Hypertension - An Ayurvedic approach

Radhika Pungaliya¹, Shivaleela S. Kalyani², Sunilkumar M. Chabanur³

¹Final Year Post Graduate Scholar, Dept. of PG Studies in Kayachikitsa, BVVS Ayurved Medical College and Hospital, Bagalkot, Karnataka, India.
²Professor, Dept. of PG Studies in Kayachikitsa, BVVS Ayurved Medical College and Hospital, Bagalkot, Karnataka, India.
³Head of Department, Dept. of PG Studies in Kayachikitsa, BVVS Ayurved Medical College and Hospital, Bagalkot, Karnataka, India.

INTRODUCTION

Hypertension is one of the most common lifestyle diseases in present era. Every 5th person is found hypertensive. Most adults develop it in last half of their life.[¹] Hypertension results from variety of reasons like stress, obesity, genetic factors, over use of salts in the diet etc. Hypertension is called a silent killer because it rarely exhibits symptoms before it damages the heart, brain, or kidney.[²] The prevalence of Hypertension and its adverse effects are increasing in an alarming rate.

ABSTRACT

Hypertension is severe high blood pressure caused by a stressful lifestyle, in which the blood vessels have persistently elevated pressure, making it difficult for the heart to pump. Because of this increased pressure on the heart, the pressure on the blood vessels that supply the different tissues and organs of the body increases and can damage the corresponding organs. It is an early stage of pathogenesis and a risk factor for the development of diseases affecting, for example, the heart, brain, kidneys, etc. Many people with hypertension are undiagnosed for a long time or until diagnosed incidentally, so it can be considered a silent killer. About 1.13 billion people worldwide suffer from hypertension, so normalizing abnormally high blood pressure is a difficult task. In Ayurveda, systemic hypertension can be understood as the participation of vitiated Doshas, where Vata and Pitta are the dominant Tridoshas, which prevent the movement of these Doshas in the respective Srotas. The concept of Avarana (occlusion at Dosha functioning in a normal state) gives a better understanding of hypertension, which should be considered for better results in Ayurvedic treatment of diseases. Therefore, an attempt will be made here to understand hypertension from Ayurvedic concepts and to discuss the management of this condition from an Ayurvedic perspective.

Key words: Hypertension, Ayurveda, Doshas, Vata, Pitta, Tridosha, Srotas, Avarana

INTRODUCTION

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AIMS AND OBJECTIVES

To find out the factors involved in hypertension as per Ayurvedic perspective and to explain hypertension in
terms of Ayurveda. This research paper is a sincere effort to understand hypertension in terms of Ayurveda, which will be beneficial for treatment as well as preventive purpose.

MATERIALS AND METHODS

To study signs and symptoms resembling hypertension with Ayurvedic perspective, classical books on Ayurveda, modern literature, available research updates and scientific information available on internet etc. were searched and analysed.

LITERATURE REVIEW

Nomenclature

In this modern era there are several references available for the disease hypertension with worldwide acceptance but in Ayurveda experts have suggested different names to demonstrate the phenomenon like पितावृत वात, रक्तावृत वात, सिरंगत वात व्यानवृध्धि, रक्तरुधि, रक्तवृध्धि, धमनिप्रतिच্ছय,[9] विकारनामाकुवशतो न जिखीययात कदाचन[10] न नं स्वविकरणां नामतोःसिति धृवा स्थिति:|| (Charaka Samhita, Sutrasthana 18/44)

According to Acharya Charaka, sometimes it is neither possible nor it is necessary to identify a disease by a name. An Ayurvedic physician should attempt to construct the Samprapti of a given clinical condition based on the signs-symptoms and investigative findings in each case and should plan the management accordingly.

