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Hypertension - An Ayurvedic approach

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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

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.

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Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths in India.^[3]

In *Ayurvedic* texts there is no clear pronunciation of hypertension; but it might be present from the time, when life is existing in the universe because diseases like *Pakshaghata*, *Mutraghata*, *Hrudroga* are very well explained in our texts which are common complications secondary to hypertension. According to *Acharya Charaka*, in case of unknown disease, the physician should try to understand the nature of the disease through *Dosha*, the site of manifestation, etiological factors and then should initiate the treatment.^[4] Hence it becomes necessary to study multiple factors like *Dosha Vriddhi*, *Dhatu Dushti*, involved *Srotas* and their role in causation of hypertension for proper understanding of disease and its *Samprapti* to plan its *Samprapti Vighatanameva Chikitsa* and prevention.

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 पित्तवृत्त वात, रक्तवृत्त वात, सिरागत वात व्यानवृद्धि, रक्तचाप, रक्तवृद्धि, धमनिप्रतिचय.^[5]

विकारनामाकुशलो न जिहीयात् कदाचन।

न हि सर्वविकाराणां नामतोऽस्ति ध्रुवा स्थितिः॥ (*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

node.^[10] 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 पिच्छिल substances (like साम दोष, विश्यंदित कफ etc.). Increase गुरुत्व and सांद्रता 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 (धातुतर्पण).

Blood Pressure regulation and role of *Tridoshas*

Blood pressure in the body is regulated by multiple mechanisms

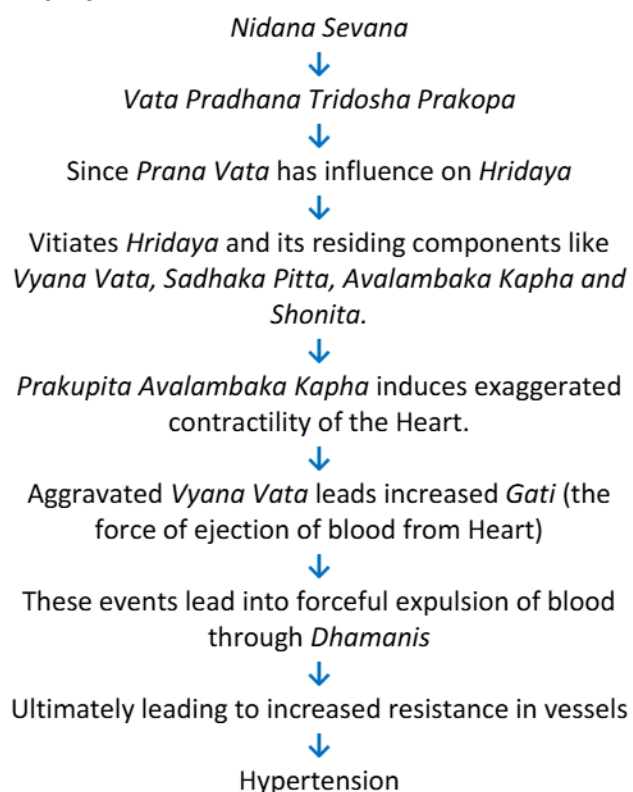
Short term regulation - Neural mechanisms; by *Prana Vata*. *Prana Vata* takes help of *Kapha* in Barro receptor and *Pitta* in Chemo receptor.

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*)

Samprapti



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 *Lakshanas* 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*.

