

VIVID ANALYSIS OF HYPERTENSION IN AYURVEDA

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ABSTRACT

Hypertension or High Blood Pressure is the silent killer of mankind. It is a leading factor for Cardiovascular and Cerebrovascular morbidity and mortality. While classical Ayurvedic texts do not directly address Hypertension, its clinical manifestations and underlying physiological mechanisms can be interpreted through established Ayurvedic principles. About 33% urban and 25% rural Indians are hypertensive. Of these, 25% rural and 42% urban Indians are aware of their Hypertensive status. Only 25% rural and 38% of urban Indians are being treated for hypertension. One-tenth of rural and one-fifth of urban Indian hypertensive population have their Blood Pressure under control.^[1] Ancient acharyas and many authors have given symptomatic correlative terms that reflected diverse perspectives on the condition. This article aims to give vivid analytical review on Hypertension through classical Ayurvedic texts, modern medicine texts and literatures, correlating the different views of acharyas and authors with modern understandings. Here a literary review of classical texts and literatures has been undertaken to explore the clinical relevance of Hypertension in Ayurveda. The study highlights the holistic Ayurvedic perspectives emphasizing the Hypertension.

KEYWORDS: Hypertension, Pittavruta Udanavata,^[2] Raktagatavata,^[2] Raktavrutavata,^[2] Pranavrutta Udanavata.^[2]

Hypertension Definition

Hypertension is chronic life style disorder where blood pressure of person stays high. Clinically, Hypertension is defined as sustained systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg, representing a major modifiable risk factor for cardiovascular and cerebrovascular events. Most sufferers (85%) are asymptomatic and hence early diagnosis is a problem. The dividing line between normal and abnormal Blood Pressure is arbitrary because Blood Pressure is dependent upon many factors like Age, Race, and Gender etc.^[3]

Pittavruta Udanavata Definition

Avrutta vata is distinct pathological entity described in Ayurveda, while explaining about Vata dosha Acharya Charaka given about Avrutta vata. Avrutta means pathological condition where the normal Gati(movement) and Karma(function) of Vata dosha are obstructed by another Dosha(Pitta/Kapha), Dhatu(Tissues), Mala(Waste) of the body, when Vata is

blocked or covered by another factor it is called Avrutta vata. Where **Pittavruta Udanavata** is a specific type of Aruttavata in which Udanavata one of the types of Vata is obstructed by aggravated Pitta dosha. Udanavata is primarily located in the Nabhi(Umbilicus), Ura(Chest), Kantha(Throat), and is responsible for Vak Pravrutti(Vocalization), Prayatna(Effort), Urja(Energy), Bala(Strength) and Varna(Complexion).

Probable correlations of Hypertension in Ayurveda

Hypertension including concepts such as Pittavruta Udanavata,^[2] Raktagata vata,^[2] Siragata vata,^[2] Raktavrutta vata,^[2] Pranavrutta Udanavata,^[2] Uccharaktachapa,^[4] and Raktabharadhikya, Avrita Vata,^[5] Dhamani Prapurana⁵, Rakta Vikshepa,^[5] Vyana Prakopa,^[5] Raktamada,^[5] Vyana Atibala,^[5] Dhamani pratichaya^[6] etc. Lifestyle factors like improper diet, stress, sedentary habits, and disturbed sleep play a crucial role in its pathogenesis, closely resembling the Nidana described for Vataprakopa and Rakta Dushti.

This article attempts a vivid and critical analysis on Hypertension through Ayurvedic principles, correlating modern understanding with Dosha–Dushya–Srotas involvement in Ayurveda.

