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Review Article

PSYCHOLOGICAL UNDERSTANDING OF HYPERTENSION- AYURVEDIC PERSPECTIVE

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ABSTRACT

Hypertension is the condition where blood pressure is elevated chronically. It has multiple factors such as genetic, environmental and life style. The stress which is usually having a role in the scenario, usually is left unaddressed and the condition is managed only with the anti-hypertensives. Discussion of hypertension in the perspective of Ayurveda is a debatable area till now. *Hrdaya* considered to be the root place of hypertension, has its origin from *Rakta* and *Kapha* in the normal state of development. Being abode for consciousness, senses, mind, soul etc. It is to be taken as a conglomeration of somatic, psychic as well as spiritual entities. *Shrama, Moha, Murcha* which is exhibited in the circumstances of alteration of *Ojus* such as *Ojakshaya/ Ojovyapath*, can be observed in elevated blood pressure situations. *Tridosha* also contributes a major role in the development of hypertension through their dysfunctions. While considering the *Nidana pancaka* of stress associated hypertension, negative emotions such as fear, anxiety, anger and excessive thoughts are always going in parallel to the unhealthy dietary habits and sedentary lifestyle. A multidisciplinary approach may be ideal and quite useful in such situations. Ayurvedic principles along with the practices of yoga can improve positive health in this intricate scenario.

INTRODUCTION

Ayurveda explains that the equilibrium of life is maintained by *Āhāra, Nidrā and Brahmacarya*, the three vital factors known as *Trayōpastaṃbha,* which are the life style factors in a balanced state and quite essential for maintenance of the health[1]. Even though everyone is aware of the term "health", we are least concerned about its preservation and the methods contributing to the same, the alterations ultimately leading into a diseased state[2]. In this modernized world, human life is determined by time and money.

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Extreme changes in the lifestyle, food habits, work field competitions etc. are often gaining life threatening outcomes. On chronic exposure, these are leading to awful ailments such as hypertension, diabetes and other lifestyle disorders. These are associated with factors affecting harmony of body and mind through the various psychosomatic mechanisms[3].

Hypertension (HTN), also known as high blood pressure, is a long-term medical condition in which the blood pressure in the arteries is persistently elevated due to several reasons. Being an asymptomatic condition in 85% cases, it is popularly known as "the silent killer"[4]. An estimated 1.13 billion people worldwide have hypertension, among which 2/3rd live in low and middle income countries[5]. In India, hypertension is directly responsible for 57% of all stroke deaths and 24% of all deaths from the coronary heart diseases. It has

multiple factors such as genetic, environmental and lifestyle[6]. In 90-95% of HTN cases, a specific aetiology is not known or yet to be known[7]. The condition is usually managed by anti-hypertensives while the stress, which is usually a contributing factor is usually left unaddressed. But, this mode of management creates secondary symptoms such as headaches, giddiness etc. Also the patients are suggested to have those kind of medications for long period without addressing the actual cause[2].

Discussion of hypertension in perspective of Ayurveda is a debatable area till now. There are no direct correlations that we can have for a condition such as hypertension to be explained in Ayurveda[2]. It is a condition resulting from the alteration of *Doshas* from various causes and may be a stage of a pathogenesis resulting in other diseases as well. Its pathology may be understood by assessing the involvement of *Dōṣa, Dūṣya, Srōtas* etc. as per the condition of the affected individual. Even though many hypothesis have been raised regarding pathogenesis of elevated blood pressure, a concensus is yet to arrive.[3] The thing is we have to address all the issues in contribution to HTN rather than have an antihypertensive for controlling blood pressure, including physiological, psychological and life style issues through pharmacological as well as non pharmacological interventions.

Hypertension - Ayurvedic Approach

On the aspect of developmental, *Hrdaya* which is considered to be the root of hypertension has its origin from *Rakta and Kapha,* in their normal state. It has the function of *Rasa – Rakta Saṃvāhana* throughout the body, executed with the help of *Sirā* as well as *Dhamanī*[8]*.* Being the abode for consciousness, senses, mind and soul it is to be considered as a union of somatic, psychic as well as spiritual entities[9]. *Ōjas* located at *Hṛdaya,* is considered as the essence of all the dhatus and the energy inside the body[10]. *Śṛama, Mōha, Mūṛchā* which are exhibited in the condition of the affection of the *Ojus* such as *Ōjakṣaya/ Ōjōvyāpath*, are observable in those with elevated blood pressure[11].

The three *Dōṣas* also plays a significant role in the development of hypertension through their possible dysfunctions from various contributory factors. *Vāta* is dominant among the *Tridōṣa* because of the quality of movement (*Gati*) and also to mobilise other *Dōṣas* all over the body. Among the *Paṉca vāyu*, *Vyāna vāyu* has got a vital role in the heart and its functioning as it is located in the heart and circulates all over the body. It undertakes functions such as *Gati, Prasāraṇa, Ākuṉjana, Srōthōviśōdhana, Rasasaṃvāhana, Swēdaasṛk sṛāvaṇa* etc[2]. The self-excitatory function of heart carried by SA node may be attributed as the performance of *Vyāna vāyu*[12].

