

**REVIEW ARTICLE ON HYPERURICAEMIA WITH AN APPROACH TO VATA-SHONITAM**Athira Ann Mathew<sup>1</sup>, Krishna Kumar K.M<sup>2</sup>

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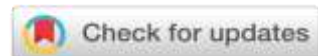
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**ABSTRACT**

Hyperuricaemia is the condition in which Serum uric acid level is elevated in blood above 7mg/dl for men and above 6mg/dl for women. Uric acid is formed when the body breaks down a chemical called Purines. The most amount of Uric acid dissolves in the blood, passes through the kidneys, and leaves the body. Uric acid is the final oxidation product of Purine degradation. Approximately 70% of the uric acid excreted by humans comes from endogenous production and food consumption, and the remaining 20% being primarily eliminated by the intestine. The elevated Serum uric acid level is because of either increased production, or decreased excretion of uric acid, or as a combination of both processes. Urate production is accelerated by Purine rich diet, Endogenous purine production, and error in Purine metabolism.

**Keywords:** Hyperuricaemia, Uric acid, Purine metabolism**INTRODUCTION**

Hyperuricaemia is the condition of elevated Serum uric acid level in the blood. The primary contributors to attributable worldwide mortality and the burden of

Hyperuricemia are identified as Genetics, Insulin resistance, Iron overload, use of Diuretics, Overweight, Obesity, Alcohol consumption, and Hyperlipidemia.<sup>2</sup> Westernization of diet may play a role in increasing

Serum uric acid levels causing the rising prevalence of Hyperuricaemia in the last several decades<sup>2</sup>. It is a disorder of Purine metabolism linked with an elevated level of serum uric acid that crystalizes as Monosodium urate deposits in joints, tendons, and the surrounding tissues<sup>3</sup>. In Hyperuricaemia, initially, the person has no prominent symptoms, and they remain asymptomatic for a long time. As per recent studies Hyperuricaemia is associated with a number of clinical disorders other than Gout, including Hypertension, Atherosclerosis, Cardiovascular disease, and Chronic kidney disease<sup>2</sup>. Hyperuricaemia comes under the cluster of Metabolic and Hemodynamic abnormalities including Abdominal obesity, Glucose intolerance, Insulin resistance, Dyslipidemia, and Hypertension, all these are coming under the term “Metabolic syndrome”<sup>4</sup>. An individual's diet and way of living are the only factors that influence their health. People are more susceptible to metabolic problems because of poor dietary practices, fast food culture, and stressful lifestyles<sup>5</sup>. From an Ayurvedic Perspective, this disease process is correlated with *Pithaadhika Vatashonitam*, where the *Dooshita Vata* leaves its path and moves in the wrong direction and get obstructed by the *Dooshita Rakta*, so this vitiated *Vata* and *Rakta* got mixed together and circulates all over the body and get lodges, especially in Sandhi, further, it associates with *Pitta* or *Kapha*.<sup>6</sup>

### RATIONALE AND BACKGROUND

Hyperuricaemia manifests approximately 21% of the population and in atleast 25% of hospitalized individuals. In India, the Prevalence rate is 25.8%. It is more prevalent in men over age 30 & women over age 50<sup>7</sup>. Urban residents show a much higher prevalence as compared to Rural residence<sup>8</sup>.

The prevalence of hyperuricemia has increased over the past 20 years as a result of dietary changes, lifestyle changes, and other risk factors, but there is still a need for efficient management of this emerging condition. Thus, it is crucial to educate people about the severity of the condition and the limitations of available treatments.

### AIMS AND OBJECTIVES

1. To Review Hyperuricaemia and its associated comorbidities
2. To Review Hyperuricaemia in the context of *Vatashonitam*

### MATERIALS AND METHODS

Materials and methods used and adopted are from PubMed, Articles, Research papers, and Authentic classic Ayurvedic textbooks like *Charaka Samhita*, *Ashtanga Hridaya*, and all other relevant databases were analyzed.

