Review Article

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Essential Hypertension - An Ayurvedic View

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ABSTRACT

India is labelled as global capital hypertension. Hypertension being a chronic illness constitutes an important public health challenge because of its prevalence concomitant increase in the cardiovascular diseases. Ayurvedic texts provide straight reference about essential hypertension, but disease can be explained on base of Ayurvedic principles. Hypertension is result of Raktadushti with Tridosha involvement in which vata and pittadoshas are prominent. Here sincere effort is made to establish etiopathogenesis of Essential Hypertension in terms of Ayurveda.

Keywords- Essential Hypertension, *Raktadushti*, *Vata*, *Pitta*, *Ayurveda*.

INTRODUCTION

21th century described as the age of anxiety and stress. People don't have time to think about themselves, so they are becoming less concerned regarding health and are taking more stress and strain. Therefore, these irregularities regarding health and mental stress leads to many physical and mental disorders, out of these hypertension is one of the alarming diseases. India is labelled as global capital of hypertension. Hypertension being a chronic illness constitutes an important public health challenge because of its prevalence and concomitant increase in the risk of cardiovascular diseases.

Hypertension is said to be essential when there is no obvious precipitating cause. It is an instrumental disease and came

into existence by the invention of sphygmomanometer in 1896 by Italian scientist Riva Rocci. After the moment the role of blood pressure has been studied in etiopathogenesis. Unfortunately there is no clinical or laboratory tests which can provide a quick positive diagnosis of essential hypertension and exclude other secondary types of hypertension but, essential hypertension is a clinical entity in itself, although its pathogenesis is unknown.

Ayurveda, the science of life is an amicable dictum of life principles, which benefits health, happiness and harmony to the humanity. The aim of Ayurveda is "to maintain the health in the healthy person and to alleviate the disorders in the diseased" As there is no specific nomenclature available in relation to Hypertension from classical textbooks, we have to see the corresponding disease state from various Ayurveda textbooks. Caraka has very clearly expressed all the disease and disorders or states of illness, may not be known with specific nomenclature, but grouped under particular modalities of classification. There is no definitive and permanent name that can be attributed to a particular condition as it is expected to change with time to time according to its presentation. [1] Thus by understanding the dosha state, site of appearance and its signs and symptoms, here is the conceptual study to understand etiopathogenesis of essential hypertension in terms of Ayurveda principle combinations vikalpa i.e. and permutations of doshas.

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Aims and Objectives

To find out etiopathogenesis of essential hypertension in terms of *Ayurveda*.

MATERIALS AND METHODS

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

Regulation of Blood pressure in Ayurveda

Raktadhatu is drava (liquid) dhatu. Therefore, it has natural property of flowing. To maintain the circulation up to the end tissue, additional force (nodana, abhighata, dhamana, sarana) is required along with its natural property of flowing, which is provided by contractions & relaxations of the heart, the pulsations in the arteries. This particular pressure, exerted by circulation is known as blood pressure.

In Ayurveda, three humours — Vata dosha, Pitta dosha and Kapha dosha; seven Dhatus (Rasa dhatu, Rakta dhatu etc.), Malas (Mutra, Purisha etc.) are considered as the root cause of all the functions of the body. So, to understand the blood pressure in terms of Ayurveda, consideration of Srotasa by which it travels, Hridaya, Oja and functions of Mana are necessary.

Circulatory system means Rasa-Rakta Samvahana is multidirectional and its kinetics varies by the area of the body and according to the need of Saptadhatu. Acharya Sushruta has tried to elaborate the theory of circulation on the basis of direction, thus Rasadhatu, the resultant of digestion and very micro in nature circulates all over the body in three directions. Circulation takes place from Hridaya in 3 directional ways which are Shabda (Tiryagamitva), Archi (Urdhwagamitwa), Jala (Adhogamitwa) santanavat [2] which are mainly related to intensity of kinetic force(cardiac output) These (directional ways) are concerned Vatadosha. If any how there is alteration in direction and kinetic force of Vatadosha then it may lead to high or low blood pressure. These conditions may be altered by obstruction of their natural directions and kinetics leading to hypertension.

