



AETIOPATHOGENESIS & PREVENTION OF HYPERTENSION THROUGH AYURVEDA -A CONCEPTUAL STUDY

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ABSTRACT

Introduction: Hypertension is a common disease in present era. Every fifth person is found hypertensive. Most adults develop it in later half of their life More than 50% of the deaths and disabilities from heart disease and stroke together kill more than 12 million people each year. It has been predicted that by the year 2020 there will be a 75% increase in the global cardiovascular disease burden occurring. Hypertension is dreadful disease which is multifactorial in its origin with a chronic aetio-pathogenesis when thought adapting the principle of *Dosha, Dhātu* and *Mala* theory the pathology seems to be centered on *Shonita Dhātu* and *Tridosha* So it fall in the *Madhyam Rogamarga* (intermediate route) & hence it is *Yapya* disease (difficult to cure). **Aim 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. **Material 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 analyzed. **Discussion & Conclusion:** The hypertension showed that the disease can be well managed by following *Pathya- Apathyaas* mentioned in Ayurveda (avoidance of the etiological factor). Considering detailed conceptual part we can definitely say that Ayurveda describes appropriate lifestyle and diet management called as *Aahar* and *Vihar* for maintaining homeo-stasis and thereby preventing hypertension.

KEY WORDS: Hypertension, *Tridosha*, *Pathya- Apathyaas*, *Aahar*, *Vihar*.

INTRODUCTION

The World Health Organization (WHO) has identified India as one of those nations that is going to have most of the lifestyle disorders in the near future. Hypertension results from a variety of reasons like stress, obesity, genetic factors, over use of the salts in the diet and ageing. As we all know, hypertension is called a silent killer because it rarely exhibits symptoms before it damages the heart, brain or kidney.^[1] Hypertension is an important world- wide public health challenge and remains a major cause of morbidity and mortality worldwide.^[2] About 26.4% of the world adult population in 2000 had hypertension and 29.2% were projected to have this condition by 2025.^[3] Hypertension is a condition in which the blood pressure is chronically elevated. It is considered to be present when a person's systolic blood pressure is consistently 140 mm Hg or higher, and/or their diastolic blood pressure is consistently 90 mm Hg or higher. Various epidemiologic

studies had consistently demonstrated that increasing levels of systolic BP correlate directly with the risk of developing cardiovascular events and stroke leading to mortality. In old age systolic blood pressure becomes a stronger predictor of risk than diastolic blood pressure or other standard risk factors besides age. However, there is no doubt that this disease must have been existed in the past as well, though may not in the same form, incidence and severity due to different kind of life style in those days. The change in social and economic conditions, life style, dietary habits and an increasing stress and strain in earning the livelihood have increased the prevalence of this disease. Though a suitable term for the disease condition hypertension is not directly mentioned in the Ayurvedic classics, its symptomatology can be found in the chapters of *vata vyadhi*, *prameha* and *hridroga*. A disease condition *vyanabala vaishamya*, which can be correlated with hypertension, seems to be resulted from the *vaishamya / vikriti* of *vyana vayu*. This condition of

vaishamyā (Disharmony/Disproportion) can be of two types either *vridhhi* (Increase) or *kshaya* (Decrease). Hypertension comes under *vridhhi* type of *vaishamyā*.^[4] In 95% of the cases of hypertension, the exact underlying causes are still unknown^[5] but is believed to be due to genetic and environmental factors.^[6] The diseases occur due to his faulty life style and stressful psychological conditions. These factors affect one's mind and homeostasis of the body by several psychosomatic mechanisms and lead to many lifestyle diseases such as diabetes and hypertension.

According to Ayurveda Regulation of Blood Pressure

Blood pressure is not described in any of the *Ayurvedic* classics. Blood pressure is an important phenomenon for the normal functioning of blood circulation, and physiology related to blood circulation. The regulation of Blood pressure is carried by myocardial contractility that pumps the heart continuously and ejects the blood, helps in maintaining normal Blood pressure. In Ayurveda regulation of Blood pressure can be understood by functions of *Prana Vayu*, *Vyana Vayu*, *Sadhaka Pitta*, *Avalambaka Kapha*, *Rasa* and *Rakta Dhātu* which are situated in *Hridaya*. (Heart). The vitiation of *Vata*, *Pitta*, and *Kapha* (Premordial factors), *asthi meda* etc. affects blood pressure *Kapha* vitiation (*avalambak kapha*) increases cardiac strength but due to sluggishness of *kapha*, it decreases the *kapha* and on other hand *Pitta* (*sadhak pitta*) and *Vata* (*vyana vata*) vitiation increases blood pressure. Here one thing must be clarified that term for blood circulation is not the *rakta samvahana* (transportation of blood) but *rasanudhavana* (Circulation of Plasma) *Ayurveda* believes that *rasa* (plasma) is the circulating medium and not the *rakta*(blood).^[7]

Aim 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.