### HYPERURICAEMIA and Its HIDDEN DANGERS

Uric acid is primarily excreted in the kidneys, and a third is excreted into the intestine. 90% of it is reabsorbed after being filtered and secreted in the kidneys. Due to the activity of Uricase, other mammals have lower levels of uric acid. This enzyme transforms urate into the more water-soluble form of Allantoins. Hyperuricaemia is brought on by urate synthesis, which is exacerbated by purine-rich diets, endogenous urea production, and excessive cell breakdown. All meats, especially organ meats and some seafood are high in purine. The purine content of Beer causes a rise in uric acid levels by reducing renal excretion. The vast majority of serum uric acid arises from endogenous sources. In most cases, Hyperuricaemia remains asymptomatic. It clinically presents in two forms. First, uric acid crystal deposition in the form of Gout, and second in raised serum uric acid levels which are present in association with Hypertension, Insulin resistance, Chronic kidney disease, and Cardiovascular disease and Obesity.

### ❖ HYPERURICAEMIA AND HYPERTENSION:

Hyperuricemia is associated with a higher risk of cardiovascular disease, including a higher possibility of developing Hypertension. The National Health and Nutrition Examination Survey (NHANES) reveals that total and cardiovascular mortality are linked with Serum uric acid levels in both sexes during 10 years of follow-up<sup>9</sup>.

❖ **HYPERURICEAMIA AND CHRONIC KIDNEY DISEASE** Excretion of uric acid is primary through the kidneys; therefore, Chronic renal disease

will result in elevated Serum uric acid levels. The risk of kidney injury does not have a clear threshold uric acid value, but it does appear to be increased when uric acid levels rise. As a Renoprotective agent, urate-lowering medications like Allopurinol or Febuxostat may be an option for this condition<sup>10</sup>.

❖ **HYPERURICAEMIA AND CONGESTIVE HEART FAILURE**

Many epidemiological studies have shown a connection between Hyperuricaemia and the development of cardiovascular disease; among them, the link between Hyperuricaemia and heart failure has been receiving considerable attention for a long time. Asymptomatic hyperuricaemia has been proven to greatly increase the risk of Cardiometabolic disorders. Increased Xanthine Oxidase(XO) activity and reactive oxygen species (ROS) can cause oxidative stress, endothelial dysfunction, vascular inflammation, and other issues that lead to heart failure. Recent clinical data supported the theory that the Xanthine oxidase (XO) pathway plays a significant role in the pathogenesis of heart failure. The potential benefits of uric acid lowering therapies (ULT) and the mechanisms underlying their effects on heart failure are the subjects of research. It has also been discovered that Allopurinol, a medication used to lower uric acid, improves outcomes in patients with heart failure<sup>11</sup>.

❖ **HYPERURICAEMIA AND OBESITY**

**NIDANA**<sup>12</sup>

	<b>AHARAJA NIDANA</b>	<b>VIHARAJA NIDANA</b>
VATA PRAKOPAKA NIDANA	<i>Kashaya, Katu, Tikta bhojana Abhojana, Alpabhojana, Rooksha bhojana</i>	<i>Ambukreeda, Plavana, Ativyavaya, Haya Ushtra Khara yana, Veganigraha</i>
RAKTA PRAKOPAKA NIDANA	<i>Lavana, Katu, Amla Atibhojana, Kshara, Snigdha, Ushna bhojana, Jeern- abhojana, Klinna Shushka Ahara, Ambujaanoopa Mamsa, Mulaka, Kulatha, Nishpava, Dadhi, Aranala, Shukta, Takra, Sura, Asava, Virudhasana, Adhyasana, Mishtana, Sukha bhojana</i>	<i>Sukumara, Sukha Jeevana, Achank- ramana, Sheelata, Abhigata, Ashudhi</i>

Obese people are 400% more likely to get gout than people with normal body weights. The relationship between metabolic syndrome and Hyperuricaemia is strongly influenced by obesity. The major link between obesity and Hyperuricemia is insulin resistance brought on by fat accumulation. High serum urate levels have the potential to oxidase lipid membranes and increase serum fat levels. This in turn encourages the accumulation of fat in the liver and adipocytes. High triglyceride levels in women were linked to Hyperuricemia, whereas waist circumference was more frequently linked to the condition in men.