Pṛāṇa vāyu situated at *Mūṛdhā* (brain) controlling the *Hṛdaya,* may be viewed as controlling function of autonomic nervous system (ANS) over SA node and blood vessels[3]. So, any dysfunction in both the *Pṛāṇa vāyu* and *Vyāna vāyu* would definitely imbalance the neural mechanisms in blood circulation resulting in conditions such as hypertension. Impaired autonomic nervous system function and peripheral vascular resistance leads to hypertension, which may be understood as vitiated *Pṛāṇa vāyu* and increased *Rūkṣa* and *Śīta guṇa* of *vāta* respectively[3,13].

While evaluating the role of *Pitta* in the elevated blood pressure, *Pācaka pitta* and *Sādhaka Pitta* may be mainly considered. On the basis of Read's and Gale's formula, the basal metabolic rate has got an impact on pulse rate and pulse pressure of heart[14,15,16]. Hence the variations in the basal metabolic rate cause change in blood pressure. The action of *Pācaka pitta* may be taken in relation with basal metabolic rate[3]. Action potential generated by the flow of Na^{+}, Ca^{++} and K^{+} ions across the membranes of SA node creates auto-rhythmicity of the heart[17]. The involvement of these chemical ions can be taken under the purview of Pitta, mainly *Sādhaka Pitta,* situated in the heart, which is explained due to its *Tīkṣṇa* (rapidness), *Drava* (fluidity) and *Sara* (diffusion/ dispersion) *Guṇas*. Further, short term mechanisms including chemoreceptors, Renin-Angiotensin mechanisms, chemical regulation in peripheral vascular resistance can also be included underneath the role of *Pitta dōṣa*[3].

Among the five components of *Kapha*, *Avalaṃbaka kapha* is having a major role in the function of *Hṛdaya*. The contribution of *Avalaṃbaka kapha* is to support *Hṛdaya* with *Āhāra rasa* and *Rasa dhātu,* together with its own Vīrya[2]. Thus, it keeps the heart in a healthy state and enhances its working capacity. The diastolic pressure generating through resistance offered by relaxing heart muscles may be taken as the action of *Avalambaka* kapha[3]. *Dhamanī praticaya* is one of the *Nanātmaja vyādhi* mentioned resulting from *Kapha*. According to Cakrapāṇi it is explained as the *Upalēpa* of *Dhamanī*. So, for the normal maintenance of *Dhamanī*, *Kapha dōṣa* is obligatory[2]. The diameter and elasticity of blood vessels influencing peripheral resistance is to be understood under the horizon of *Kapha dōṣa.* Moreover, *Srōtōrōdha* engendered by *Kapha dōṣa* itself along with *Mēdō dhātu* on vitiation, in turn

affects the circulation of *Dhātu* and finally create imbalance in Hṛdaya[3].

Hypertension - Psychological Aspects

Stress is being considered as a foremost reason for several illnesses nowadays. The sympathetic system has a key role in responding to stressful stimuli by raising cardiac activity, heart rate and blood pressure. Any imbalance in its functioning leads to pathological changes. Even though there doesn't exist any visible relationship between stress and hypertension, it may be taken as due to repeated activation of sympathetic system, failure to get back into the resting state (blood pressure) after stress impact, failure to habituate the same type of stressors, or a combination of all these, any of these leading to elevated blood pressure[2].

The persistence of blood pressure level is damaging since it is not in need after the event. Enduring, an intrusive and repeating negative thought with preservative cognitive characteristics has been proposed as a mechanism for poor recovery of blood pressure. Rumination is an unproductive process which focuses on the cause of a negative mood. Several studies suggested that rumination always got effect on elevating cardiac activity resulting in delayed recovery of blood pressure. Moreover, the distraction in over thinking about stressful events results in speed recovery of blood pressure[18].

While considering the *Nidāna pancaka* of stress associated with hypertension, negative emotions such as fear, anxiety, anger and excessive thoughts are always going in parallel to the unhealthy dietary habits and sedentary lifestyle[2,3]. Those negative emotions in turn vitiates the *Manō dōṣa, Rajas and Tamas* which then leads to alteration of *Manōvahā sṛōtas.* Eventually, this end up in *Agnimāndya* and the resultant *Rasa - Rakta Sṛōtōduṣti* leading to the disease condition contributing to hypertension[2].

Ayurvedic Management

Ayurveda stresses on the correction of the multitude of factors contributing to any clinical condition including HT, for its appropriate management. Hence correction of the *Sareera doshas*, *Manasa doshas*, *Ahara* and *Vihara* is explained for addressing the issue absolutely. Due to an increase in need for living and prosperity, lifestyle disorders are getting more prevalent even in young population nowadays. Stress is becoming an important factor for such disorders and so preserving a positive mental health is in high demand in the current scenario[2]. Ayurveda advices on the importance in prevention and promotion of health in which removing the contributory factors or *Nidāna is* considered as primary line of management[3].