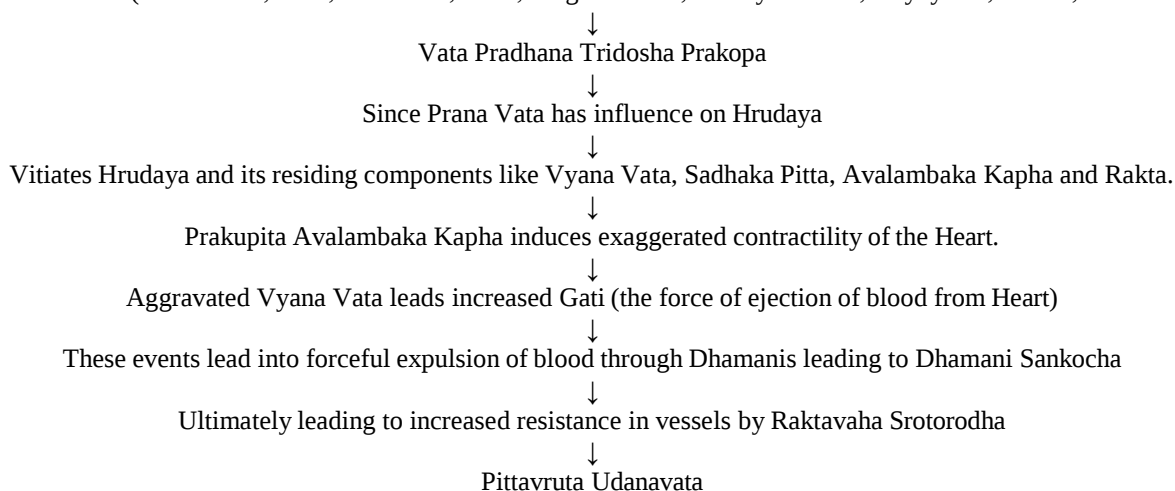
Etiology of Hypertension^[7]

- Alcohol
- Obesity
- Pregnancy
- Renal disease
- Parenchymal renal disease, particularly glomerulonephritis, Renal vascular disease,

- Polycystic kidney disease.
- Endocrine disease
- Pheochromocytoma, Cushing's syndrome, Primary hyperaldosteronism (Conn syndrome), Glucocorticoid-suppressible hyperaldosteronism, Hyperparathyroidism, Acromegaly, Primary hypothyroidism, Thyrotoxicosis, Congenital adrenal hyperplasia due to 11 β -hydroxylase or 17 α -hydroxylase deficiency, Liddle syndrome and 11 β -hydroxysteroid dehydrogenase deficiency
- Drugs
- Coarctation of the aorta

Showing schematic representation of Samprapti^[8]

Nidana Sevana (like Lavana, Katu, Amla rasa, Guru, Snigdha ahara, Madhya sevana, Avyayama, Chinta, Krodha etc.)



Samprapti Ghataka^[8]

- **Dosha** - Prana, Udana, Vyana Vata, Sadhaka pitta, Avalambaka Kapha
- **Dushya** - Rasa, Rakta, Mamsa, Medha
- **Upadhatu** - Sira, Dhamani
- **Agni** - Jatharagni, Dhatwagni Mandya
- **Srotas** - Rasa, Rakta, Prana, Manovaha Srotas
- **Srotodusti prakara** - Sangha, Vimargagamana
- **Udbhavasthana** - Pakwashaya, Amashaya
- **Sancharasthana** - Sarva Sharira
- **Vyaktasthana** - Sarva Sharira
- **Rogamarga** - Madhyama
- **Sadhyasadyata** - Yappa
- **Vyadhi swabhava** - Chirakari

Pittavruta Udanavata lakshana

When the vitiated Pitta obstructs the normal functioning of Udanavata, the physiological and regulatory functions becomes disturbed. The symptoms, which are expressed in Hypertension, are very nearer to the symptoms of Pittavruta Udanavata. Acharya Charaka and Acharya Vagbhata have mentioned the Uras as the sthana of Udanavata and are related to Hrudaya. Charaka Samhita; Chikitsasthana, details Pittavruta Udanavata citing symptoms such as **Murccha** (Fainting), **Daha in Nabhi Uras** (Burning in the umbilical region and chest), **Klama** (Fatigue), **Oja Bhramsha** (Loss of vital

essence), **Avasada** (Prostration).^[9] Sushruta Samhita; Nidanasthana, details Udanavata when covered by Pitta, gives rise to **Murccha** (Fainting), **Daha** (Burning sensation), **Bhrama** (Giddiness) and **Klama** (Exhaustion).^[10]

Other correlating conditions

Ayurveda, the traditional Indian medical system, prioritizes equilibrium within the body's doshas (Vata, Pitta, and Kapha), mental health, diet, and lifestyle.^[11]