Hridaya: Foetal heart made up by sara of Kapha and Ashrika (Rakta). Muscles of the heart nourished by the sara of Rakta, Kapha resembles properties like Oja, retains the bala of Heart which is utilized for Rasa-Raktasamvahana. Hridaya is considered as "Chetana Sthana." [3] Mula of rasavaha srotasa is Hridaya and Dasha dhamani. [4] Acharya Sushruta has accepted Hridaya and dhamani as Mula sthana for Pranavaha and Rasavaha Srotasaboth. Acharya Sushruta has also accepted Raktavahi dhamani as Mula Sthana for Raktavaha ManovahaSrotasa When both. the pathology arises in the Rasadhatu or Hridaya, it directly affects Rasa-vikshepana kriya (circulation of Rasa- Rakta dhatus) at the level of entire body, resulting in change of blood pressure. Moreover, in Ayurveda texts, Atichinta has been mentioned as direct cause of Rasavaha Srotodushti. [5] Chintya is the vishaya of Mana. Atichinta may be called as vitiated state of mind. As Hridaya is a root of Rasavaha Srotasa and Mana. The above causes affect Hridaya also and hamper its Rasa-samvahana function. Preserve. Oja and maintain heart and the vessel attached to it in good condition by avoidance of such of the factors as may lead to unhappiness (worries). Stable condition mana plays an important role in the regulation of blood pressure. dhamanis because they pulsate, as srotamsi because they permit oozing and siras because they maintain a continuous flow of blood (Rasa -*Rakta*)". ^[6] The *dhamanis* are stated to have their origin in the heart and end in the srotamsi (capillaries) which in turn unite to siras (veins). Thus, Hridaya, form Dhamanis, Srotamsi and Siras constitute a single circulatory unit, which regulate the proper flow of blood and nutritional supply to the body. Spandana of Hridaya is controlled by mastishkagata Pranavayu and Avalambakakapha.

Oja: Hridaya is the main seat of Oja, from where ten vessels arise which carry Oja and pulsate all over body. As described earlier, Oja remains as bala of Hridaya to utilize for Rasa raktasamhanana. In the pathogenesis of high blood pressure, heart is the main affected organ. So, on the basis of Ashraya-ashrayi bhava, Oja gets affected in high blood pressure. Moreover, symptoms of Oja Kshaya and Vyapada described in Ayurvedic texts like Shrama, Moha, Murchha etc. are also found in high blood pressure.

Vyana vayu: Situated in Hridaya performs the function like Gati (movements), Prasarna (extension), Akunchana (flexion), Unmesha-Nimesha (blinking) [8] Circulation of heart caused by contraction of musculature of organ due to stimulation of Vyanavata. Affecting outflow of blood depends not only on effective ejecting capacity of heart but also calibre of blood vessels.

Prana Vayu: There are 2 location of Pranvata- Shirahsthita Pranavata- in head. Vagbhata states that Pranavata maintains the actions of Hridaya (heart), Manas, Buddhi, Indriya (sensory organ) and supports the Dhamanis (probably the vasomotor functions i.e., circulatory system) Pranavalambanam, Buddhi, Indriya, Hridaya, Mana drika. [9]

Urahsthita Pranavata: Situated in chest. Shirahsthita pranavata may regularly move down into the chest through neck to join Urahsthitapranavata that goes to oronasal region ears and eyes through throat. It carries out sneezing, belching etc. It is clearly stated that Pranavata is controlling Hridaya and Dhamanis (Hridaya dharana and Dhamani dharana). Hridaya is located in Urah and Dhamani spread throughout body. Since Hridaya has to conduct Vikshepa karma for blood to carry throught the body. The condition of Dhamanis particularly relevant and associated with function of Hridaya.