Non-pharmacological interventions such as improving lifestyle and food habits, normalising the stress are proven in reducing the risk of hypertension, coronary heart disease etc[19]. While considering the management of hypertension, Ayurveda and Yoga is capable of providing synchronous effects in the condition. In Ayurveda, *Prakṛti, Dōṣa-Dūṣya Sammūṛchana, Agni, Bala, ojus* etc are the major factors in the management of hypertension[2]. Further, the guidelines provided for harmonious lifestyle through explanation of *Dinacarya, Ritucarya, Sadvritta* etc. can be followed to trim down the risk of attainment of life style disorders including hypertension[19,20].

As far as Yoga is concerned, mind relaxation and balancing have been given prior consideration in the approach towards any illness[2]. Lifestyle and dietary modifications are the key factors of the protocols of both the systems which can be followed effectively in any clinical scenario. Eventually, the long-term exposure to medicines and their adverse effects can be delineated through the methods of Ayurveda and Yoga. Several studies had been conducted on evaluating effects of Ayurveda and Yoga in management of hypertension.

Clinical Study on Hypertension

In a clinical study conducted at VPSV Ayurveda College Kottakkal, the add on effect of *Manomithrachoorna* and *Yoga* protocol in reducing stress associated with HT was analysed among 45 subjects of the age group of 30 to 50 years. In one group, the medicine was administered at a dose of 6 gm twice with warm water before food along with yoga protocol and allopathic medication. The second group received the medicine along with ongoing allopathic medication. The control group were those who were on ongoing allopathic medication. The interventions were continued upto 45 days and outcomes were analysed statistically[1].

Manomithra choorna is a conventionally used formulation in reducing stress, anxiety etc. and used in Ayurvedic psychiatric practise. It consists of *Bala, Aswagandha* and *Yashtimadhu* in a ratio of 2:2:2 and the dosage were 6 grams twice daily. The anti-stress and adaptogenic activities of these drugs were already proved by previous studies[1]. The effect of yoga practices in reducing anxiety, increasing GABA and Serotonin levels, improving muscle relaxation and enhancing immune mechanisms are also been reported from previous studies[6,7].

The Study concluded that the *Manomithra choorna* along with Yoga package has significant

effect in reducing stress, as per ISMA questionnaire as well as hypertension. On assessment with the Bullpit and Fletcher's QOL questionnaire, there was improvement in the QOL at the significance level of $p<0.001$. In the control group only the level of blood pressure reduced significantly, without any changes in stress and QOL. But the study was insignificant while comparison between the groups, the reason may be the unequal distribution of symptoms, variability in the allopathic medications among the groups etc. [1] Further studies are the need of the hour so as to generalise the findings of the study.

DISCUSSION

HT can be approached from the Ayurvedic point of view being caused by all the three *Doshas* with the involvement of *Rasa*, *Raktha* and *Medo dhatus*. There is definite role for *Ahara*, *Vihara* and stress in the pathogenesis. The management includes addressing the multitude of factors thereby reversing the pathogenesis and not only controlling the raised blood pressure. Also, the preventive approach including *Sadvritta*, *Achara Rasayana*, dietary regulations and *Yoga* are helpful in not leading to conditions such as HT.

From the clinical study, it is clear that we have enough evidence for the efficacy of Ayurvedic herbs and yoga techniques in hypertension and stress associated with the same. *Manomithra choorna* is a conventionally used formulation in reducing stress, anxiety etc. It contains *Bala* (*Sida cordifolia), Aśwagandha (Withania somnifera)* and *Yaṣtimadhu (Glycyrrhiza glabra)*[2]. The antistress and adaptogenic activities of these drugs are already studied. Moreover, studies proved that *Sida cordifolia* extract reduces plasma cortisol and glucose level which were being raised by the mechanism of stress[22]. *Aśwagandha* being *Rasāyana* and *Dhātu agni dīpana* enhances *Ōjas* which may help to reverse the pathology in HT. Anxiolytic action of *Aśwagandha* and *Yaṣtimadhu* had been proved by studies as well[23,24]. The effect of Yoga practices in reducing anxiety, increasing GABA and Serotonin levels, improving muscle relaxation and immune mechanisms etc. are also been discussed in previous studies[27,28].

CONCLUSION

Hypertension being a lifestyle disorder has got multidimensional factors related to its causation. Stress is being an important factor for most of the diseases nowadays, contributing magnanimously to lifestyle disorders, especially HT. In the usual management of hypertension, the psychological part being unaddressed mostly, making the sufferer to prolonged intake of medicine with unsatisfied recovery. Ayurveda and Yoga practices can make significant contributions to such a complex scenario through appropriate medicines along with healthy dietary habits, lifestyle and creating positive mental health. Further researches are to be conducted so as to enhance the results.

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