



Serum uric acid as a prognostic factor in patients with acute myocardial infarction

Authors

Dr M.G.K. Pravallika Santoshini, Dr B. Ashok Babu, Dr K.Sudheer

Department of General Medicine

GEM Srikakulam

Introduction

Acute coronary syndrome is composed of patients with

1] acute myocardial infarction with ST segment elevation on their presenting electrocardiographic changes [ECG]

2] NSTEMI

3] Unstable Angina

ST segment elevation myocardial infarction have been diagnosed on the basic triad : chest pain, electrocardiographic changes, elevated plasma enzyme activity.

Most common symptom:

1] Chest pain- most common presenting complaint in STEMI patient which is deep and visceral commonly described as heavy, squeezing & crushing

2] ECG – it is sensitive for detecting myocardial ischemia & infarction

A] New Q waves

B] New or presumably new ST-T segment elevation or depression after J point in two consecutive leads

C] Complete left bundle branch block in appropriate clinical setting

D] The ECG diagnosis of right ventricular (RV)

occurs in the presence of inferior left ventricular infarction

E] Posterior wall MI is indicated by ST-segment elevation in posterior leads v7-9.

3. Serum cardiac biomarkers: Certain cardiac markers (CPK-MB/ Troponin-T and I) are released into the blood in large quantities from necrotic heart muscle after myocardial infarction.

- The Killip's classification:

- Killip classified patients with acute MI into 4 classes depending on the clinical manifestations of cardiac failure.

- Class 1: No signs of pulmonary or venous congestion

- Class 2: Moderate heart failure i.e. rales at lung bases, s3 gallop, tachypnea or signs of failure of right side of heart including venous and hepatic congestion

- Class 3: Severe heart failure, pulmonary edema

- Class 4: Shock with systolic pressure

Serum Uric Acid

- It reflects circulating xanthine oxidase activity and oxidative stress production. It is defined in patients who have congestive heart failure.

Serum uric acid levels were noted in patients with acute MI and correlation with Killip's

classification was studied, and at the same time, it was decided whether it affects mortality in such patients.

Aim and Objectives

- To correlate serum uric acid level with age, sex, diabetes mellitus, hypertension, past history of Ischemic heartdisease
- Serum triglycerides, Killip’s classification and to note any
- Relationship between serum uric acid level and mortality following
- Acute myocardial infarction

Materials and Methods

This was a prospective, observational study carried at gems hospital, department Of general medicine, Srikakulam from November 2020 and follow up till hospital stay

All the data collected from the patients with in 24hr onset of symptoms, underwent routine investigations and sr. uricacid, lipid profile and the healthy individuals were evaluated at opd

Inclusion Criteria

- Any adult (>18 years) patients who were diagnosed as a case of acute MI (NSTEMI, STEMI) on the basis of clinical history, examination, biochemical markers admitted in gems hospital.

Exclusion Criteria

- A. age < 18 years
- B. Patient k/c/o: renal disease, hepatic disease, Gout, autoimmune malignancy
- C. Patients using drugs causing hyperuricemia: salicylates & > 2gm/day diuretics, ethambutol

Statistical Analysis

- Quantitative data is presented with help of mean, SD, IQR ,median
- Comparision among study group is done with help of Mann-whitney and Kruskal-wallis oneway analysis as per normality test
- Quantitative data among study groups is assessed with the help of chi-square test
- p<0.05 is taken as significant level