The disease hypertension is abnormality of Rakta Dhatu popularly known as Shonita Dushti because Lakshanas are similar to that of hypertension are - Shiroruk, Klama, Anidra, Bhrama, Buddhi Sammoha, Kampa which akin to the manifestation of hypertension. Mada, Murcha, Sanyasa equally true in relation to malignant hypertension (Charaka Samhita, Sutrasthana 24/11-17)

Concept of Blood Pressure in Ayurveda

The blood 1st ejected out of heart, is then distributed to all parts of the body then returned back to heart through blood vessels which is controlled by Samana Vata.[6]

Pumping action of Heart

Blood Pressure is the lateral and Anterior pressure exerted by flow of blood on the walls of Arteries. It has 2 components

a) Systolic Blood pressure  b) Diastolic Blood pressure

Heart has its pacemaker (SA node) that generates electrical impulses on its own, which makes the heart contract, during the systole so, this is the Systolic blood pressure. This self excitatory function of heart can be attributed to the functioning of Vyana Vata.[7] Though the SA node generates impulses on its own, the rate of its impulse generation is controlled by Autonomic Nervous System. It is the Prana Vata that situated in Murdha controls the Hridaya and does Dhamani Dharana. Thus, Heart rate is controlled by Prana Vata.[8]

Peripheral Resistance

The diastole is attained when the Heart muscles relax here, pressure is only due to blood flowing through narrow structures of chambers of heart, Arteries, and there is no active push by the heart. The Diastolic blood pressure is the resistance offered by the structures of heart and the blood vessels. Thus, the peripheral resistance determines diastolic blood pressure. Thus, diastolic blood pressure can be taken under the domain of Avalambaka Kapha as Kapha maintains structural integrity of body organs. The peripheral resistance mainly influenced by the diameter and elasticity of blood vessels which can be considered under the purview of Kapha.[9]

Elasticity of large arteries

The vascular tone is also controlled by Anterior nervous system which alters the diameter of artery which when required. The peripheral resistance offered by the artery due to vasoconstriction caused by sympathetic nerve which is the function of Prana Vata. The auto rhythmicity of heart is due to the action potential created by the rapid influx of sodium, calcium ions and efflux of potassium ions across the membrane of SA
The involvement of these chemical ions can be taken under the purview of Sadhaka Pitta due to its Teekshna, Drava, Sara Gunas.

Volume of circulating blood

The blood volume can be determined by the quality and quantity of Rasa and Rakta Dhatus which also determine the cardiac output. Rasa, Rakta Vruddhi in circulatory channels produce Gouravata and Sirapurnata thereby rise in Blood pressure. Water balance is maintained by Samana Vata controlled by Prana Vata and also determined by Apana Vata.[11]

Viscosity of blood

The viscosity of blood partly determines resistance to blood flow through small vessels. Decrease in द्रवत्व due to पिध्िल substances (like ताम दोष, विशंयति कफ etc.). Increase गुरुत्व and तांद्रता of blood. लघुता which is आकाशीय property of रक्त will be lost resulting in increase of व्यान activities to meet the metabolic needs of the tissues (धातुतृप्ति).

Blood Pressure regulation and role of Tridoshas

Blood pressure in the body is regulated by multiple mechanisms

Short term regulation - Neural mechanisms; by Prana Vata. Prana Vata takes help of Kapha in Barro receptor and Pitta in Chemo receptor.

Long term regulation - Pressure Diuretics and Pressure Natriuresis - Apana Vata [Astanga Sangraha, Sutra Sthana 20/2], Hormonal mechanisms - Pitta

Etiological Risk Factors

Essential hypertension is idiopathic where exact etiology of the rise in Blood Pressure is not yet clear. There are many predisposing factors which causes hypertension are - Madhyapana, Excess Lavana intake, Sedentary lifestyle (Atisnigdha, Madhura, Ahara, Divaswapna), Mental stress (Krodha, Bhaya, Shoka), Physical strain (Shrama), Seasonal variation (Ritu sandhi), Beeja Dusthi. and Nidanarthaka Rogas-Madhumeha, Sthoulya, Hridroga, Vrikka Roga, etc (Charaka Samhita, Sutrasthana 24/7-10)

