Scholars Journal of Applied Medical Sciences (SJAMS)
Abbreviated Key Title: Sch. J. App. Med. Sci.
ISSN 2320-6691 (Online)
ISSN 2347-954X (Print)

A Unit of Scholars Academic and Scientific Society, India
www.saspublishers.com

Medicine

Serum Uric Acid an Independent Risk Factor in Acute Ischemic Non Embolic Stroke

Dr. Nitin Jadhav, Dr. Pavan Patel*, Dr. Shruti Nair
Department of Medicine, Krishna Institute of Medical Sciences, Karad, Maharashtra, India

Original Research Article

***Corresponding author**
Dr. Pavan Patel

Article History
Received: 29.11.2017
Accepted: 11.12.2017
Published: 30.12.2017

DOI:
10.36347/sjams.2017.v05i12.028

Abstract: Among elderly after coronary heart disease and cancer, stroke is the 3rd common cause of death worldwide. In recent years serum uric acid has been recognized as a direct risk factor for cardiovascular diseases. Still there are some conflicts about the correlation. Aim of the study was to find association between serum uric acid and and acute ischemic non embolic stroke. Present study was carried out among 100 cases admitted within 24hrs of onset of stroke. Blood samples were investigated for serum uric acid levels. CT scan was done. Data was collected and compiled in microsoft excel and analysis was done using chi square test. $P<0.05$ was considered significant. 70% were males and 30% were females. Mean age of patients was 65±2years. Almost 45% of patients had hyperuricemia. Mean serum uric acid levels were 6.18±1.2 mg/dl. Significant relation was found between serum uric acid and stroke. The study concluded that serum uric acid and acute ishemic non embolic stroke are associated.
Keywords: Serum uric acid, non embolic, stroke.

INTRODUCTION

Among elderly after coronary heart disease and cancer, stroke is the 3rd common cause of death worldwide [1]. In recent years serum uric acid has been recognized as a direct risk factor for cardiovascular diseases [2]. Numerous risk factors are involved in the development of stroke, such as hypertension, cigarette smoking, hyperlipidaemia and diabetes [3]. The morbidity and mortality is increasing day by day due to which the socioeconomic burden of stoke [4].

National Health and Nutrition Examination Survey (NHANES) study concluded that uric acid is an independent risk factor for development of cardiovascular and cerebrovascular diseases [5].

Uric Acid is the most abundant aqueous antioxidant in humans and contributes as much as two-thirds of all free radical scavenging capacity in plasma. It is particularly effective in quenching hydroxyl, superoxide and peroxynitrite radicals and may serve a protective physiological role by preventing lipid peroxidation. Evidence from epidemiological studies suggests that the elevated SUA levels may predict an increased risk for cerebrovascular (CV) events including stroke. Moreover therapeutic modalities with a SUA lowering potential have been shown to reduce CV disease morbidity and mortality. In this respect SUA levels could be used as an easy to measure serum marker in selecting and appropriately treating subjects at risk [4]. Role of serum uric acid is not still clear. Hence a small study was carried out to fill the void.

AIM

To find association between serum uric acid and acute ischemic non embolic stroke

MATERIALS AND METHODS

Present study was a prospective study carried out among 100 patients those who were admitted within 24hrs of onset of stroke under the department of Medicine of a tertiary care hospital. Study period was 1 year. Detailed evaluation was done depending on clinical evaluation, laboratory diagnosis and neuroimaging. Laboratory diagnosis gave the serum uric acid levels and CT scan findings were done for presence of infraction. Blood samples were taken within 24 hrs of onset of stroke and sent for analysis. Detailed history was also taken which included history of additional risk factors, addiction, drug history and associated disease, etc. Ethical approval was taken prior to the start of study. Informed consent was taken from all the participants. Data was collected and compiled in Microsoft Excel and analysis was done using openepi software. Analysis was done sing chi square test.

RESULTS

Study carried among 100 stroke patients showed that Mean age of patients was 65±2years. And majority were males (Figure 1).

