

## AN APPROACH TO UNDERSTAND THE ETIO-PATHOGENESIS OF ESSENTIAL HYPERTENSION AS PER *AYURVED*: A REVIEW

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### ABSTRACT

In today's practice, Hypertension is one among the various life style disorders. About 26.4% of adult population had their Blood Pressure raised in 2000 and were projected to 29.2% by 2025. India is labeled as Global Capital of Hypertension. This result is from a number of reasons like Stress, Obesity, Genetic factor, Excessive alcohol, Smoking, Sedentary life style, use of excessive salts in diet and ageing. In majority of cases, it doesn't show any symptom so called as 'Silent Killer'. In Ayurveda, there is not any disease found with the name as "Hypertension". Here an attempt is made to understand the pathogenesis of Hypertension as per Ayurvedic aspect in terms of *Dosha, Dushya, and Srotas* involved.

**Keyword:** Hypertension, Life style disorder, Silent Killer

### INTRODUCTION

#### Concept of Hypertension in Ayurveda-

In *Ayurvedic* texts, there is not any such disease found with the name as "Hypertension". *Acharya Charaka* had given a guideline that it is not important to name a disease rather than its removal. Thus a physician must not be ashamed of it and should start the treatment on considering the pathogenesis, location and etiological factors involved in that disease<sup>[1]</sup>. Many research scholars and academicians had tried to give different names to demonstrate the phenomenon like *Raktagata Vata, Siragata Vata, Avarita Vata, Dhamani Prapurnata, Rakta Vikshepa, Rakta Chapa, Vyana Bala, Vyana Bala*

*Vaishmaya* etc.<sup>[2]</sup>. In *Ayurveda*, *Tri-dosha, Sapta Dhatus* and *Mala* are considered as root cause of all the functioning of body<sup>[3]</sup>. So, to understand blood pressure and hypertension in terms of Ayurveda, consideration of *Vata, Pitta, Kapha, Dhatu, Srotasa, Hridaya* and *Oja* is necessary<sup>[4]</sup>. Though a number of effective anti-hypertensive drugs are available in market but none of them have satisfactory results. So, people are more concern to adopt *Ayurveda* which is based on the principle of maintaining good health and adopting a healthy way of life.

**Modern view:**

Blood pressure is defined as the amount of pressure exerted by the blood on the walls of arteries along with the amount of resistance offered by the arteries on the blood. The normal amount of pressure exerted is 120mmHg systolic and 80mmHg diastolic. When this pressure exceeds its normal limits, it is called as Hypertension.

**Blood pressure  $\propto$  Blood volume**

$\propto$  **Radius of lumen of arteries i.e.**

**$1/r^4$**

**(where 'r' is radius of artery)**

As per WHO, increased intake of processed food as well as increased amount of salt in diet results in rise in blood pressure. High blood pressure is not a disease but is the primary sign which if ignored can lead to various major diseases like Stroke, MI, Heart failure, CAD, and peripheral artery disease and kidney diseases etc. In recent era, Hypertension and Heart diseases had become global health concern. Rise in blood pressure causes symptoms like Headache, Palpitation, Sweating, Anxiety, Insomnia, and Blushing etc. In majority of cases, it doesn't show any symptom so it is also called as "Silent Killer". Various physical as well as psychological factors are responsible for rise in blood pressure like irregular exercise, excessive smoking, excessive alcohol intake, sedentary life style, depression, stress, anxiety, fear etc.<sup>[5]</sup>. According to World Health Report 2002, Cardiovascular Diseases will be the largest cause of death and disability by 2020 in India. Near about 2.6 million people are predicted to die due to Coronary Heart Disease which constitutes 54.1% of all deaths. Nearly half of these deaths are likely to occur in young and middle aged individuals i.e. 30-69 years age people<sup>[6]</sup>.