MATERIAL AND METHODS

The 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.

(1.) Aetiology of Hypertension

Essential Hypertension is idiopathic where exact etiology of the rise in blood pressure is not yet clear. There are many pre disposing factors which causes hypertension is mention as follow.

- Alcohol intake (*Madyapana*)
- Salt intake (*Lavan*)
- Sedentary life style (*Ati Snighda*, *Madhur* & *Divaswap*)

- Mental Stress. (*Krodha*, *Bhaya*, *Shok*)
- Physical Strain (*Shrama*)
- Seasonal variations (*Rutu Sandhi*)
- Nidanarthkara Roga* – *Madhumeha* (Diabetes), *Sthoulya*(obesity), *Hridroga*(Heart disease), *Vrika roga* (Renal disease) are the precipitating diseases to form secondary hypertension.^[8]

(2.) Pathogenesis of Hypertension in Ayurveda

Ati lavana sevana (Excessive salt intake), *madyapana* (Alcohol consumption) *snighda bhojana* (oily diet) *Divaswap* (day time sleep) and *manovighata* (Mental accident) leads to vitiation of *Shonita* (blood). But *Shonita* being *Dhatu* (tissue) is not capable of vitiating *Doshas* (pre mordial factors of body) independently. The *Doshas* present in the *Shonita* which are involved indirectly in the manifestation of high blood pressure. The over use of salt, alcohol vitiates the *Sadhaka pitta* and *Shonita* (blood). Sedentary habits vitiate the *Avalambaka kapha* and psychological stress induces vitiation of *Prana vayu*. Initially *Prana vayu* gets *prakopa*. Since *Prana vayu* has influence on *Hridaya* (heart), vitiates *Hridaya* and its residing components like *Vyana vayu*, *Sadhaka pitta*, *Avalambaka kapha*. *Shonita* is also involved as it is located in *hridaya*. *Prakupita* (vitiated) *Avalambaka kapha* induces exaggerated contractility of the heart, while aggravated *Vyana vayu* leads increased *gati* (speed), the force of ejection of blood from *Hridaya*. These events result into forceful expulsion of blood through *dhamanis* (blood vessels), ultimately leading into increased resistance in vessels ensuring High blood pressure.

(3.) Samprapti ghatakas (components of pathogenesis)

Doshas: - *Prana*, *Udan* & *Vyana vayu*, *Sadhaka Pitta*, *Avalambaka Kapha* (Premordial factors)

Manas Dosh:- *Raja*, *Tama*

Dushyas:- *Rasa*, *Rakta*, *Mamsa*, *Meda* (plasma, blood, Muscular & Adipose tissues)

Updhatu:- *Sira*, *Dhamani*(Blood Vessels)

Agni:- *Jatharagni*-*Dhatwagnimandya* (Gastric Fire)

Aama:- *Rasagata* (Toxins at plasma level)

Srotas (Channels):- *Rasavaha Raktavaha*, *Pranvaha* & *Manovha* (Circulatory & Respiratory System)

Srotodushti Prakar-(type of lesion):- *Sanga type of srotorodha* (obstruction) *Udabhava Sthana*- (site of occurrence):- *Hridaya*, *Dhamani* (heart & blood vessels).

Adhithana (Location): *Mano-daihika* (physio-psychological) *Sira*, *Dhamani*, *Srotas* (blood vessels, body channels).

Sancharasthana (Transportation):- *Sarva Sharir* (whole body)

Rogamarga (Disease route):- *Madhyama Rogamarga* (intermediate).

(4.) **Symptomatology (Lakshanas)**:- Hypertension is asymptomatic in most of the cases but the symptoms can be seen in accelerated or sustained or Malignant Hypertension.

- a. Headache (*Shirorukh*)
- b. Tiredness (*Shrama*)
- c. Irritability (*Krodhaprachurata*)
- d. Raised body temperature (*Jwara*)
- e. Dizziness (*shirobhram*)
- f. Vomiting (*Klama*)
- g. Altered consciousness (*tamasaatidarshan*)
- h. Seizures (*Kampa*)
- i. Visual Disturbances (*Akshiraga*)
- j. Focal neurological signs (*Ardita*)
- k. Urinary symptoms (*Raktameha*)
- l. Delirium in Hypertensive (*Shiro Bhrama*)
- m. *Delirum* in encephalopathy (*Mada*)
- n. Stupor (*Moorchha*)
- o. Coma (*Sanyasa*).^[9]

(5.) Prevention of Hypertension through Ayurveda

The line of prevention and management of such disorder is beautifully quoted in *Ayurveda*.