<table>
<thead>
<tr>
<th>Samprapti</th>
<th>Nidana Sevana</th>
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<tbody>
<tr>
<td>Vata Pradhana Tridosha Prakopa</td>
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<tr>
<td>Since Prana Vata has influence on Hridaya</td>
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<tr>
<td>Vitiates Hridaya and its residing components like Vyana Vata, Sadhaka Pitta, Avalambaka Kapha and Shonita</td>
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<tr>
<td>Prakupita Avalambaka Kapha induces exaggerated contractility of the Heart</td>
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<tr>
<td>Aggravated Vyana Vata leads increased Gati (the force of ejection of blood from Heart)</td>
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<tr>
<td>These events lead into forceful expulsion of blood through Dhamanis</td>
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<tr>
<td>Ultimately leading to increased resistance in vessels</td>
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<td>Hypertension</td>
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Mild to moderate hypertension in most cases doesn’t exhibit any symptoms. But sudden or severe hypertension produces symptoms like- Headache, Giddiness, Palpitation, Increased perspiration, Fatigue, Exertion dyspnoea, Insomnia. In Ayurveda, a disease should have specific Lakshan as to be called Vyadhi. Thus, hypertension being asymptomatic (in mild-moderate form) isn’t described as a disease in Ayurveda. But some of the Academicians considered as Prasaravstha of Doshas.

Samprapti Ghatakas

- **Dosha** - Prana, Udana, Vyana Vata, Sadhaka Pitta, Avalambaka Kapha
- **Dhatu** - Rasa, Rakta, Mamsa, Medha
- **Upadhatu** - Sira, Dhamani
- **Agni** - Jatharagni, Dhatwagni Mandya
- **Srotas** - Rasa, Rakta, Prana, Manovaha Srotas
- **Srotodustiprakara** - Sangha, Vimargagamana
- **Udbhavasthana** - Pakwashaya, Amashaya
- **Sancharasthana** - Sarva Sharira
Schematic Presentation of Samprapti of Hypertension

**Rogamarga - Madhyam**

Schematic presentation of Samprapti based on Kriyakala

**Sadhyasadyata - Yapya**

**Lakshanas of Hypertension**

Shiroruk, Shrama, Krotha Prachurata, Jwara, Bhrama, Klama, Akshigraha, Tamas, Atidarshana, Kampa, Ardita, Raktameha, Mada, Murcha, Sanyasa etc.

**Avarana in Hypertension**

Anyadosha Avarana - Increased Hormonal and Enzyme action (Pitta Prakopa), Decreased sodium

Exposure to Nidana (pathology) - Ahar, Vilasa & Manusrod

Sanchara (accumulation) of Dosha - Vitiation of Ojas

Vitiation of Agni and formation of Ama (vitiation of Prakrti Pitta & Sannata Vata)

Virtued Rasa Dhatu (Kapha & Ama)

Prasaa Avastha - spread of vitiated Doshas from their specific sites of all the Doshas along with Rakta due to mutual occlusion of Vyaan Vata with Prana, Uduna, Agama & Sannata Vata

Praasaa Avastha (spread of vitiates Doshas from their specific sites) of all the Doshas along with Rakta due to mutual occlusion of Vyan Vata with Prana, Uduna, Agama & Sannata Vata

Oclusion of Vyan Vata Doshaa by Pitta, Kaptha, Rasa, Rakta or Madas

Sthana (localization) of Doshas in Hridraya, Brain, Kidneys, Ears Blood vessels - Depending on the site of Vaigatnya

Vata, Prakaara, Pitta

Vyaakta Avastha - Diseases of the above organs

Psoriasis, Varru, Rasa, Rakta, Madas

Bheda Avastha - Complications and emergencies of the vital organs

Chronic site

Twelve senses, expansions, impotency, sleep etc.capricious changes

Assistive site factors such as acid, chandrika malnutrition, swelling, excitation

Aharacarana

Anyadosha Avarana

Increased Hormonal and Enzyme action (Pitta Prakopa)

Decreased sodium
excretion (Pitta, Rakta), Atherosclerotic changes in artery (Kapha, Medha).

