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Association of Serum Uric Acid with Killip's Classification in Patients of Myocardial Infartion

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Abstract

Background: This study is aimed to correlate Serum uric acid level (SUA) and Killip's classification in patients of acute myocardial infarction.

Methods: This study was conducted on those who were diagnosed as acute myocardial infarction, and the relation between SUA and Killip's classification were analysed. All data were analysed using SPSS version 17 software for ANOVA and independent t test.

Results: The mean age of the patient who took part in the study was 57.31±12.016 years and for the control group was 48.99±13.39 yearsFor Myocardial group mean value of serum uric acid (mg/dl) is 6.6±1.6 vs. 3.9±0.31 in control group (p value is <0.001)Mean SUA was 4.42mg/dl in patients of Killip's class 1, 5.03mg/dl in patients of killip's class 2 , 6.30mg/dl in patients of killip's class 3 and 7.99mg/dl in patients of killip's class 4. (p<0.001).

Conclusion: SUA is significantly raised in MI and correlated positively troponin I and higher SUA is associated with higher Killip's classification.

Introduction

Cardiovascular is one of the most important cause of mortality and myocardial infarction contribute major portion of that,age specific events has fallen in last decades but the overall prevalence's risen as population age and survival of the peoples [1].Various biomarker have been studied in patient of myocardial infarction but little is known about their prognostic importance.

In 1967, Killip and Kimball proposed scheme of prognostic classification on the basis of presence and severity of rales in patient of STEMI [2]and is predictor of all-cause mortality in patients of acute myocardial infarction[3] SUA was found to be raised in patient of cardiovascular disease[4] hence this study was conducted regarding the prognostic importance of Serum uric acid (SUA).several study has confirmed close relationship between SUA and Killip's

Material and Methods

Source of Data

Patients of acute myocardial infarction and willing to give consent, reaching medicine department of LLR

and associated hospital GSVM medical college, Kanpur from August 2017 to September 2019.

Methods of collection of data

Study Design: Prospective single-centre observational study

Place of Study: The present analysis was a conducted at the GSVM MEDICAL COLLEGE KANPUR India

Study Period: Between August 2017 and SEPTEMBER 2019.

Inclusion Criteria: Patients >18 years of age

With STEMI or non-ST segment elevation MI (NSTEMI) on the basis of

History

Clinical examination

Electrocardiographically changes

Participant willing to give informed consents

Troponin I

Exclusion Criteria

Condition elevating SUA level (e.g., Chronic kidney disease, gout, haematological malignancy, hypothyroidism, hyperparathyroidism) were excluded. Patients on drugs that raises SUA (e.g., salicylates [>2 g/day], ethambutol, amiloride, bumetanide, chlorthalidone, cisplatin, cyclophosphamide, cyclosporine, ethacrynic acid, thiazide diuretics, furosemide, indapamide, isotretinoin, ketoconazole, levodopa, metolazone, pentamidine, phencyclidine, pyrazinamide, theophylline, vincristine or vitamin C were also excluded, as were chronic alcoholics.3

Statistical analysis

The data was collected and entered in MS Excel and a master chart was made. The data was analysed using appropriate statistical tools i.e. SPSS (23rd version) like percentage, mean, SD by using chi square test and t test and results were drawn accordingly.

Observation

In our study 49 patient of myocardial infarction and 48 control patient are studied, which are age and sex matched (p>0.5).

Table 1: DESCRIPTIVE STATISTIC FOR AGE

AGE	N	Minimum	Maximum	Mean	Std. Deviation
CASE	49	35	91	57.31	12.016
CONTROL	49	28	80	52.56	13.27

Independent t test was applied on age of MI patients and control, the p value equals to 0.07 which was greater than 0.05 indicating there was no significant difference in age of two groups.

The mean age of the patient who took part in the study was 57.31±12.016 years and for the control group was 48.99±13.39 years.

The lowest age was 35 years and highest age was 91 years in case group whereas lowest age was 28 years and highest age was 80 years in control group.

Table 2: Distribution of Gender

Gender	Male	Female
Total patient(n= 49)	33	16
Percentage	67.3	32.7

Table 3: Mean Serum Uric Acid Level In Case And In Control.

	Myocardial infarction	control	P value
Serum uric acid (mg/dl)	6.6±1.6	3.9±0.31	<0.001

For Myocardial group mean value of serum uric acid (mg/dl) is 6.6±1.6 vs 3.9±0.31 in control group .The Independent student t - test is applied ,p value is <0.001 indicating that serum uric acid is significantly higher in myocardial infarction patient.