- a. Psychological up gradation
- b. Life style and diet beneficial for heart.
- c. Diet and exercise to facilitate *srotas* flow.
- d. Follow the principles of peace (*ahimsa*)
- e. Follow the path of knowledge (*gyana*)

(5.1) PREVENTIVE MEASURES

- **Regular physical activity:** All patients should be advised to become physically active as part of a comprehensive plan to control hypertension, regardless of drug treatment.
- **Smoking** cessation may not directly reduce BP, but markedly reduces overall cardiovascular risk. The risk of myocardial infarction and stroke is higher in people who smoke than in non-smokers.
- **Dietary salt restriction:** 1 teaspoon/day/person. Recommend low-salt and reduced-salt foods as part of a healthy eating pattern.
- **Dietary modification:** Eat a heart-healthy diet rich in fruits and vegetables, lean protein and whole grain. Diet which is low in sodium, cholesterol, saturated and total fat has been shown to lower high blood pressure. A healthy eating pattern includes mainly plant-based foods e.g. fruits, vegetables, pulses and a wide selection of wholegrain foods, moderate amounts of low fat or reduced-fat dairy products, moderate amounts of lean unprocessed meats, poultry and fish, moderate amounts of polyunsaturated and monounsaturated fats (e.g. olive oil)
- **Weight reduction:** Reduction in body weight lowers systolic BP. Weight loss of 10 kg can reduce systolic BP by 6–10 mmHg.

(5.2) Do's (*Pathya*'s)

- Regular blood pressure check-up.
- Lifestyle modifications like timely intake of balanced diet, more use of fruits and green

vegetables.

- Regular physical exercise.
- Daily brisk walking for half an hour.
- Reduce intake of oily, salty, sour and spicy food items.
- Weight reduction
- Timely sleeping and awakening.
- Regular practice of Yoga, Meditation.

(5.3) Don'ts (*Apathya*'s)

- Excessive intake of salt (sprinkling over salad, curd etc.)
- Excessive use of Butter, Ghee, Chillies (Red-Green), Pickles, Til taila, Bengal gram, Mustard oil, Sour fruits, Curd, Tea, Coffee etc.
- Intake of animal fat, processed/oily food items.
- Alcohol consumption and smoking.
- Practice of day sleeping and awakening at night.

DISCUSSION

Ayurvedic Concept of blood pressure

It is essential to understand the physiological aspects of blood pressure in *Ayurveda* which is fundamentally based on the theory of *Tridosha*.^[10] The blood first ejected out of the heart, is then distributed to all parts of the body, and, thereafter, is returned back to the heart through the blood vessels termed as „*Sirah*“ in *Ayurveda*.^[11] This return of *Rasa* (blood) towards heart is controlled by the function of *Samana Vata*.^[12] As it is known, blood pressure is the lateral pressure exerted by the flow of blood on the walls of the arteries.^[13] The heart has its pacemaker (SA node) that generates electrical impulses on its own, which makes the heart contract during the systole. This self-excitatory function of the heart can be attributed to the functioning of the *Vata Dosha*, in particular the *Vyana Vata* as it is seated in the heart and is responsible for blood circulation.^[14] Charaka clearly describes that *Vyana Vata*, a component of *Vata Dosha* constantly forces the blood out of the heart and distributes it.^[15] Thus it can be said that the systolic BP attained during contraction of the heart is controlled by *Vata* (*Vyana Vata*). Though the SA node generates impulses on its own, the rate of its impulse generation is controlled by the autonomic nervous system via sympathetic and para-sympathetic nerve fibers emerging from the brain. It is the *Prana Vata* situated in the *Moordha* (Brain) that controls the *Hridaya* (heart) and does *Dhamani Dharana* (arterial perpetuation)^[16] and thus heart rate is controlled by *Prana Vata*. In this context it can be understood as *Vyana Vata* and *Prana Vata* denote the nervous control of circulation because *Vata*, in general, denotes all neural mechanisms.^[17] The diastole is attained when the heart muscles relax. Here, diastolic blood pressure is only due to blood flowing through the narrow structures of the chambers of the heart and arteries and there is no active push by the heart. Thus diastolic BP can be taken under the domain of *Kapha Dosha* (*Kapha* maintains the structural integrity of body organs), mainly the *Avalambaka Kapha* because it is the resistance offered