Dhamani dharana kendras is also located in the area of *Pranavata* and is an important center in that area. Its effect on *Dhamani* is of two types: 1) *Sankochana* (contraction)

2) Vikasana (dilatation) -These two functions are possible only due to the presence of mamsa

Peshisin dhamanis. The contraction of these peshis causes the decrease in the caliber of the vessels (vaso - constriction) and the relaxation causes the dilatation. The main function of Rakta is jeevana kriya to all the tissues of the body. Therefore Rakta is kept in circulation by the spandana of the *Hridaya*. The decrease in the caliber of the dhamanis produces a decrease in the supply of the "prana" vayu and therefore the Hridaya is stimulated for increased and forceful spandana, thereby increasing the Raktabhara. The decrease in the caliber of Dhamanis also causes increased peripheral resistance. Thus the dhamani dharana kendra can either increase or decrease of the activity of *Hridaya*.

Udana vayu: Situated in *Urasthana* perform functions like *Prayatna* (volition/will) - *utsah- Hemadri* (Efforts), *Urja* (Energy), *Bala* (Strength), *Varna* (Complexion), *Poshana* [10]

All these *Karmas* are performed in whole body. All the organs, directly or indirectly do their function (Efforts) with the help of Energy and Strength provided by *Udanavayu*. Heart beats approximately one lakh times per day, continuous without taking rest, for this effort heart needs extra strength and energy which is provided by *Udanavayu*.

Samana vayu: Situated in Sweda, Dosha and Ambuvahi Srotasa responsible for transportation of Rasa in to the heart. According to Acharya Sharangadhara after the digestion process Samanavayu helps in the transportation of Rasadhatu in to the heart and from heart it circulates in the whole body. [11]

Apana vayu: Situated in Pakvadhana, Guda, Vrishana, Basti, Medhra, Nabhi, Uru, Vankshana and Shroni Performs expulsion of Mutra, Purisha, Shukra, Garbha, Artava Normal functions of all doshas including all Vayus depend upon the normal direction of Apana vayu. Acharya Caraka has quoted that if there is obstruction in the path of Apana vayu i.e. in Gudasthana then the reverse direction of Apana vayu vitiates Samana vayu, Vyana vayu, Prana vayu, Udana Vayu and Pitta-Shleshma. Thus it can be said that all the normal functions of body are dependent upon the normalcy of *Apana vayu.* Thus indirectly the circulatory functions remain under the control of Apana vayu. Mutra and Purisha have been considered as Mala, which are able to produce diseases if not excreted at their regular intervals. [12] It is clear that there is some effect of excretion of mutra on regulation of the body fluid. Vitiation of Apanavayu hampers the excretion of the mutra, so the body fluid level becomes imbalance, which may affect maintenance of normal blood pressure. Similarly in modern science, Na+, K+, urea, acid like waste substances constituents of the urine, which have to be excreted at regular intervals. Retention of these substances cause toxic effects on the body and also alters the fluid balance.

Sadhaka pitta: Situated in Hridaya responsible for Buddhi, Medha, Utsaha, Abhiman, Shaurya, Bhaya, Krodha, Harsha, Moha. [13] Sadhaka pitta helps to keep away rajaand tama, which hampers Chetana to do its normal functions and makes mana free from such Avarana ofraja and tama. So, mana becomes more efficient, in turn, enhances Buddhi, Medha, Abhimana etc. eventually helps "Atma" to achieve its goal. Psychological disturbances hamper the normal function of Sadhaka pitta affect the heart rate and cardiac output, which is result high blood pressure.

Avalambaka kapha: Located in Uraha pradesha (with Hridaya) The contribution of Avalambaka kapha is to make Avalambana of Hridaya with Ahararasa and rasadhatu together with its own potency. [14] The normal rhythmicity, conductivity, excitability, contractility, tone and refractory period of cardiac muscles can

be correlated with *Avalambana karma* of *Hridaya*. Thus, it keeps heart in a healthy state and enhances its Working capacity of continuous pumping action. Therefore, it can be said that *Avalambaka kapha* has some role on regulation of blood pressure.