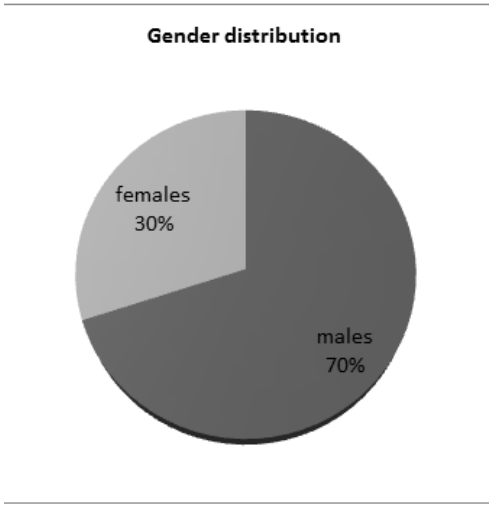

Fig-1: Gender Distribution

Table-1: Hyperuricemia

Hyperuricemia	Frequency	Percentage
Present	45	45%
Absent	55	55%
Total	100	100%

Table 1 show that almost 45% of patients had hyperuricemia. Mean serum uric acid levels were 6.18±1.2 mg/dl. Range of serum uric acid level was 2 to 10 mg/dl.

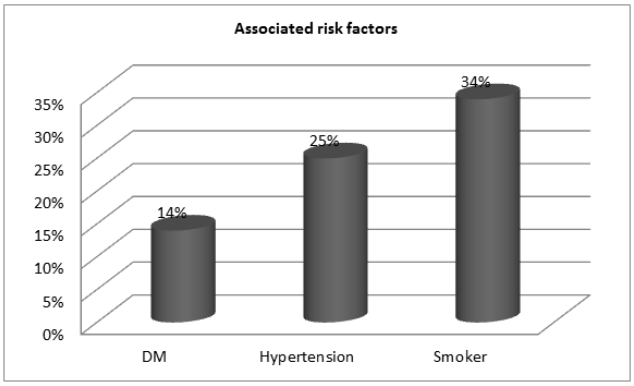

Fig-2: Associated risk factors

Figure 2 shows the associated risk factors were majority cases were smokers, followed by 25% were hypertensive and 14% were diabetic. Hypertension showed statistical significance ($p<0.05$).

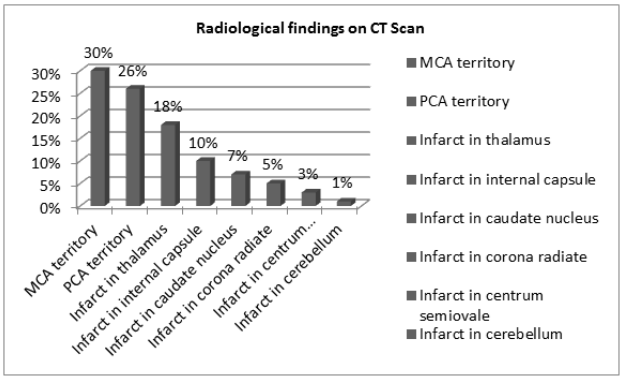

Fig-3: Radiological findings on CT scan

According to figure 3 it was seen that majority 30% of patients were affected in MCA territory followed by 26% PCA territory followed by 18% Infarct in thalamus, followed by 10% Infarct in internal capsule followed by 7% Infarct in caudate nucleus followed by 5& Infarct in corona radiate followed by 3% Infarct in centrum semi vale and only one percent Infarct in hemisphere. There was a positive correlation between serum uric acid and stroke. (r=0.3, p=0.05)

DISCUSSIONS

Present study showed that majority 70% were males and 30% were females. Mean age of patients was 65±2years. 45% had increased levels of serum uric acid levels. Mean serum uric acid levels were 6.18±1.2 mg/dl. Range of serum uric acid level was 2 to 10 mg/dl. Majority 34% were smokers, 25% were hypertensive and 14% had DM. Hypertension showed statistical significance (P<0.05). majority 30% of patients were affected in MCA territory followed by 26% PCA territory followed by 18% Infarct in thalamus, followed by 10% Infarct in internal capsule followed by 7% Infarct in caudate nucleus followed by 5& Infarct in corona radiate followed by 3% Infarct in centrum semiovale and only one percent Infarct in hemisphere. There was a positive correlation between serum uric acid and stroke. (r=0.3, p=0.05)