Raktagatavata means involvement of *Rakta* by vitiated *Vayu*. According to Ayurveda, the main function of *Rakta* is *Jivanam* (life). Hence, it has been mentioned as *Jiva*. When *Rasa-Rakta Dhatu* remains in their normalcy, mainly *Sira*, *Dhamani* and *Hrudaya* stay put standard and perform their functions as a rule. Any abnormality of *Rasa Rakta Dhatu* affects the normal circulation of *Rasa Rakta* and ultimately results in the abnormality of the blood pressure or by increasing the blood pressure. As *Rasa Rakta Samvahana* occurs simultaneously in the body.^[12]

While explaining Avrutavata Acharya Charaka quoted **Raktavruta vata**. In modern medicine, Hypertension is characterized by increased peripheral vascular resistance, arterial stiffness, vascular inflammation, and endothelial

dysfunction. These fundamental mechanisms can be conceptually correlated with the features described in Raktavruta Vata. The symptom “**Sadaha Arti**” (**persistent burning sensation**) reflects Pitta and Rakta dushti, indicating excessive Ushnata and inflammatory changes within the vascular system. This may be compared to endothelial irritation and low-grade vascular inflammation observed in hypertensive pathology. “**Shvayathu**” (**swelling**) denotes fluid accumulation and impaired circulation, which resembles fluid retention and edema seen particularly in hypertensive patients with renal involvement. “**Saraga**” (**redness**) suggests hyperemia and increased blood flow under pressure, comparable to capillary congestion resulting from elevated vascular tension. The feature “**Kathina**” (**hardness**) symbolically represents loss of vascular elasticity and increased rigidity, closely aligning with arterial stiffness a well-established hallmark of chronic Hypertension.^[13]

The condition described as *Pranavruta Udanavata* in *Chikitsasthana* explains the symptom complex arising when the normal function of Udanavata is obstructed by Prana Vata. Pranavata, located in the Brain, Udanavata governs the Hrudaya (heart) and maintains arterial perpetuation,^[14] thus controlling heart rhythm. Diastolic blood pressure, on the other hand, is influenced by Kapha Dosha, particularly Avalambaka Kapha, which helps to maintain the structural integrity of organs and contributes to the resistance within the heart and blood vessels. The manifestations include **Shirograha** (head heaviness or constriction), **Pratishyaya** (nasal congestion), **Nishavasa–Ucchvasa Sangraha** (difficulty in respiration), **Hrudroga** (cardiac discomfort), and **Mukhashosha** (dryness of mouth).^[15] These features show significant conceptual parallels with the clinical presentation and pathophysiology of Essential Hypertension. Shirograha can be correlated with the throbbing or pressure type headache frequently observed in hypertensive individuals, resulting from increased vascular tension in the cranial circulation. Nishavasa–Ucchvasa Sangraha reflects altered respiratory dynamics, which may correspond to exertional dyspnea or breathlessness secondary to elevated blood pressure or left ventricular strain. Hrudroga suggests cardiac involvement, comparable to palpitations, hypertensive heart disease, or increased cardiac workload due to sustained systemic vascular resistance. Mukhashosha indicates sympathetic over activity and systemic stress response, both of which play a pivotal role in the development and maintenance of essential Hypertension.

Laboratory Investigations

Hypertension is a chronic cardiovascular disorder characterized by persistently elevated arterial blood pressure. Proper evaluation through sphygmomanometer helps in confirming the diagnosis, while laboratory and imaging investigations help assess disease severity, target organ damage, and secondary causes of hypertension.^[16–24]

1. Blood Pressure Measurements^[16,17]

- Using sphygmomanometer
- Patient seated and relaxed for 5 minutes
- Two readings taken at least 1–2 minutes apart
- Measurements taken on at least two different visits
- Diagnosis: $\geq 140/90$ mmHg

2. Ambulatory Blood Pressure Monitoring (ABPM)^[16,18,19]

- 24-hour automatic BP recording
- Gold standard for confirmation of hypertension
- Detects white coat hypertension, Masked hypertension, and Nocturnal hypertension.