NIDANA

As the signs and symptoms of the EHT can beinferred under many *Vyadhi avasthas e.g. Rasa-Raktapradoshaja vikaras* and *Vata-Pitta pradhana tridoshaja vikara* then it becomes a light job by taking the etiological factors quoted under the same headings.

Raktapradoshaja nidana- Unwholesome, hot and sharp wine excessive food, Kulattha, Masha, Nishpava and Til oil. Pindalu, Mulaka and all green vegetables. Meat of aquatic, marshy, Prasaha and the animals living in holes, Curd, sour whey (Mastu), vinegar, Sura and Sauviraka. Rotten, putrefied food and which has mutually contradictory qualities (Viruddha). Sleeping during day time after taking liquid, unctuous and heavy food, excessive anger, excessive exposure to the sun and fire. Supression of the urges, avoidance of bloodletting (in Sharada). [15]

Excessive intake of salt-Vagbhata has described that atilavana intake leads to increase in Abhishandi, sukshma, Ushna and Vyavayi gunas in body which results in pitta and shonita vitiation along with increase in quantity of *Rakta*. [16] *Lavana* formed with *jala* and mahabhoota and one of function described as kledana which can be compared with retention of sodium ions in tissue and increased quantity of Rakta. Salts more than 10gm /day leads to renal retention of salt and water which in turns increase the quantity of plasma and extra vascular fluid volume which keeps the circulatory volume higher than it should be excreting excess fluid pressure on walls of blood vessels walls. Walls react to this stress thickening and narrowing, leaving less space for fluid raising resistance and requiring higher pressure to move blood to the organs. Heart has to pump against high

pressure system that leads to high blood pressure.

Excessive alcohol intake- Usana, tikshna, sukshma, vishada, ruksha, vyavayi, vikasi are ten qualities of madya which are exactly opposite to the qualities of Oja. [17] Ushana, tikshna gunaprovoke pitta dosha and shonita dushti. Laghu guna of madhya aggravate vata dosha. Ultimately Oja kshaya occur and Hridaya gets involved being the seat of Oja. Hridayashrita Vyanavayu, Sadhaka pitta, Avalambaka kapha are also get affected. Avalambak kapha weakens the function of upachayaof mamsapeshi, resulting Hridava pumping action of heart which results in increase end diastolic volume. Also vitiates the vyana vayu w.r.t. vriddhi resulting aggravated contractility of heart compensate the extra volume which ultimately leads into increased arterial blood pressure.

Ati snigdhabhojana (fatty food)etiopathogenesis of Shonita dusti, excessive intake of snigdha, guruahara with day sleep is explained. Ati Snigdha, GuruAharacauses Jatharagni Vaigunya and Medodhatvagnimandhya leads to production of Ama rasadhatu) and Apakva Medovriddhi. This Apakva meda and rasa when deposits in Rasavaha Srotas may Dhamani leads to Pratichaya (Atherosclerosis), which may be responsible factor of High Blood pressure.

Vega-Vidharana: In Ayurveda, suppression of natural urges has unique importance in the manifestation of mainly Vata vyadhis. As hypertension is the outcome of Vata dosha involvement, suppression of natural urges which aggravates Vatadosha. Acharya Vagbhata has also implied that all the diseases may manifest by the suppression of natural urges. [18] Hridroga is inferred to be a complication of hypertension by modern science simultaneously. Thus substantial theory of *Udavarta* can be taken as an aetiological factor of hypertension by taking direct and indirect implications from different places.

Beeja Dosha/Genetic considerations-Sthaulya and Prameha have been clearly mentioned as having Beeja Dosha as etiological factor by AcharyaCharaka. These two Santarpanottha Vyadhis are very prone hypertension. much to Raktapradosha Vikaras ViruddhaAhara is one of the etiological factors having individual etiological measure in the manifestation of Santana Dosha [19] and it coincide with also can genetic predisposition (Beeja Dosha).