by the structure of the heart and the blood vessels that controls the diastolic blood pressure. The involvement of these chemical ions can be taken under the purview of *Pitta* due to its *Tikshna* (rapidity) *Drava* (fluidity) and *Sara* (diffusion/dispersion) *Guna*, mainly *Sadhaka Pitta* situated in the heart. The basal metabolic rate (BMR) has a direct but imperfect positive correlation with the pulse rate and pulse pressure of the heart.^[18] This is on the basis of Read's and Gale's formulae.^[19-20] This means to say that variations in the basal metabolic rate cause changes in blood pressure as well. Thus the basal metabolic rate can be understood as a result of the action of *Agni* or *Pitta* more precisely, *Pachaka Pitta*.

Risk factors related to hypertension (Etiological)

The causes of essential hypertension are unknown but many genetic and environmental factors and their mutual interactions act as risk factors for the development of this condition. Among these, high salt and spicy food, alcohol consumption, use of tobacco, low Calcium and Potassium intake and psychological stress may vitiate *Pitta*, *Vata* and *Rakta*, while physical inactivity, dullness and habitual intake of fatty foods are *Kapha* and *Medovardhaka Nidanans* (etiological factors increasing fat).^[21] Family history (heredity) is due to *Beeja dosha* (genetic defects). Most of these *Nidanans* are mentioned together as *Rakta Dusti Karana* by *Charaka* in the *Vidhishonitiya Adhyaya* and in the context of *Pittaja Hridroga*.^[22]

Ayurvedic pathology of hypertension

The pathology of hypertension is due to *Dooshana* (vitiating) of *Pitta* and *Rakta* due to *Ati Katu & Lavana Rasa sevena* (excess intake of pungent and salty items). The other mechanism is increased functional vasoconstriction due to impaired hormonal actions leading to increased peripheral resistance.^[23] This may be understood as *Pitta Dushti* due to endocrinal defects. Impaired functioning of the autonomic nervous system causing rise in blood pressure may be seen as *Dushti of Vata*. *Sushruta* has mentioned that *Vata Dooshita Rakta* (blood vitiated by *Vata*) is both *Sheeghra gama* (fast moving) and *Askandi* (hemodilution). Both these factors lead to changes in peripheral resistance. Hemodilution increases cardiac output^[24] and *Vata* being *Ruksha* (dry) and *Sheeta* (cold) in nature may cause stiffness of vessels which increases peripheral vascular resistance and leads to hypertension.^[25] The third mechanism is due to defects in the vascular smooth muscles (atherosclerotic changes caused by factors like hyperlipidemia) where the blood vessels lose their normal tone and this increases peripheral resistance, thus causing hypertension.^[26] This pathology may be due to the vitiating of *Kapha Dosha* and *Medo Dhathu*. Based on these points it can be deduced that the pathology of hypertension involves one or all the three *Doshas* which in turn affects the *Rasa* and *Rakta Dhatus* to cause this condition. It may be impaired by its own *Prakopa* (aggravation) due to *Vataja Nidanans*.^[27]

(etiological factors for *Vata*) or may get vitiated by the influence of other *Doshas* and *Dhathus*. This is where the concept to occlusion of normal functioning of *Vata* plays a major role in the pathogenesis of hypertension. The normal course of *Vata* can be occluded by *Pitta*, *Kapha*, *Rakta* and *Medas*.

CONCLUSION

Improper life-style and food habits, psychological stress factors like *Atichinta* (excess worry), *Bhaya* (fear), *Krodha* (anger), *Alasya* (dullness) etc., with or without genetic predisposition provokes and vitiates all the three *Doshas* to trigger the pathogenesis of hypertension. *Anya Dosha Avarana* and *Anyonya Avarana* are the mechanisms of pathogenesis. Though modern science considers hypertension as a disease, from the *Ayurveda* point of view it should be understood as the *Prasaravastha* of all the *Doshas* along with *Rakta* which circulate all over the body until they get lodged at a site of *Kha-Vaigunya*. This decides the organ of impact of the disease process (whether brain, heart, kidneys, eyes or blood vessels). With the help of recent advancements in the medical science the, diagnosis of this condition has been 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 Dhatus* as *Dooshyas* with both *Sarva Shareera* (whole body) and *Manas* (mind) as its *Adhithana* (site). For effective management of hypertension, lifestyle modifications should be given more emphasis and if necessary appropriate drug therapy should also be given.

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