.	GENDER	NUMBER	PERCENTAGE
1)	MALE	74	74%
2)	FEMALE	26	26%
TOTAL		100	100%

Out 100 cases of acute MI, 74 cases (74%) were male and 26 cases (26%) were female. This suggests that MI is more common in males.

3) SERUM URIC ACID LEVELS ON DAY 0 AND DAY 3

DAY 0	DAY 3	SIGNIFICANCE
4.8±1.6	4.6±1.5	P=0.019

This table shows that serum uric acid levels in study group on day 0 was 4.5±1.6 and on day 3 it was 4.6±1.5. it shows that serum uric acid levels decreased from day 0 to day 3 (p=0.019).

4) EVALUATION OF SERUM URIC ACID LEVELS IN MI

RESULT	VALUES	PERCENTAGE
INCREASED	44	44%
DECREASED	56	56%

44% of the patients included in this study had an increase in serum uric acid levels and 56% had decrease in serum uric acid levels.

5) EVALUATION OF PATIENT BASED ON CHANGE IN SERUM URIC ACID LEVELS IN RELATION TO PROGNOSIS

CHANGE IN SERUM URIC ACID (mg/dl)	PROGNOSIS	
	GOOD	BAD
INCREASED	17(24%)	26(88%)
DECREASED	53(76%)	04(12%)
TOTAL	70 (100%)	30 (100%)
INTERFERENCE	INCREASE IN SERUM URIC ACID IS SIGNIFICANTLY ASSOCIATED WITH BAD PROGNOSIS WITH P=0.002	

88% of patients who had bad prognosis had increase serum uric acid level, this shows that increase in serum uric acid is significantly associated with bad prognosis with p=0.002.

SUMMARY AND CONCLUSION

100 patients with MI were evaluated in this study to see the correlation between serum uric acid levels and killip grading of the patient and short term prognosis.

- 1) Incidence of acute MI increase with age. The maximum numbers of patients were in age group of 56-70 years.
- 2) Incidence of acute MI was higher in men than in females.
- 3) Smoking, HTN, DM and sedentary lifestyle were major risk factors.
- 4) Among 100 patients, 47% were in killip grade 1, 21% were in grade 2, 17% were in grade 3 and 15% were in grade 4.
- 5) On day 0 and 3, serum uric acid levels were higher in patients who were in higher killip class (class III and IV) then in patients who were in lower killip class (class I and II) (p<0.05).
- 6) In duration of 3 days, 43% had increasing serum uric acid levels and 57% had decreasing serum uric acid levels.
- 7) 88% who had bad prognosis had increase in serum uric acid level and 76% of patients who had good prognosis had decrease in serum uric acid levels during period of 3 days. This shows that increase in serum uric acid is significantly associated with bad prognosis with p=0.002.
- 8) Among 4 patients who died, all were in killip grade 4 and all had serum uric acid levels >7.0mg/dl.

To conclude, serum uric acid level is increased in patients of acute MI. From our study, we can conclude that serum uric acid level in MI patients correlates significantly with the killip grading of the patient and it can be used as a prognostic marker in patients with acute MI.