Manovighata (Stress): There is a clear relation between emotional stress and temporary rise in blood pressure. The mechanism by which mind affects arterial pressure could be either by a central influence on sympathetic efferent neurons which ultimately leads to increased arterial blood pressure. [20]

In Ayurveda atichinta, shoka, bhaya are said to be causative factors of shonita dusti. These Manasika Bhavas vitiate Manas via Raja and Tama. As a result, prana vayu gets prakopa and vitiates hridaya which is the seat of manas, resulting into Hrid-drava, an increased cardiac output ultimately manifesting in increased blood pressure.

Age- Acharya Sushruta has mentioned that the nutrient materials cannot nourish the body which has under gone changes due to age. ^[21] Old age is Vatadosha pradhana vaya. Physiological aggravation of Vata with its Ruksha, Khara, Daruna, Sheeta Gunas may cause Sankocha and Kathinya of the vessels. Poor nourishment of dhamanis results in reduction of the lumen of the arteries that raise the blood pressure.

SAMPRAPTI – GHATAKA

Doshas - Vata (All five types; mainly Vyana Vayu) Pitta (Sadhaka & Pachaka) Kapha (Avalambaka)

Dushya - Rasa, Rakta, Meda

Agni - Jatharagni, Dhatvagni

Ama - Jatharagni, Dhatwagni-Mandya-Janya

Srotasa - Rasavaha, Raktavaha, Manovaha, Medovaha

Srotodushti - Ati-pravritti, Sanga Type, Siragranthi

Udbhava Sthana - Ama-pakwashaya Sanchara Sthana - Rasayani (dhamanis) Adhisthana - Manodaihika (Psychosomatic) Hridaya, Sira, Dhamani, Srotas. Rogamarga – Bahya, Madhyama (Including Tri-Maha-Marma-Hridaya, Shira, Basti)

Samprapti

Overuse of salt and alcohol vitiate sadhak pitta and shonita. Sedentary life style vitiate Avalambak kapha and psychological stress vitiate prana vayu, raja tama bhava. Prana vayu has influenced on hridaya vitiates hridaya and its components like sadhak pitta, avlambaka kapha, oja. Shonita is also involved as it is located in hridaya. Prakupita Avalambakakapha induces exaggerated contractility of the heart while aggravated Vyana vayu leads increased gati, the force of ejection of blood from Hridaya. These events result into forceful expulsion of blood through dhamanis, ultimately leading into increased resistance in vessels ensuing High blood pressure. At same time because of aharaja, viharaja and manasa hetu there is jathargnimandhya which (apkvaannarasa), produce ama consequence of rasa raktadi dushti with apkava rasa raktadivruddhi can takes place leading to increase viscosity and fluidity of blood. This gives rise to hemodynamic changes where heat has to pump with more pressure. Obesity has been claimed for its role in manifestation of hypertension. Siras (which are adhisthana of hypertension) are originated from medodhatu. Vitiated medo dhatu causes strotasavarodha .Ruksha guna vriddhi causes hardening of blood vessels and reduction in elasticity of vessels results in reduced lumen of blood vessels (sira & dhamani).

Purvarupa:

The premonitory symptoms appearing before the appearances of the disease are known as *Purvarupa*. On the basis of observations of the patients of Essential Hypertension, it is said to be *Vata Pitta pradhana tridoshaja vyadhi* and *Purvarupa* of the *Vata Vyadhi* is said to be *Avyakta*. [22]

Most of the hypertensive patients are asymptomatic or present with subjective symptoms like headache, vertigo etc. Many patients are diagnosed at routine check-up or other health problem. So the premonitory symptoms of EHT are indistinct.

Rupa:

Ayurveda is the science which examines the signs and symptoms on the basis of Panchagyanendriya pariksha. The blood pressure measuring mainly depends upon Darshana. Sparshana and Shravana pariksha. But when patient unhappiness or pain in mind or body it is called as Vedana and it is always the indicator of sansthana (Symptoms) and in 50% of hypertensive patient's symptomatology (sansthana) is not found. But 50% patients come with specific clinical features.