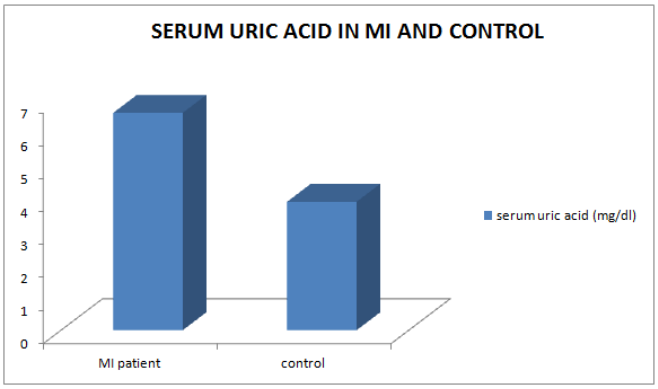

Fig 1: Mean serum uric acid distribution in case and control.

Mean serum uric acid level was 4.42mg/dl in patients of Killip's class 1, 5.03mg/dl in patients of killip's class 2 , 6.30mg/dl in patients of killip's class 3 and 7.99mg/dl in patients of killip's class 4. ANOVA shows that higher killip's class is associated with higher serum uric acid level ($p<0.001$).

Table 4: Relationship Between Serum Uric Acid Level And Killip's Class

Killip's class	N	Mean (mg/dl)	Std. Deviation	Std. Error
1	7	4.42	0.33	0.12
2	6	5.03	0.54	0.22
3	15	6.30	0.36	0.09
4	21	7.99	1.21	0.26
Total	49	6.60	1.60	0.22

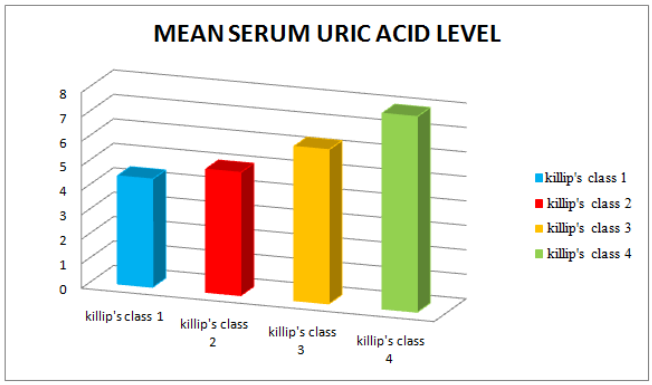

Fig 2: Relationship between serum uric acid level and Killip's class

Discussion

This study was conducted with a aim to study SUA and Kiliip's classification in patient of acute myocardial infarction. 85 49 patient of acute myocardial infarction were selected for study purpose of whom 33 are male and 16 are female. Forty six age and gender matched control were also evaluated for their base line SUA .

There was male dominance in the study and also shows high preponderance of acute myocardial infarction in male as compared to female which was similar to the previous study which also a higher male dominance as by Dr. Srikant et al (2017) and Vladimir Trkulja et al (2011.)

The mean age of the patient who took part in the study was 57.31±12.016 years for AMI and for the control group was 52.56±13.27. Burki.l et al (2013) had taken mean age of 50.0±12.4 in case group and 51.8±10.1 in their control group

The mean serum uric acid level was significantly higher in acute myocardial group in comparison to control group on the day of admission which was similar with regards to past study as by Padma et al (2017), R. K. Chowdhary et al (2016) There was significant relation between SUA and Killip's class on the day of admission , patient in Killip's class 3 and 4 had higher level of mean SUA compared with patients in Killip's class 1 and 2($p<0.001$) We also found that higher serum mean serum uric acid level was in higher Killip's class which was similar to others Kaushik BIswas at el(2016), Sunao kojima et al (2005) in our study majority were in Killip's class 4 (42.9%), Killip's class 3 (30.6%), Killip's class 2 (12.2%), Killip's 1 class (14.2%) which was different from Dr R.K. chowdhary et al (2017) of whom maximum were in Killip's class 1(60%), 22% in Killip's 2,12%in Killip's 3 and 6%in Killip's 4, further kojima et al 2005 correlates SUA

with Kiilip's classification. Combination of Killip's class and serum uric level after AMI is a good predictor of mortality in patients who have AMI.

Two patients died in the study one was in Killip's class 3 and another was in Killip's class 4.

Conclusion

We conclude from our study that SUA was higher in patients of acute myocardial infarction correlated with killips class.Patients have higher SUA were belongs to higher killips class.hence SUA can be used as prognostic marker of MI

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