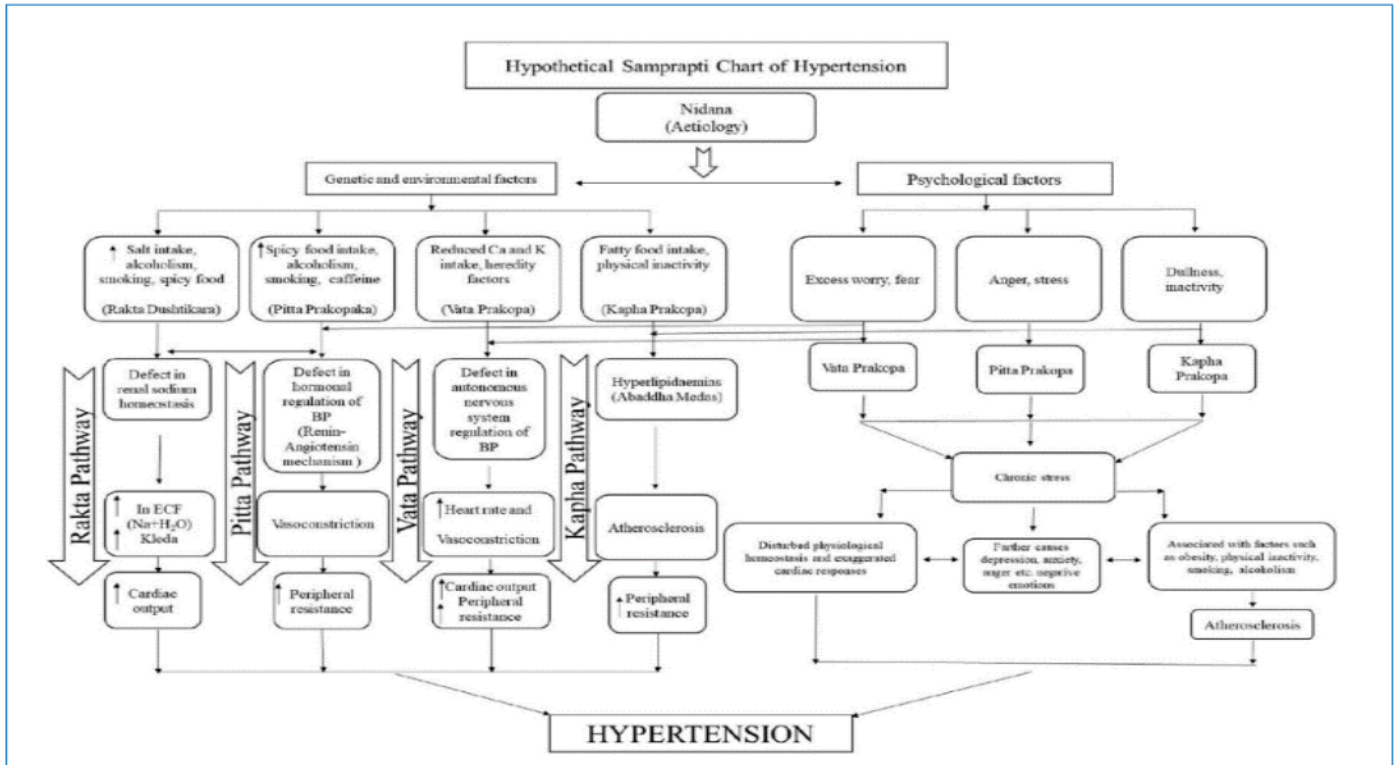
Samprapti Ghatakas

- *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*

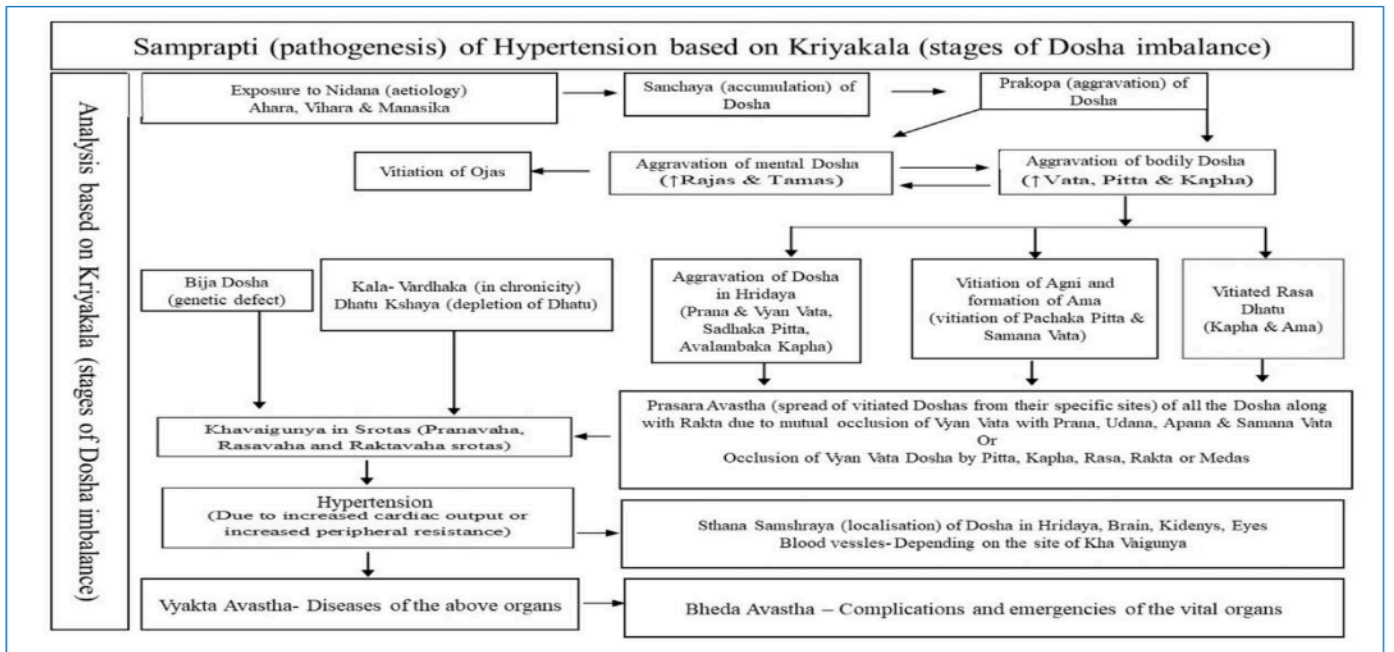
■ Rogamarga - Madhyam

■ Sadhyasadyata - Yappa

Schematic Presentation of Samprapti of Hypertension



Schematic presentation of Samprapti based on Kriyakala



Lakshanas of Hypertension^[12]

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

Avarana in Hypertension

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*.



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*

Pathyapathya

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 three *Doshas* to trigger the pathogenesis of hypertension. *Anya Dosh 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 vitiated affecting the *Rasa-Rakta Dhatu* as *Dooshyas* with both *Sarva Shareera* and *Manas* as its *Adhithana* 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 Dosha* 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 Dosha (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 *Pathyapathya* and lifestyle should be followed.

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