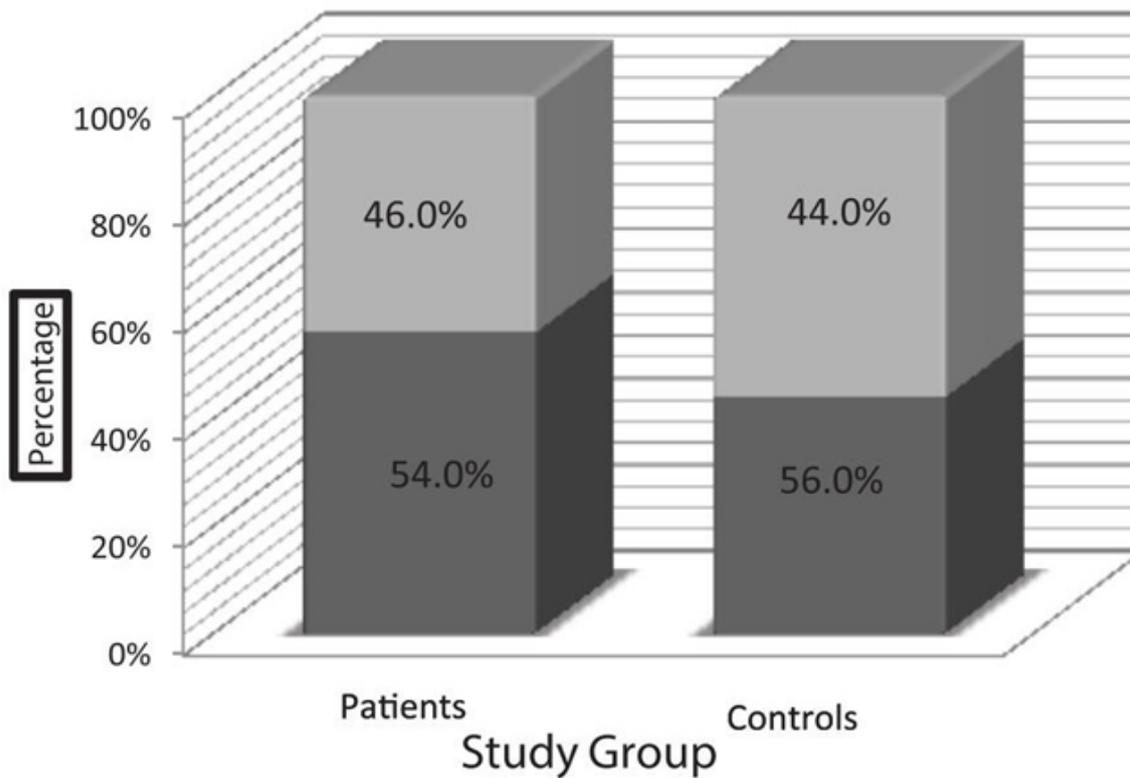
Comparison of Uric Acid among IHD

IHD	N	MEAN+/_SD	MEDIAN	IQR	Mann-whitneytest	P
YES	12	6.16+/-93	5.75	1.05	92.5	0.02
NO	38	4.97+/-0.39	4.90	0.50	Difference is Significant	