**Etiological factors of Hypertension in Ayurveda-**

Hypertension is classified in two categories. First one is Essential Hypertension and other is Secondary Hypertension. The cause of Essential Hypertension is idiopathic and exact etiology of rise in blood pressure is unknown. Excessive salt intake, excessive alcohol, fatty diet and psychological stress are elicited

as the main causative factor of Hypertension<sup>[7]</sup>. On the other side, *Ati Lavana Sevan, Madya, Surapana, Ati-snigdha Bhojana* and *Chinta, Shoka, Bhaya* are *Nidanas* of *Shonit Dushiti*<sup>[8]</sup> can be viewed with reference to Hypertension.

**Factors involved in Hypertension-**

Myocardial contractility pumps the heart continuously and ejects blood from ventricles into vessels. Normal heart rate and volume of blood are the factors which help in maintaining normal blood pressure. In *Ayurveda*, regulation of blood pressure can be understood by taking into consideration *Dosha* involved (*Prana Vayu, Vyana Vayu, Sadhaka Pitta, Avalambaka Kapha*), *Dhatus* involved (*Rasa, Rakta*), *Srotas* involved (*Rasavaha, Raktavaha* and *Manovaha*) and the role of *Agni* in the regulation of blood pressure.

**Role of Doshas involved-**

**1. Prana Vayu-** The functions of *Prana Vayu* situated in '*Murdha*'<sup>[9]</sup> are *Hridaya Dharana, Buddhi, Indriya Dharana* etc.<sup>[10]</sup>. The center for Cardiovascular system is situated in the medulla oblongata. This controls the functions of Heart by regulating heart rate, contractility of ventricles and blood vessel diameter which regulates blood pressure<sup>[11]</sup>. *Hridaya Dharana* specifies impact of *Prana Vayu* on functions of heart via *Vyana Vayu* that regulates myocardial activity. This mechanism can be considered as neural regulation of blood pressure.

**2. Vyana Vayu-** *Vyana Vayu* is responsible for movement in the body<sup>[12]</sup>. Situated in *Hridaya*<sup>[13]</sup>, it performs various functions like *Rasadi Samvahana, Prasarana, Akunchana, Gati, Asrika Sravana*<sup>[14]</sup>. *Prasarana* and *Akunchana Karma* can be viewed as contraction and relaxation of heart. Hence, *Vyana Vayu*, by contraction and relaxation of heart, propels blood from heart to the body tissues and keep blood pressure in normal limits.

**3. Samana Vayu-** *Samana Vayu* helps in digestion and circulation of *Rasa* into heart and whole body<sup>[15]</sup>. Due to abnormality of this *Vayu*, proper transformation of food to *Dhatu* is hampered which results in '*Apakava Meda Dhatu*' (harmful lipid)

formation. This cause endothelial dysfunction and get deposited in blood vessel leading to Hypertension<sup>[16]</sup>.

**4. Sadhaka Pitta-** ‘Sadhaka Pitta’ situated in *Hridaya* and responsible for Budhi, *Medha*, *Utsaha*<sup>[17]</sup> is involved in regulation of blood pressure. *Hridaya* is also the seat of *Mana*. Any psychological disturbance which hampers the normal functions of *Sadhaka Pitta* also aggravates *Vyana Vayu* resulting in difference of cardio-vascular function. This exaggerates contractility of heart which increases forceful expulsion of blood resulting in high blood pressure. Increase in blood volume in the pathogenesis of Hypertension<sup>[18]</sup> may be inferred as abnormality of Pitta.

**5. Avalambaka Kapha-** *Avalambaka Kapha* which resides in Cardio-vascular system and ensures smooth transport of *Rasa-Rakta* through blood vessel. This *Kapha* strengthens the cardiac muscle tissue which ejects blood to body tissues through vessels. Hence, *Samyavastha* of this helps in maintaining blood pressure, normal rhythm, contractility and tone of cardiac muscle are some other functions which can be of *Avalambaka Kapha*<sup>[19]</sup>.

#### Role of Dushya involved-

**1. Rasa-** *Rasa Dhatu* is formed as a result of the process of digestion of food (*Aahar*). The factor which cause *Rasavaha Sroto-dushti* are excessive intake of *Guru* (heavy), *Shita*(cold), excessively unctuous food and constant worry<sup>[20]</sup>. These factors are also responsible for changes in blood pressure.