❖ **HYPERURICAEMIA AND GOUT**

The most well-known medical manifestation of Hyperuricaemia is gout. Gout is caused by the deposition of uric acid crystals in and around the joints and has 4 stages: Asymptomatic Hyperuricaemia, Acute gout, Inter critical gout, and Chronic tophaceous gout. The duration of each stage varies significantly among individuals. Fewer than one-third of individuals with Asymptomatic Hyperuricaemia will develop gouty arthritis. The risk of developing gout increases with age and the degree of Hyperuricaemia.<sup>3</sup>

**VATASHONITAM:** *Nidanapanchaka* of *Vatashonitam* with special reference to Hyperuricaemia has been mentioned below.

## SAMPRAPTI-PATHOGENESIS

*Prakupita vata* contributes to *Rakta dushti* as a result of *Ahara* and *Viharaja nidana*, which were previously described, because of its *Vyadhi prabhava*, which enables it to circulate throughout the body, and because *Sthanasamsraya* occurs at *Padangushta sandhi*. *Chakrapani* refers to this as *Anyonya avarana*. *Vatashonita* is hence described as an *Avaranajanya vatavyadhi*. Due to the *Sukshmatva* and *Saratva* of *vayu* as well as the *Dravatva* and *Saratva* of *rakta*, they spread everywhere. The spreading is aided by *Vyana vayu*. These *doshas* lodge in *Sandhis*. The predominant and earliest site of manifestation is the *Pada moola* (first metatarsophalangeal joint), followed by *Hasta* and *Pada*, and spreading upward from there<sup>13</sup>.

### SAMPRAPTI GHATAKA

*Dosha - Vata Pradhan Tridosha-Janya Vyadhi*

*Dushya – Rakta, Twak, Mamsa*

*Agni – Mandagni*

*Udhhavasthana – Pakvashaya*

*Sancharasthana- Sarva Sharira*

*Vyaktasthana – Sandhi*

*Srotus - Raktavaha, Asthivaha, Majjavaha*

*Srotodushthi Prakara – Sanga, Vimargagaman*

*Rogamarga – Madhyam*

### POORVAROOPA

*Poorvaroopa* is a clear sign of impending illness. *Vata dosha, Rakta dhatu*, plays a significant role in the pathophysiology of *Vatashonita*, and many of the *Poorvaroopa* resemble *Kushta*. Hyperuricaemia does not typically exhibit many signs and symptoms, particularly in the early stages. Typically, it is detected through a normal physical examination, a casual blood test, or the course of treating another illness<sup>14</sup>.

### Rupa of Vatashonitam W.S.R to Hyperuricaemia

1. *Vidham* - Burning sensation.
2. *Raga* - Redness
3. *Bhrishoshmata* - Warmthness
4. *Sopham* - Swelling in joints.
5. *Sparashaakshamatvam* - Lack of tactile sensation
6. *Ruk* - Pain and tenderness in joints

## DISCUSSION

Hyperuricemia is a condition due to an error in Purine metabolism. People are more likely to develop metabolic disorders because of poor dietary practices and lifestyle choices, and these disorders will impair tissue function. The most common, distressing, and common of these disorders in the modern era is *Vatashonitam*. Both *Vata* and *Rakta* are affected by a number of etiological factors, including excessive alcohol consumption, a diet high in red meat, a sedentary lifestyle combined with mental stress, and a protein-rich diet. These factors will result in the deposition of Monosodium urate crystals in joints and connective tissue, which is characterised by severe pain, Tenderness, Inflammation, and Burning sensation in the affected joints and also develops the risk for Metabolic syndrome, Gout, Nephrolithiasis, Chronic Kidney Diseases (CKD) and cardiovascular disease. In *Vatashonitam*, disturbance happens in metabolism results from engaging in unwholesome dietary patterns and lifestyle habits. So, due to the similarity in the etiological factors and clinical presentation, *Vatashonitam* can be correlated with Hyperuricaemia to some extent.

## CONCLUSION

Hyperuricaemia is a serious health hazard that often goes undiagnosed. This disorder is manifested due to the excess production of uric acid in the blood. Persons with Hyperuricaemia gets the risk of getting a variety of associated conditions, such as Metabolic syndrome, Hypertension, Crystal induced arthritis, Nephrolithiasis, Chronic renal disease, and cardiovascular disease. So, People who are at risk for increased serum uric acid levels should undergo frequent and routine check-ups for Hyperuricaemia because of its serious consequences.

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