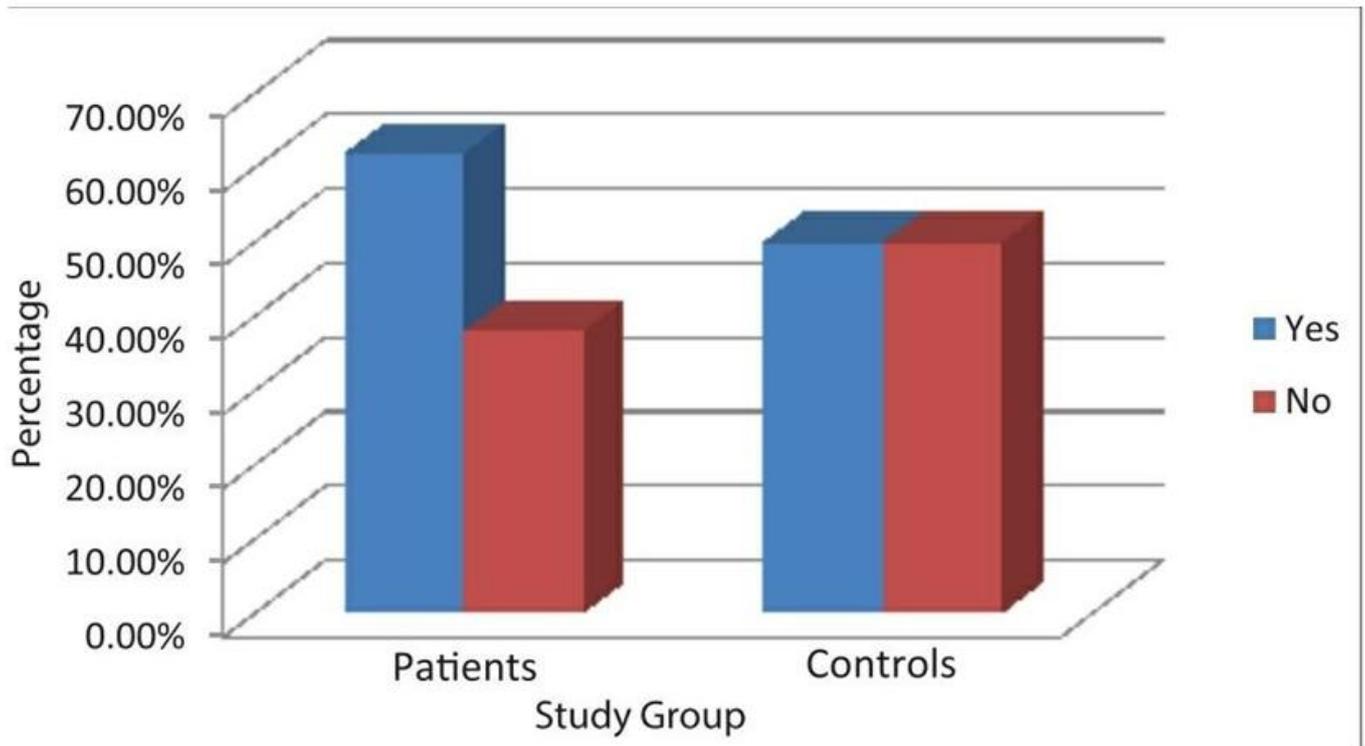
KRUSKALWALLSONEWAYANALYSIS

K-CLASS	N	MEAN+/_SD	IQR	Kruskal-Walls Oneway Analysis	P
1.00	20	4.80	0.60	CHISQUARE 17.28 Difference is Significant	<0.001
2.00	15	4.90	0.50		
3.00	9	5.70	0.60		
4.00	6	5.85	1.00		

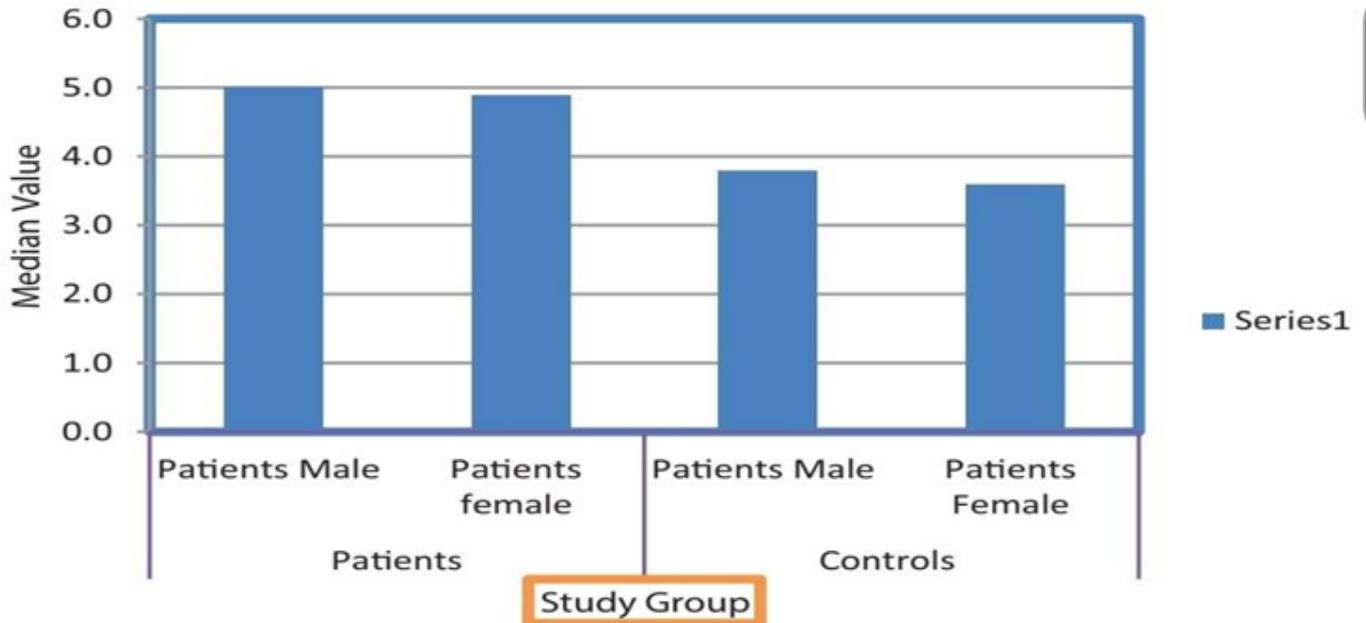
Distribution of study group as per sex: No significant difference in sex ratio between groups