**2. Rakta-** The *Srotas* involved in the circulation of *Rakta* in body are *Hridaya* and *Raktavahi Dhamani* i.e. cardio-vascular system. Intake of food and drinks which are irritant, unctuous, hot and liquid and excessive exposure to sunlight and fire will cause *Raktavaha Sroto-dushti*<sup>[21]</sup>. The symptoms of this *Sroto-dushti* closely relates to the symptoms of Hypertension<sup>[22]</sup>.

#### Role of Srotas involved-

**1. Rasavaha-** The symptoms due to *Rasavaha Sroto-dushti* are *Hrilasa*, *Gauravam*, *Tandra*, *Angamarda*, *Tama*, *Sada* etc.<sup>[23]</sup>.

**2. Raktavaha-** According to *Charaka*, *Mula Sthana* of *Raktavaha Srotas* are *Yakrit* and *Pliha* and as per *Sushruta*, these are *Yakrit*, *Pliha* and *Raktavaha Dhamani*. When *Dushti* of this *Srotas* occurs, it produces the symptoms like *Raktapitta*, *Asrikdara*, *Pliha Vridhi* etc.<sup>[24]</sup>

**3. Manovaha-** *Manas Bhava* like *Chinta* (worry), *Krodha* (anger), *Bhaya* (fear) etc. play an important role in pathogenesis of Hypertension. Stress increases sympathetic nervous system activity which in turn interact with High Sodium Intake, Renin Angiotensin and Insulin Resistance to mediate the pathogenesis of Hypertension<sup>[25]</sup>. *Manas Bhava* have their effect in the pathogenesis, progression, and prognosis of disease and also on the response of the treatment on disease<sup>[26]</sup>.

**Role of Agni in Hypertension-** *Agni* plays its role in digestion of food. After digestion, food will result in the formation of ‘*Prasad Bhaga*’ and ‘*Mala Bhaga*’. When there is a state of *Agnimandhya*, the digestion will end in the formation of ‘*Ama*’. This *Ama* will cause *Srotoavrodha* and vitiation of all *Doshas*. It will increase peripheral resistance and can lead to Hypertension. When the state of *Agnimandhya* and *Ama* formation becomes chronic, it will results in atherosclerotic changes.

#### Probable mechanism of Hypertension as per Ayurveda:

The mechanism of nourishment of various *Dhatus* (body tissues) and excretion of metabolic waste product in the body is carried out by *Rasa-rakta Samvahana* (cardiovascular system). *Hridaya* (heart) is the main organ of this system<sup>[27]</sup>. The signals from the nervous system and the psychological state of an individual affect the function of heart. Therefore, *Hridaya* (heart) is said to be the seat of *Mana* (mind) and *Chetana* (life) in Ayurveda. The circulation of *Rasa* and *Rakta* in the body is regulated by various mechanisms. For proper circulation of *Rasa* and *Rakta* through *Sira* (veins) and *Dhamani*’s (arteries), certain amount of pressure is needed. This pressure is generated by the pumping action of *Hridaya*, walls of *Sira* (veins), size of lumen of Arteries and

volume of blood<sup>[28]</sup>. This pressure changes accordingly with change in internal and external environment. This dynamic change of pressure is regulated by the complex interaction of *Tridosha* as all the functions of the body are regulated by *Tridoshas*<sup>[29]</sup>.

## CONCLUSION

From the above discussion, it can be concluded that various factors are involved in the pathogenesis of Hypertension as per Ayurveda. All these factors, when get aggravated due to various causes, produces many kind of changes in the body's constitution. Due to all these, there occurs *Vikrit Rasa Rakta Paribhramana*. This *Vikrit Gati* will be mainly due to *Vridhha Vyana Vayu* which will results in increased pressure on the walls of blood vessels. This is called as Hypertension. In *Ayurvedic* terms, it can be called as *Vyana Bala Vaishmaya*.

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