3. Home Blood Pressure Monitoring (HBPM)^[16,22]

- Useful for long-term monitoring
- Detects refractory hypertension, symptomatic hypotension, and white coat hypertension

4. Routine Laboratory Investigations in Hypertension^[16,17,20]

- Complete Blood Count
- Fasting Blood Glucose Level
- Hemoglobin A1c
- Lipid Profile
- Serum Electrolytes
- Thyroid Function Test
- Urine Routine and Microscopy
- Renal Function Test

5. Electrocardiogram (ECG)^[20] Helps detect

- Left Ventricular Hypertrophy
- Arrhythmia
- Ischemia

6. Echocardiogram^[20] Helps evaluate

- Cardiac structure
- Left Ventricular Hypertrophy
- Ejection Fraction

7. Fundoscopy^[20] Detects

- Hypertensive Retinopathy

8. Chest X-ray^[20] Shows

- Rib notching suggesting coarctation of aorta
- Cardiomegaly
- Heart failure
- Mediastinal widening suggesting aortic dissection
- Pulmonary edema
- Aortic abnormalities

Prognosis

The prognosis depends mainly on **early detection, severity, and control of blood pressure.**

1. Good Prognosis (Favorable)

- When diagnosed early and properly managed
- With lifestyle modification + regular medication
- No target organ damage

Patients can live a **normal life expectancy**

2. Moderate Prognosis

- Long-standing but partially controlled Blood Pressure
- Mild damage to organs like:
 - Heart (Left Ventricle hypertrophy)
 - Kidneys (early nephropathy)
 - Eyes (grade 1–2 retinopathy)

Risk of complications increases but can still be slowed

3. Poor Prognosis (Unfavorable)

- Uncontrolled or malignant hypertension
- Severe/end-organ damage:
 - Heart → Heart failure, Coronary artery disease
 - Brain → Stroke
 - Kidney → Chronic renal failure
 - Eye → Severe retinopathy High morbidity and mortality if untreated
- Level of Blood Pressure (higher = worse prognosis)

- Duration of disease
- Presence of risk factors:
 - Diabetes
 - Smoking
 - Obesity
- Patient compliance with treatment

Ayurvedic Perspective

In Ayurveda, Hypertension (often correlated with Pittavruta Udanavata) prognosis depends on:

- **Dosha involvement** → Vata-dominant conditions are chronic
- **Dushya** (Rakta, Hrudaya) **involvement**
- **Srotorodha** (Vascular resistance)
- **Rogi bala** (Patient strength)

Management

- **Salt restriction:** Modest sodium restriction up to 2.4g/day or sodium chloride up to 6gm/day.
- **Weight management:** Overweight persons, Reduction of 1kg may reduce 1.6/1.3 mmHg Blood Pressure.
- **Stop smoking**
- **Diet:** Lacto vegetarian diet, High intake of polysaturated fish oils.
- **Stop or +Limit of Alcohol Intake:** <1 ounce/day Ethanol (24 ounces beer, 8 ounces wine, or 2 ounces 100-proof whiskey.)
- **Relaxation:** Yoga, Psychotherapy.
- **Regular exercise**^[25]

Shamana Yogas^[26]

Sarpagandha, Gahanavati, Bhrami vati, Guduchi Satva, Kuamaryasava, Punarnavasavam, Lodrasavam, Balarishta, Sarivadysavam, Ashwagandharishta	Kalyanaka gruta, Mahakalyanaka gruta, Sringa bhasma, Dantiharitaki, Brihat vasavleha, Hridayarnava rasa, Prabhakara vati	Sapagandha, Lashuna, Arjuna
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- ❖ **Sarpagandha Gahanavati:** One of the most important bioactive compounds found in *Rauwolfia serpentina* (*Sarpagandha*) is reserpine, an indole alkaloid primarily concentrated in the root of the plant, but also present in smaller amount in the stem and leaves. The antihypertensive effect of reserpine has been well documented and reviewed, including in systematic reviews such as the Cochrane Database. The primary pharmacodynamic action of *Sarpagandha Vati* is its sedative, tranquilizing, and antihypertensive properties. These effects are mainly due to the presence of reserpine; an alkaloid found in *Rauwolfia serpentina*. *Sarpagandha Vati* reduces blood pressure through Widening of blood vessels, lowering of cardiac output, Decrease in sympathetic activity. This makes it beneficial for the long-term treatment of Essential hypertension.^[27]
- ❖ **Bhrami vati:** Brahmi vati is a formulation with drugs reportedly having activity on HTN, central nervous system, cardiovascular system, diuretic activity etc. Ingredients like Brahmi (*B. monnieri*