Comparison of diabetics among study-no significant difference

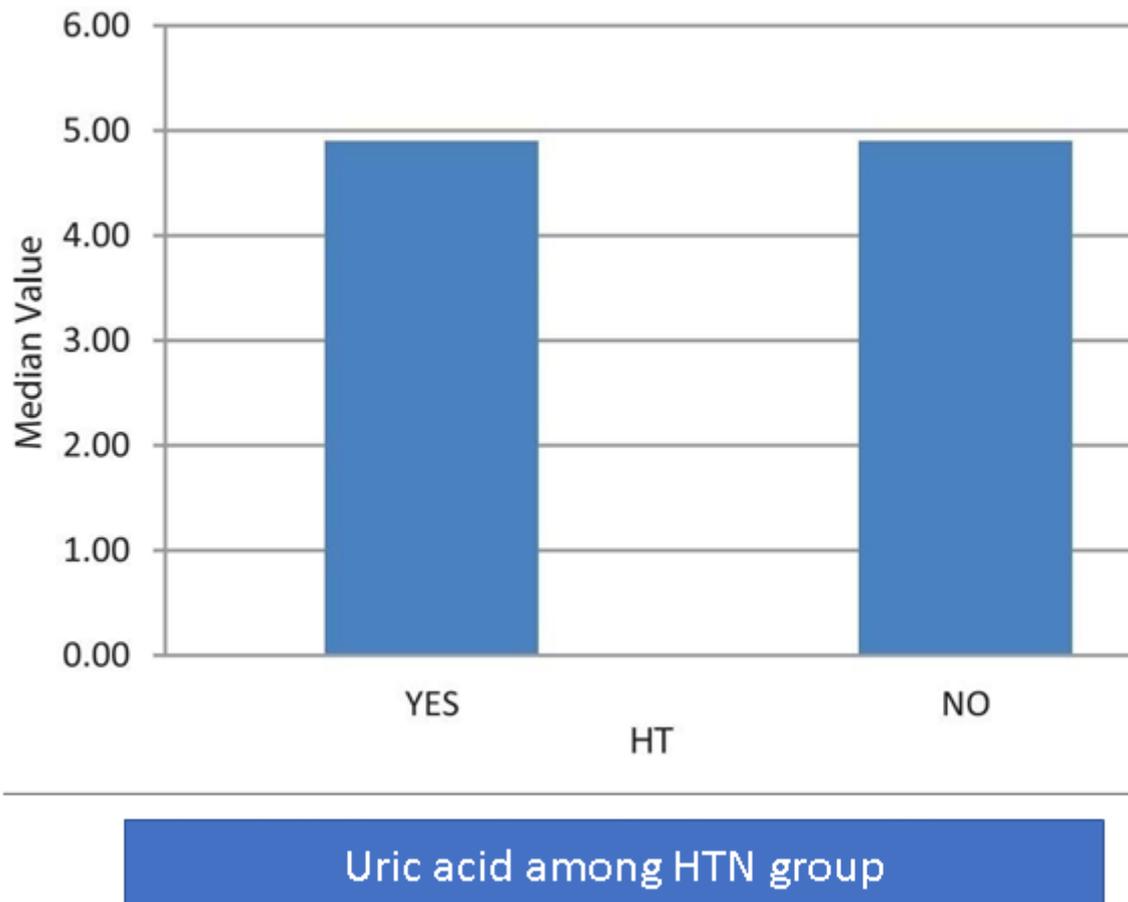


Comparison of uric acid among study group