*Anyonya Avarana* - Hampered Autonomic Nervous System (Prana, Vyana)

*Chikitsa Sutra*

Ayurvedic treatment attempts to establish a balance among *Tridoshas*, as well as to improve digestion and elimination of *ama*. Ayurvedic therapy often begins with *Shodhana* in which toxins are eliminated. Once *Shodhana* is completed, *Shamana* is used to reduce the intensity of a disease and balance the disordered *Doshas*. Finally, *Rasayana* is used to maintain health.

*Chikitsa*

Chikitsa of hypertension should be planned according to *Dosha* and *Dushya* involved.

- **Nidana Parivarjana**[13]
- Lifestyle Modification
- **Shodhana Chikitsa**[14]
- **Shamana Chikitsa**

### 1. Shodhana Chikitsa

If the patient is having *Uttam Bala* and having mild/moderate type of hypertension without any other complication then *Shodhana* procedures like *Virechana / Basti / Raktamokshana* can be advised according to *Dosha Pradhanyata*.

*Virechana*

*Virechana* clears the *Margavarodha*, eliminates the morbid *Doshas* from *Pitta*, *Rakta* and regulates the activity and movement of *Vata*.

![Diagram](https://example.com/diagram)

- During *Virechana* process the inflammation of intestinal mucosa
- Leads to hyperaemia and exudation resulting into increased passage of fluids through vessel walls to intestinal lumen
- Increase in fluid volume also results in the dilution of toxic material
- Evacuation of the fluid from *Rasa-Rakta* by *Virechana* is the direct process to decrease in fluid volume
- **Basti**
  - The long term regulation of BP occurs through Renin angiotensin aldosterone axis of endocrine mechanism
  - Lower part of GIT is richly supplied with parasympathetic nerve which on stimulation with *Basti*
  - Cause decrease in RAA complex
  - Activates depressor of vasomotor centre
  - Vasodilation
  - Decreases blood pressure

*Raktamokshana*

*Raktamokshana* is not only limited to puncturing site but also show effects on whole body. In hypertension bloodletting leads to reduction in blood volume.

*Shirodhara*

Beneficial for *Vata* and *Pitta Dosha*

- A particular pressure and vibration is created over the forehead
- Amplified by hollow sinus present in the frontal bone
- Then transmitted inwards through the fluid medium of the cerebrospinal fluid
- Thus, this vibration along with little temperature may activate the functions of thalamus and basal forebrain
- Brings the amount of serotonin and catecholamine to the normal stage inducing the sleep.

*Shamana Aushadhi*

1. **Chedana Dravyas**

*Vibhitaki* - *Rasa- Kashaya, Guna-Laghu, Ruksha, Virya-Ushna* and Chemical composition- Mannitol which acts as Diuretic. It helps in lowering cholesterol and even acts through calcium antagonist mechanism

*Maricha* - Chemical composition- Piperine. It reduces the obesity and hyperlipidemia - by lowering the lipid
absorption through inhibitory action on cholesteryl ester synthesis. It inhibits the action of phenylephrine (which is a vasoconstrictor) and potassium efflux, thus reduces contraction of heart muscles

**Guduchi** - Chemical composition- Diterpenoid lactones. Acts as vasorelaxant and Best Medohara

2. **Rakta Shodhaka Dravyas**

**Sariva** - Methanolic extract of roots acts as Antithrombotic by enhancing the release of lipoprotein lipase enzyme

**Manjistha** - Acts as diuretic, calcium channel blocker, antistress and Vasodilator

3. **Mutrala Dravyas**

**Gokshura** - Diuretic- reduces the intra vascular volume, thus preventing further accumulation of fluid

**Punarnava** - Alcoholic and aqueous extract - Diuretic. Total alcoholic extract - Cardiotonic. Virya -Ushna, so clears the obstruction

