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Ayurvedic approach of hypertension and prevention through Ayurveda

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ABSTRACT

Modernization in medical field has changed the understanding of illness. Many a diseases has been vanished and newer emerged with the time. Hypertension is one among them, a newer condition which has been creating burden on health expenditure of mankind and being the risk factor for many diseases. Hypertension is not curable condition, so the prevention is major factor to avoid the condition. Hypertension is not directly mentioned in ayurvedic literature but knowledge prevailing to the condition is scattered under different headings in Ayurveda classics. This article is an attempt to conceptualize and to search preventive measures in Ayurveda.

Key words: *Hypertension, vyanavata, rasarakta dhatu, dhamanis.*

INTRODUCTION

An infinite group of lifestyle diseases haunting the mankind today include certain forms of cancer, most heart diseases, high blood pressure,[1] type 2 diabetes, obesity and certain diseases of the internal organs. Hypertension is one commonest cardiovascular disorder affecting about 20% adult populations worldwide and is an important risk factor for cardiovascular mortality.[2] Its rapidly increasing prevalence in developing countries as leading cause of death and disability.[3] The prevalence of hypertension in India is reported as ranging from 10 to 30.9 %[5]; 25% in urban and 10% in rural people;[6] and is projected to cause 4.6 million deaths by 2020.[4] In last century, human population witnessed major shift in lifestyle; healthy traditional food practices being replaced by readymade, attractive but nutritiously poor stuffs. Environment, consisting of many factors including atmosphere, habitat, stress etc. also play decisive role in lifestyle disorders. Stress in modern society is skyrocketing with the urbanization and busy schedule of individuals. For their slow pathology and high degrees of resultant impairments, prevention becomes the key to lifestyle diseases. Ayurveda being the science of life, has well highlighted the effect of food and environment in causing various diseases. However the disease hypertension has not been directly explained but understanding the disease in terms of Ayurvedic principles is more preferable than naming the disease. So this paper is a humble attempt to find out probable correlation and prevention of the hypertension in Ayurvedic perspective.

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High blood pressure (hypertension)

High blood pressure or hypertension is defined by JNC 7 report in three categories which can be summed up as systolic pressure ranging from 140 & >140 mm of Hg and diastolic as 90 & > 90 mm of Hg. In Ayurveda, neither the concept of hypertension is mentioned directly nor its objectivity as because of discrepancy in the concept and the instrument like

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sphygmomanometer or blood pressure meter were not invented at that time. When the blood pressure increases above the normal it causes various diseases of major organs like heart, brain, kidney etc. Vitiated vyana cause impact on general body.[8] Showing that vyana vata can affect the multiple organs of the body. From this it can be understood that, for high blood pressure the underlying pathology is vitiation. The hypertension is classified into mainly two types: 1) essential hypertension 2) vyana vata secondary hypertension.

The essential hypertension or primary hypertension is the type in which no appreciable cause is identified for the increase in B.P, which is found in 90% hypertensive cases. The secondary hypertension is that in which increase in blood pressure is due to other systemic illnesses. As the causes of essential hypertension are not well understood, many lifestyle changes are being postulated for the causation of the disease. So in this context vyana vikriti along with vitiation of kapha/pitta which take place directly from nidana sevana can be considered with essential hypertension and the vikriti of vyana which takes place as the upadrava of other diseases can be taken as secondary hypertension.

Understanding Blood Pressure (B.P.)

Blood pressure means the force exerted by the blood against any unit area of the vessel wall.[7] Normal blood pressure according to Seventh Report of the Joint National Committee (JNC 7) report is systolic pressure 90 - 119mm of Hg and diastolic of 60 -79 mm of Hg. Normal blood pressure is necessary for blood and nutrient flow to all the body parts. The blood pressure is maintained mainly by heart and blood vessels and nervous control. In terms of Ayurveda, Vyanavayu, the type of vata which is situated in heart and flow all over the body have the similar function with that of the mechanism responsible for maintaining normal blood pressure. The function of vyana is to maintain the flow of rasarakta dhatu.[8] So for maintaining normal blood pressure the role of vyana vata is vital.

Causes of Hypertension (Nidanas)

There is no specific cause for hypertension but following risk factors are associated with the hypertension.