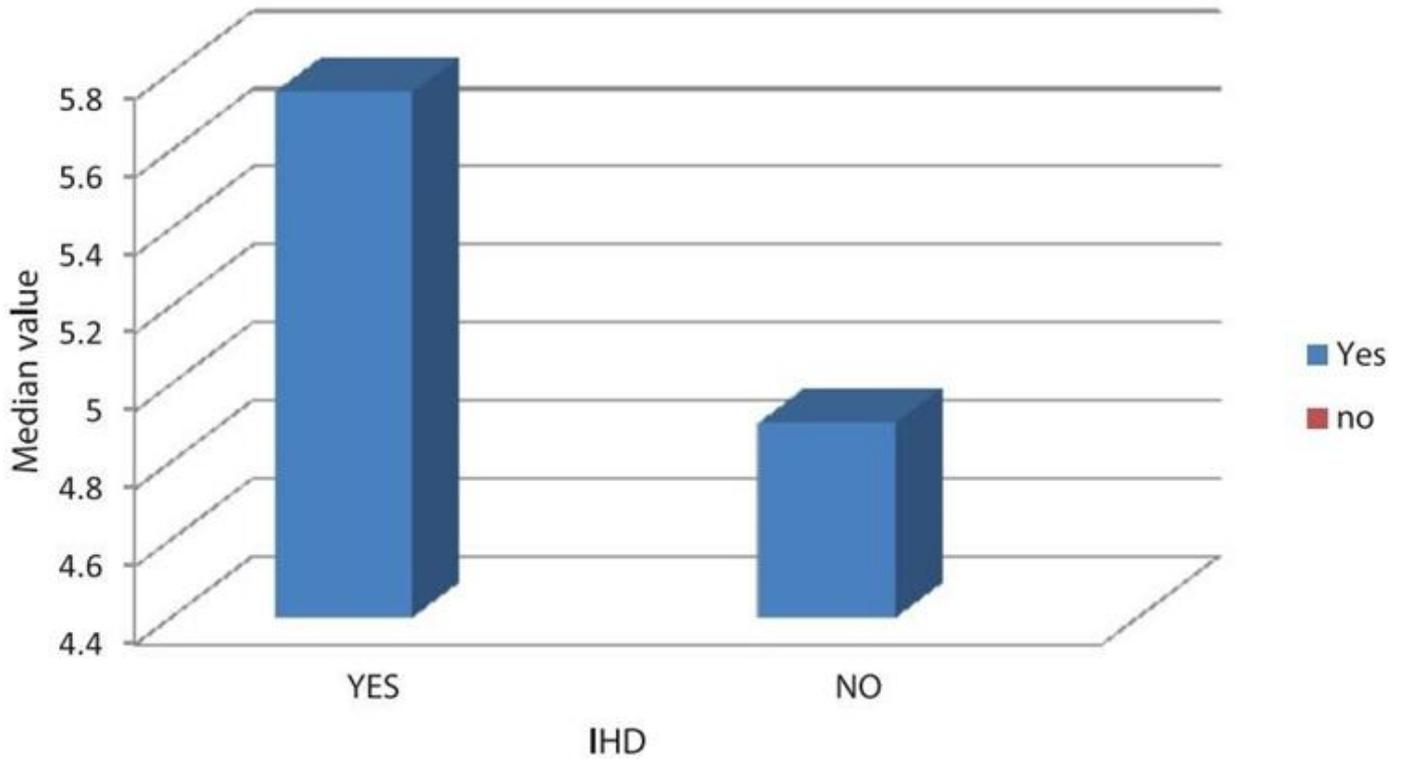


-no significant difference as far as sex concerned although higher in patient group