4. **Medhya Rasayana**

Due to their Medhya Guna, Tridosha Shamaka, Nidra Janan, Rasayana and Balya properties - reduce the Chala Guna of Vata

**Bramhi**[^15] - It’s cardiotonic, and reduce the anxiety, serum creatinine and Blood pressure

**Sarpagandha** - chemical composition- Reserpine. Reserpine controls Nerve impulse along the pathway that affect the heart and blood vessels thus it depletes the catecholamines and serotonin causes vasodilation and reduces peripheral resistance.

**Shankhapushpi**[^16] - Controls the production of stress hormone. Its ethanolic extract has been found to reduce cholesterol, triglycerides and phospholipids

### Shamana Yogas

#### Single Drugs

- Sarpagandha Churna
- Ashwagandha Churna[^17]
- Jatamansi Churna
- Arjuna Ksheerapaka

- Rasona Ksheerapaka

### Compound Formulations

- Sarpagandha Ghana Vati
- Bramhi Vati
- Prabhakara Vati
- Arjunarishta
- Hridayavarana Rasa
- Mukta Bhasma

### Pathyapathyapya

**Pathya** - Lifestyle modification like timely intake of balanced diet, more use of fruits and green vegetables. Yava, Godhum, Mudga, Shigru, Kulatta, Karavellaka, Amalaki, Draksha, Carrot, Apple, Pineapple etc. Regular physical exercise, daily brisk walking for half an hour. Timely sleeping and awakening. Regular practice of Yoga, Meditation.

**Apathya** - Excessive intake of salt, intake of oily, salty, sour, spicy food items more use of butter, oily food, fried food, chillies, pickles, Dadhi, tea, coffee. alcohol, smoking, tobacco etc.

**Prevention** - Practice of Dinacharya, Ritucharya, regular physical activity, cessation of smoking, alcohol, tobacco chewing, dietary salt restriction, dietary modification, weight reduction

### DISCUSSION

Improper life-style and food habits, psychological stress factors etc. with or without genetic predisposition provokes and vitiates all the threeDoshas to trigger the pathogenesis of hypertension. *Anya Dosha Avarana and Anyonya Avarana* are the mechanisms of pathogenesis. With the help of recent advancements in the medical science the diagnosis of hypertension made possible at an early stage and thus effective management can be offered at this stage itself to avoid risk of damage to vital organs. Thus, hypertension can be understood as a psycho-somatic hemodynamic condition where Vata Pradhana Tridoshas are vitiates affecting the Rasa-Rakta Dhatus as Dooshyas with both Sarva Shareera and Manas as its Adhisthana and structural changes as complications of
long-term hypertension on various organs like heart, blood vessels, kidney etc.

**CONCLUSION**

After thorough study of the literature and fundamentals in both Ayurveda and Modern medicine, it is concluded that Ayurvedic approach to treat a disease according to its **Samprapti** should be adopted i.e.; **Samprapti Vighatanameva Chikitsa**. The disease hypertension is abnormality of Rakta Dhatu popularly known as **Shonita Dushti**. In the condition of Avarana, 1st Avaraka should be treated followed by Avruta Dosa so, the uphold treatment modalities follows this rule also i.e.; by Virechana Karma vitiated Pitta, Kapha Doshas will be eliminated followed by Basti for Avruta Dosa (Vata). So, these treatment modalities helps in prevention of hypertension if they are followed according to Ritucharya and even helps prevention of further prognosis of hypertension. **“Shonita Kapha Prasadajam Hridayam” According to Acharya Sushruta while development of Garbha in the womb the Hridaya is formed by the purest portion of Rakta and Kapha. These originating constituents should be focused while treating hypertension so, the adopted treatment modalities are acting on the Moola of its origin itself so, and these can offer more reliable results. Along with above treatment modalities appropriate Pathyapathy and lifestyle should be followed.

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