(*L.*) Pennell) has anxiolytic effects, anticonvulsive action, antioxidant activity, adaptogenic activity cardiac depressive activity on left ventricular contractility, heart rate and coronary flow similar to that of quinidine on heart.^[28]

- ❖ **Prabhakara vati:** *Swarna Makshika*, *Louha Bhasma*, *Shuddha Seelajit*, *Abhraka Bhasma* and *Arjuna Twak Swaras*. *Swarna Makshika* (copper pyrite) possesses the properties of Tridoshaghna and *Kaphapittahara* property.^[29]
- ❖ **Arjuna:** Arjuna has Kashaya rasa, Sheeta Virya which act as Pittashamaka. Ruksh Laghu guna Katu Vipaka help to alleviate Kapha. Due to its Hridaya Pushtikara Prabhava, it is used in the management of several cardiac disorders. Antioxidant, Hypotensive, antiatherogenic properties of Arjuna plant has been reported in various researches. T. arjuna is widely used for treatment of cardiovascular diseases, including heart diseases and related chest pain, high blood pressure and high cholesterol.^[30]

Pathya-Apathya

	Pathya	Apathya
Ahara	• DASH Diet^[31] • Meals at fix timings • Whole grains like Mudga, Yava. • Ardraka, Shunthi, Lasona, Twak	• Adhyashana, Virudahara • Mamsa, Excessive protein and oils. • Ati tikta, Lavana and Amla rasa.^[32]
Vihara	• Nitya Vyayama • Weight reduction • Yoga – Vajrasana, Pawanamuktasana, Shavasana, Sukhasana, Dhanurasana, Makarasana.^[32] • Pranayama^[32]	• Alasya • Divaswapna • Ratrijagarana • Smoking • Madyapana^[32]

Interpretation

- **Ahara**

The DASH Diet is especially recommended for people with Hypertension or Prehypertension. The DASH diet eating plan has been proven to lower blood pressure in studies sponsored by National Institutes of Health. In addition to being a low salt plan, the DASH diet provides additional benefits to reduce Blood Pressure. It is based on an eating plan rich in fruits and vegetables, and low fat or non-fat dairy, with whole grains, it is a higher fiber, low to moderate fat diet, rich in potassium, calcium, and magnesium. It has been proved to lower blood pressure and cholesterol and is associated with lower risk of several types of cancer, heart disease, stroke, heart failure, kidney stones, reduced risk of developing diabetes, and can slow the progression of kidney disease.

- **Vihara**

In vihora Yoga, Pranayama and other measures helps to reducing mental stress and autonomic imbalance, helps to prevent and control hypertension. Mental stress and sympathetic overactivity contribute to the development of systemic hypertension and cardiovascular morbidity. Yoga modulates the physiological response to stress via neurohumoral activation. It optimally balances the sympatho-vagal stress response. Yoga cultivates psychosomatic harmony, induces relaxation, and reduces stress. As a result, emotional stability occurs, the somatization symptoms are relieved, and the systolic and diastolic BP is reduced. Chronic stress-induced sustained muscular contraction reduces the lumen/diameter of blood vessels in the muscles. This can lead to increased Blood Pressure. Yoga induces relaxation and decreases arterial tone and peripheral resistance. Yoga is also helpful in various stress induced psychological disorders like anxiety, depression, and insomnia.^[33]

DISCUSSION

❖ Hypertension is a chronic lifestyle disorder characterized by persistent raise of arterial blood pressure and may leading to the Cardiovascular and Cerebrovascular morbidity. Although clinically Hypertension is defined as systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg. Hypertension will be asymptomatic in early stage, making it challenging to detect.