Shirahshoola (Headache): Acharya Sushruta has stated Shoola cannot occur without the vitiation of Vata. [23] Acharya Charaka has included Shirahshoola in 80 types of Nanatmaja Shiroroga mentioned that prakupita vatadi dosha cause dusti of rakta dhatu, localizing in Shira, produce Shiroroga, which includes Shirahshoola also. This way due to Vata dusti, Shirahshoola may occur.

Nidranasha (Insomnia): VitiatedVata and Pitta and Manasa santapa are responsible for Nidranasha. Acharya Caraka has mentioned it under Nanatmaja vikara of Vata dosha. Laghuguna of Vayu generally causes nidranasha. Under the symptoms of Vata-Pittavriddhi, Acharya Sushruta has mentioned both Nidra-alpata and Nidranasha.

Bhrama (Giddiness): Acharya Sushruta has mentioned Bhrama as a result of vitiated Raja, Pitta and Vata). The chala guna of Vayu becomes dominant due to inflated Rajadosha, makes patient to feel him like revolving. [24]

Tamodarshan (Black Out): Acharya Caraka has described Tamodarshan in Rakta pradoshaja vyadhi; hence Tamodarshan occurs due to srotorodha in Rakta vahinis of Shira. [25]

Daurbalya (Weakness): Daurbalya has also been described in Shonitaja Vyadhi. Impairment of dhatu formation due to Rasa-Rakta dusti by vitiated Vata dosha also affects the formation of Oja (Prakrita bala), which produces Ati daurbalya.

Hridadravata (Palpitation): Acharya Gangadharahas clearly mentioned that Hridadravata means increased gati of Hridaya. Moreover, while describing the symptoms of Rasakshaya, Acharya Charaka has mentioned "Hridayam Tamyati". [26] Gangadhara has commented on "Tamyati". Here, Vyana vayu is aggravated with its chala guna resulting in Hridadravata.

Krodha prachurata (Excessive anger):

After the union of *Prakriti* and *Purusha*, Mahat entity comes in to the existence. Mahat means Buddhi (Intellect) which has the power to think, to understand and also to analyze the things. This Mahat considered as part taking of three fundamental attributes (Satva, Raja, and Tama) of latent or original nature. Ahamkara or egoism in its turn may be grouped under 3 subheads as Vaikarika, Taijasa (operative or Rajasika Bhutadi (Illusive or Tamasika) Ahankara come in to existence, it means the (thought of uniqueness of self existence) or attachment to wrong image of oneself (Ego). This Ahankara entity is the main Krodha.Vaikarika cause of Ahankara is the Karma of Sadhaka Pitta and Krodha is form of vikrut Sadhak pitta. Acharya Caraka has emphasized Krodha (Anger) as Dharaniya Vega. At many places, Acharya Caraka listed Krodha as Hetu in general and also a symptom in diseased conditions, but in it is listed as Raktapradoshaja Vikara.

Klama: The tiredness of body and mind without doing any physical and mental exertion is called as Klama. Klama is common symptom in the maximum number of EHT patients. Acharya Caraka listed the symptom under Raktapradosha vikaras. Vatadoshaprakopa results in the vitiation of Rasa and Raktadhatus which causes Klama.

CONCLUSION

In Ayurvedic classics, there is no direct description found regarding Essential hypertension. So the treatment should be based on the Dosha-Dushya involvement. Acharya has described Hridaya and process of Rasa-Rakta vikshepana control mainly by Prana and Vyana vayu which is very closely related to the circulatory system in modern science.

It has been screened as *Essential Hypertension* is a 'Vata-Pitta Pradhan Raktapradoshaja vyadhi', being greatly influenced by morbid state of Mana i.e., a psychosomatic disorder, which originated by involving different factors like dosha, dushya, agni, srotasa etc.

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