



## Evaluation of Serum Uric Acid in Hypertension

Authors

**B. Anil Kishore<sup>1</sup>, K. Madhavi<sup>2</sup>, M.Indira<sup>3</sup>, Y. Ruth Lavanya<sup>4</sup>, B. Shobharani<sup>5</sup>**

<sup>1</sup>M.D (Biochemistry), Senior Resident, Dept of Biochemistry, Sri Venkateswara Medical College  
Tirupati, Andhra pradesh

Email: [anilsvmc@gmail.com](mailto:anilsvmc@gmail.com)

<sup>2</sup>M.D (Biochemistry), Incharge Professor, Dept of Biochemistry, Sri Venkateswara Medical College  
Tirupati, Andhra Pradesh

Email: [madhavikondeti467@gmail.com](mailto:madhavikondeti467@gmail.com)

<sup>3</sup>M.D (Biochemistry), Asst Professor, Dept of Biochemistry, Sri Venkateswara Medical College  
Tirupati, Andhra Pradesh.

Email: [dr.indiramandala@gmail.com](mailto:dr.indiramandala@gmail.com)

<sup>4</sup>M.D (Biochemistry), Asst Professor, Dept of Biochemistry, Sri Venkateswara Medical College  
Tirupati, Andhra Pradesh.

Email: [ruthdevadoss@gmail.com](mailto:ruthdevadoss@gmail.com)

<sup>5</sup>M.D (Biochemistry) Post Graduate, Dept of Biochemistry, Sri Venkateswara Medical College  
Tirupati, Andhra Pradesh

Email: [bsr1981bcm@gmail.com](mailto:bsr1981bcm@gmail.com)

**Objective:** We carried out a study in Sri Venkateswara medical college, Tirupati during a period of 12 months to examine the relationship between serum uric acid and hypertension.

**Methodology:** A total of 150 patients were studied of which 75 were cases and 75 as controls. The patients were included if they satisfy the JNC VII criteria for hypertension 2.

**Results:** The study showed that serum uric acid levels were raised in patients with hypertension in comparison to normotensives. The Mean Serum Uricacid levels between hypertensives and normotensives were  $7.02 \pm 1.12$  and  $4.86 \pm 0.68$  respectively.  $p$  - value = 0.001 which is shown to be significant. Our study showed significant rise in serum uric acid in hypertensives.

**Conclusion:** *High serum uric acid concentrations may increase serum sodium reabsorption at nephron sites proximal to the distal tubule, and it has been proposed that metabolic perturbations such as hyperinsulinaemia may mediate some of the effects of hypertension. Hyperuricaemia may represent the culmination a multimetabolic syndrome in which insulin-mediated renal haemodynamic abnormalities lead to hypertensive renal damage. Hyperuricemia is observed in hypertension may be due to a decrease in the renal blood flow and early nephrosclerosis.*

## BACKGROUND

Hypertension is the third leading killer disease in the world and is responsible for 1 in every 8 deaths. About 1 billion people are affected by hypertension worldwide<sup>1</sup>. The prevalence of hypertension is known to increase with age. There are many other factors which are, directly or indirectly, implicated in the pathogenesis of essential hypertension. The association of raised serum uric acid levels with various cardiovascular risk factors has often led to the debate of whether raised serum uric acid levels could be an independent risk factor in essential hypertension.

## OBJECTIVE

We carried out a study in Sri Venkateswara medical college, Tirupati during a period of 12 months to examine the relationship between serum uric acid and hypertension.

## METHODOLOGY

A total of 150 patients were studied of which 75 were cases and 75 as controls. The patients were included if they satisfy the JNC VII criteria for hypertension<sup>2</sup>. Hypertension is classified as either primary (essential) hypertension or secondary hypertension; about 90–95% of cases are

categorized as "primary hypertension" which means high blood pressure with no obvious underlying medical cause<sup>3</sup>. The remaining 5–10% of cases (secondary hypertension) are caused by other conditions that affect the kidneys, arteries, heart or endocrine system.

They were excluded if they were having any other condition known to cause raised serum uric acid levels & secondary hypertension. serum uric acid was estimated by urcase/peroxidase method.

## RESULTS

The study showed that serum uric acid levels were raised in patients with hypertension in comparison to normotensives. The Mean Serum Uricacid levels between hypertensives and normotensives were  $7.02 \pm 1.12$  and  $4.86 \pm 0.68$  respectively. p - value = 0.001 which is shown to be significant. Our study showed significant rise in serum uric acid in hypertensives.

## CONCLUSION

High serum uric acid concentrations may increase serum sodium reabsorption at nephron sites proximal to the distal tubule, and it has been proposed that metabolic perturbations such as hyperinsulinaemia may mediate some of the

effects of hypertension. Hyperuricaemia may represent the culmination a multimetabolic syndrome in which insulin-mediated renal haemodynamic abnormalities lead to hypertensive renal damage. Hyperuricemia is observed in hypertension may be due to a decrease in the renal blood flow and early nephrosclerosis.

It seems safe to say that hyperuricaemia in hypertension may be an early indicator of hypertensive cardiorenal disease, which is commonly associated with a multi metabolic syndrome<sup>4</sup>.

The mechanisms underlying the increase in Serum Uric acid and its potential prognostic implications in patients with essential hypertension are still not completely known. Uric acid, a final product of purine metabolism, is bound for 5% to plasma proteins, is freely filtered at the glomerulus as a function of renal blood flow, is 99% reabsorbed in the proximal tubule, secreted by the distal tubule, and subjected to considerable post secretory reabsorption. Fractional secretion of uric acid is about 7% to 10%. A direct association exists between Serum Urivacid and renal vascular resistance in subjects with essential hypertension<sup>5</sup>.

Hyperuricaemia is predictive for the development of both hypertension and coronary artery disease; it is increased in patients with hypertension, and when present in hypertension, an elevated serum uric acid is associated with increased cardiovascular morbidity and mortality. As serum uric acid carries prognostic informations it should

be measured in patients at risk for essential hypertension<sup>6</sup>.

Various studies suggest that serum uric acid levels are affected by both genetic and environmental factors and related to such biological factors as gender, age and body mass<sup>7-9</sup>.

Unexplained rise in serum uric acid levels in Hypertension can be used as a simple biochemical marker in hypertension.

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