- ❖ From Ayurvedic perspective Hypertension doesn't corresponds to a single disease entity; rather, it can be understood through the multiple conceptual frameworks such as Pittavruta Udanavata², Raktagata Vata², Siragata Vata², Raktavrutta Vata², Pranavrutta Udanavata², Ucharaktachapa⁴, and Raktabharadhikya, Avruta Vata⁵, Dhamani Prapurana⁵, Rakta Vikshepa⁵, Vyana Prakopa⁵, Raktamada⁵, Vyana Atibala⁵ etc. These descriptions collectively give a multidimensional understanding of its pathogenesis.
- ❖ Life style factors including excessive salt intake, stress, sedentary life style, irregular dietary patterns and disturbed sleep resembles the Nidana responsible for the Vata prakopa and Rakta dushti.
- ❖ Prolonged exposure to these nidanas will manifest the Vata pradhana tridosha prakopa, particularly affecting Prana, Udana, and Vyana Vata. Since Pranavata governs higher autonomic control and influences Hrudaya, its disturbance signifies the dysregulation of cardiovascular control mechanism. Udanavata located in Uras and functionally related to Hrudaya, regulates Prayatna, Bala, Urja, which can be conceptually compared to the conductive and functional aspects of heart.
- ❖ The description of Pittavruta Udanavata explains symptoms such as Murccha, Daha, Bhrama and Klama, which resembles hypertensive symptoms like giddiness, burning sensation, fatigue, and faintness.
- ❖ Raktagata Vata emphasizes the involvement of Rakta dhatu and Raktavaha srotas. Classical features of Raktagata vata such as Sadaha arti, Shvayathu, Saraga and Kathina symbolically corresponds to endothelial inflammation, fluid retention, vascular congestion, and arterial stiffness described in modern pathophysiology. Increased vascular resistance and vascular remodeling can this be interpreted as srotorodha and Avarana of vata within srotas.
- ❖ The concept of Pranavruta Udanavata further strengthens this correlation by describing the symptoms such as Sirograha, Nishavasauchavasas sangraha, Hrudroga, and Mukhashosa closely resembling the symptoms of headache, dyspnea, cardiac strain and sympathetic overactivity. This suggests an autonomic imbalance involving Prana

and Udanavata, comparable to neurohumoral dysregulation and sympathetic dominance recognized in Essential Hypertension.

- ❖ As described samprapti illustrate a sequential beginning with nidana sevana, leading to Vata pradhana tridosha prakopa. Vitiating of Hrudaya and its functional components Vyana Vata, Sadhaka Pitta, Avalambaka Kapha results in increased gati and bala of rakta circulation. Forceful expulsion of blood through Dhamanis produces heightened vascular resistance, ultimately manifesting as Hypertension. The involvement of Rasa and Rakta dhatu, along with Sira and Dhamanai, Upadhatu, supports the understanding of hypertension as a Madhyama Rogamarga vyadhi with chronic yet manageable (Yapya) nature.

Thus, Hypertension can be interpreted as Vata dominant with significant Rakta involvement and secondary participation of Pitta and Kapha at functional and structural level.

CONCLUSION

- ❖ Hypertension, described in modern medicine as a Hemodynamic disorder characterized by elevated arterial pressure, can be relatively understood in Ayurveda through the concepts of Pittavruta Udanavata, Raktagata Vata, Raktavruta Vata, and Pranavruta Udanavata.
- ❖ The pathogenesis involves Vata pradhana tridosha pakopa, Rakta Dushti, Srotorodha and functional derangement of Hrudaya and Dhamanis. Classical Symptoms describes closely parallel symptoms such as Giddiness, Fatigue, Edema, Headache, Cardiac discomfort, and Exhaustion.
- ❖ Understanding Hypertension through Dosha, Dhatu, Srotas involvement highlights the importance of nidana Parivarjana, lifestyle modification, Vata anulomana, Rakta shodhana and Rasyana therapy. As a Yapya vyadhi,
- ❖ Long term management focusing on dietary discipline, stress reduction, and correction of dosha vaishyama offers significant preventive and therapeutic potential.
- ❖ Integrating classical Ayurvedic principle with modern diagnostic criteria may provide a holistic approach for effective management of Hypertension.

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