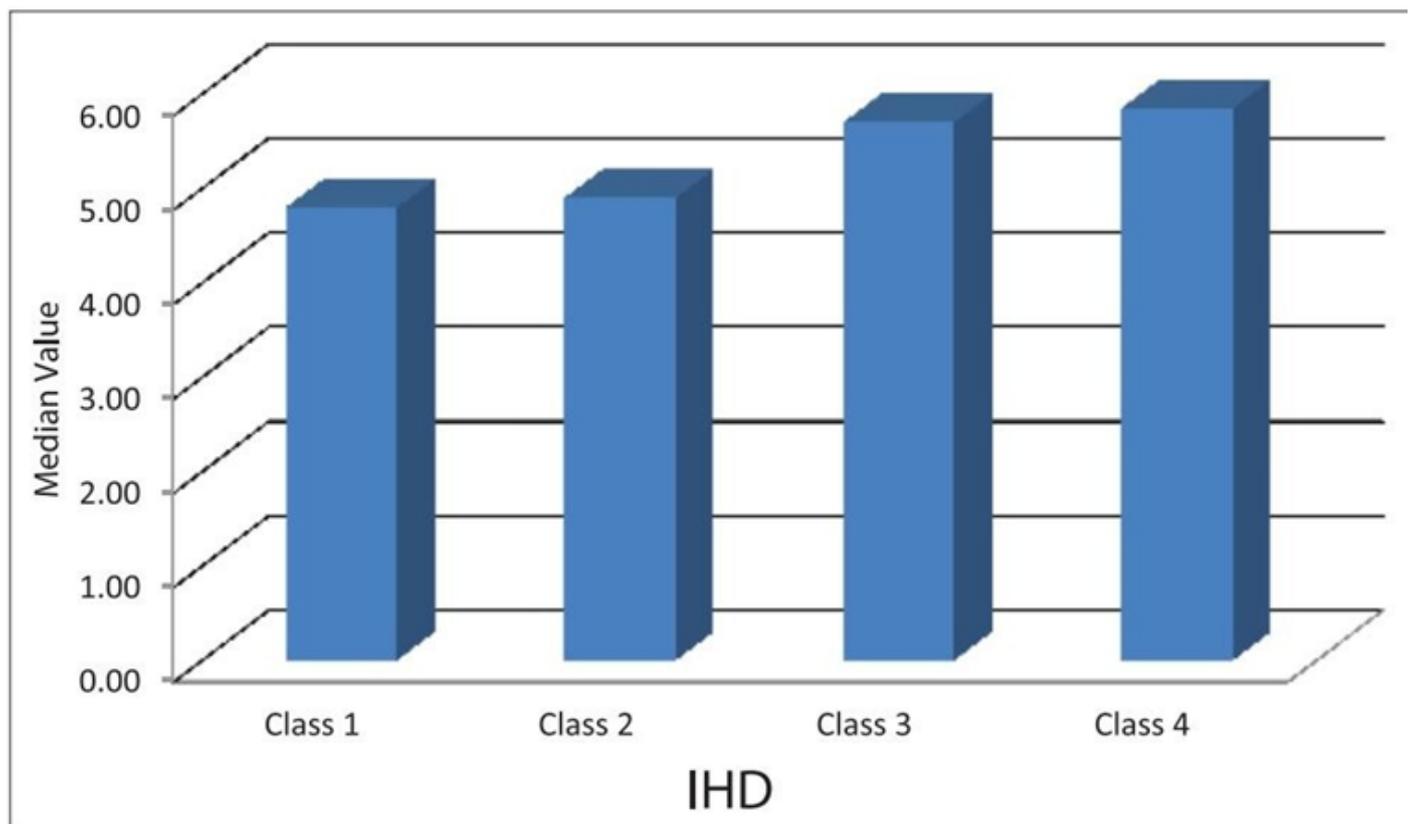
No Clinical Significance



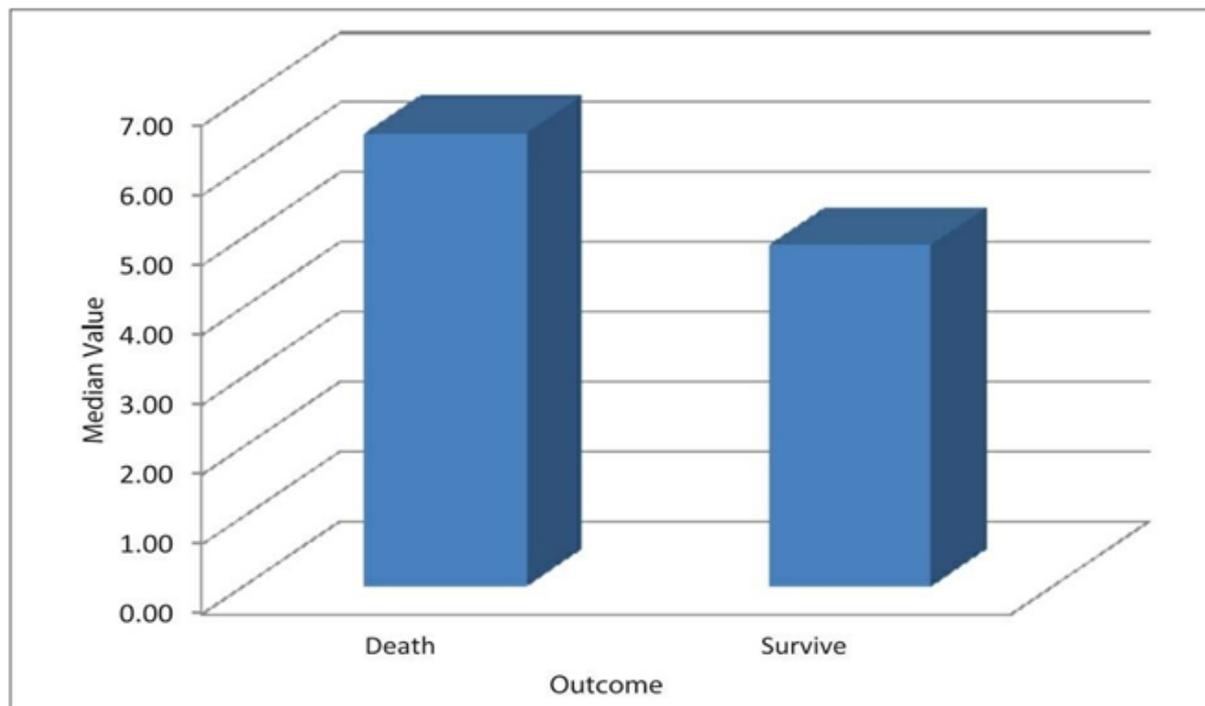
Sr.uric acid in IHD- Significantly Higher in IHD Patients



Comparison of Uric acid among Kilip Class-Shows Significant Correlation I.E Increasing Trend with Class



Comparison of Uric Acid among Patients who died and those Survived- Shows Significant Correlation



Discussion

- Our study included 50 patients of myocardial infarction within 24 hrs of onset of symptoms and 50 normal healthy controls of age and sex matching
- Out of 50 patients, 23 are female and 27 were males, in control group 22 were females and 28 are males
- Mean age patients was 60 years ranging 45-80 years
- P value of 0.616 showing no significant relation with HTN
- A total of 28 patients diabetics P=0.992[not significant]
- About 12 patients IHD p value <0.05 between uric acid and IHD [significant correlation]
- A positive correlation with killips class

Conclusion

- Serum Uric Acid is Higher in Patients of Acute Myocardial Infarction As Compared To Normal Healthy Persons
- Patients of Higher Killips Class Have Higher Uric Acid Levels

- Serum Uric Acid and Killips Class Independently And Significantly Predicted Poor Prognosis After Mi
- No Correlation between Uric Acid After Mi And Age Sex, DM, HTN

References

1. Cannon C, Braunwald E. Unstable angina and non-ST-elevation myocardial infarction. In: Kasper DL, Braunwald E, Fauci H, Longo CA, Jameson JL, editors. Harrison's Principles of Internal Medicine. 18th ed. Chicago: McGraw-Hill; 2005.
2. Strasak A, Ruttman E, Brant L, Kelleher C, Klenk J, Concin H, et al. Serum uric acid and risk of cardiovascular mortality: A prospective longterm study of 83,683 Austrian men. Clin Chem 2008;54:273-84.
3. Cicoira M, Zanolla L, Rossi A, Golia G, Franceschini L, Brighetti G, et al. Elevated serum uric acid levels are associated with diastolic dysfunction in patients with dilated cardiomyopathy. Am Heart J 2002;143:1107-11.