Study by Masoud *et al*. [1] showed that 54.4% were males, 45.6% were females, mean age was 67±13.6 years.11 patients had DM, 27.3% were smokers. Mean serum uric acid level was 5.94 ±1.7 mg/dl. 47.3% had hyperuricemia. Chen *et al* [2] showed that mean age was 58 years. Study by Vaibhav B *et al*. [4] showed that 68% were males. 34% had hypertension and hypertension showed statistical significance (P<0.05).

Fang *et al*.[5] showed that 45.4% were males. Mean age was 72.7±8.6 years. 13% had hyperuricemia. No significant relation was found between high serum uric acid levels and acute ischemic non embolic stroke. No Significance was seen between risk factor and stroke. Milionis HJ *et al*. [6] in their study had mean serum uric acid 333.1 ±101.1 micro mol/l. Significance was seen for risk factors i.e. hypertension , DM. (p=0.001)

Patil T *et al.* [7] carried out a study among 100 cases were 63% were males and 37% were females. Mean serum uric acid was 6.48± 2 mg/dl. Statistical significance was seen for diabetics and smokers. Positive correlation was seen between serum uric acid levels and stroke. Present study showed similar results. Chamorro A *et al.* [8] studied the neurological impairment on admission and final infraction size on CT/MRI. Where they found inverse proportion with serum uric acid.

CONCLUSION

The study concluded that serum uric acid and acute ischemic non embolic stroke are strongly associated. This association should be considered mainly during treating the stroke patients. Hypertension itself is significant risk factor for stroke. Future studies are required to assess the levels of serum uric acid and other risk factors leading to stroke.

REFERENCES

1. Mehrpour M, Khuzan M, Najimi N, Motamed MR, Fereshtehnejad SM. Serum uric acid level in acute stroke patients. Medical journal of the Islamic Republic of Iran. 2012 May;26(2):66.
2. Jiunn-Horng Chen, Shao-Yuan Chuang, Hsin-Jen Chen, Wen-Ting Yeh, Wen-Harn P. Serum uric acid level as an independent risk factor for all-cause, cardiovascular, and ischemic stroke mortality: A chinese cohort study. Arthritis & Rheumatism (Arthritis Care & Research). Vol. 61, No. 2, February 15, 2009, pp 225–232.
3. Farhad Iranmanesh, Nazanin Zia Sheykholeslami, Faranak Gadari, and Jafar Ahmady. Acute ischemic non-embolic stroke and serum level of uric acid. Iran J Neurol. 2012; 11(1): 1–5.
4. Biyani VV, Mane RR, Khyalappa R. Association of serum uric acid an independent risk factor in acute ischemic stroke.
5. Fang J, Alderman MH. Serum uric acid and cardiovascular mortality the NHANES I epidemiologic follow-up study 1971-1992.

National Health and Nutrition Examination Survey. JAMA. 2000;283(18):2404-10.

6. Milionis HJ, Kalantzi KJ, Goudevenos JA, Seferiadis K, Mikhailidis DP, Elisaf MS; Serum uric acid levels and risk for acute ischaemic nonembolic stroke in elderly subjects. J Intern Med, 2005; 258: 435 –441.
7. Patil TB, Pasari AS, Sargar KM, Shegokar VE, Bansod YV, Patil MB. Serum Uric Acid Levels in Acute Ischemic Stroke: A Study of 100 Patients. Journal of Neurology Research. 2011 Dec 25;1(5):193-200.
8. Chamorro A, Obach V, Cervera A, Revilla M, Deulofeu R, Aponte JH. Prognostic significance of uric acid serum concentration in patients with acute ischemic stroke. Stroke. 2002; 33(4):1048- 1052.