Risk factors[8]	***Ayurvedic Nidana***[10]
Genetic causes and age	These are due to mostly *vata* predominance
Obesity (high caloric intake, inactivity etc)	*Atiguru, snigdha, atimatraaahara, avyayama*
Atherosclerosis (high fatty food)	Above and *divaswapna* etc.
Abnormal glucose tolerance	*Asyasukham, samashana, atiamlalavana* etc.
Sedentary physical activity	*Avyayama*
Smoking, alcohol	*Atidhumapana , vatapittaprakopanidanas*
Stress	*chinta, harsha,vishadaetc*

To sum up, because of these hetus or nidana vata, pitta, kapha either alone or in combination get vitiated. These nidanas are also responsible for rasa, rakta, medo strotas dusti.

Mechanisms of Hypertension

The pathology of hypertension is multidimensional. One or more factors contribute in manifestation of disease. The volume of blood, nervous control of cardiovascular system, kidney function and peripheral vessel resistance are the important factors in causation of hypertension. Cardiac output and peripheral resistance are the two determinants of arterial pressure. Cardiac output is mainly governed by vyana vayu and peripheral resistance depends upon the proper functioning dhamanis/strotas as in which vyana flows.

Intravascular Volume

Intravascular volume is a primary determinant of arterial pressure over the long term. Increase in

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intravascular volume lead to hike in B.P. From Ayurvedic perspective this can be well understood by rasarakta dusti lakshanas like hritakleda, praseka and sirapurntava. The observation that high sodium level is associated with increased blood volume is also mentioned in classics "लवणं पित्तं कोपयति, रक्तंवर्धयति |"(cha. Su 26/43). So increase in rakta dhatu means increase in its volume as well as vitiation of pitta .

Autonomic Nervous System

The autonomic nervous system maintains cardio vascular homeostasis via pressure, volume, and chemoreceptor signals. By increasing cardiac output and peripheral resistance, Nervous signals as well as hormones like adrenaline, noradrenaline are responsible for maintaining normal blood pressure and increased activity of these manifest into hypertension. In the same way vyana vayu in normal condition do the function of rasarakta samvahana[9] and when it vitiated the pathological condition arises.

Renin-Angiotensin-Aldosterone

The renin-angiotensin-aldosterone system contributes to the regulation of arterial pressure primarily via the vasoconstrictor properties of angiotensin II and the sodium-retaining properties of aldosterone. Alteration in function of these lead to hypertension. So the obstruction in vyana vayu along with vitiation of apana may lead to the above mentioned pathology.

Vascular Mechanisms

In hypertensive patients, structural, mechanical, or functional changes may reduce lumen diameter of small arteries and arterioles. Main change in these patients is arteriosclerosis of blood vessels and atherosclerosis is one type of arteriosclerosis. In this the hardening of blood vessels and reduction in the lumen of the vasculature occurs.This mechanism of atherosclerosis , closely mimics with the concept of dhamni pratichaya, which is kaphaja nanatmaja vikarara. So kapha also have role in hypertension.

Signs and symptoms

High blood pressure (HBP) itself usually has no signs or symptoms. Rarely, headaches may occur. In early stage of hypertension and in pre hypertensive's as well there are no symptoms. Signs and symptoms of vitiated vata which are not totally manifested are called purvarupa. And as the doshanubandha and Kha vaigunya gets associated the symptoms will get manifested. If the doshanubadha is more then it will show more symptoms. A small percentage, perhaps 5%, of hypertensive persons show a rapidly rising blood pressure that if untreated, leads to death within a year or two called accelerated or malignant hypertension, the clinical syndrome is characterized by severe hypertension.

Malignant hypertension

Malignant hypertension is very high blood pressure that comes on suddenly and quickly. The lower (diastolic) blood pressure reading, which is normally around 80 mmHg, is often above 130 mmHg. Clinically characterized by Blurred vision, Change in mental status, Anxiety, Confusion, Decreased alertness, decreased ability to concentrate, Fatigue, Restlessness, Sleepiness, stupor, lethargy Chest pain (feeling of crushing or pressure), Headache, Nausea or vomiting Numbness of the arms, legs, face, or other areas, Seizure etc. this can be accomodated under the pitta-kapha avarutavyana lakshanas.[9] Severity of symptoms depends upon dosha predominance and amount of dosha dusti.

The hypertension if left untreated then it will affect the multiple systems and it is true in the case of aavarana also. Vyana avarana left untreated or not treated properly then will affect the main sthana of vyana i.e. hridaya and consequently it will affect the prana and ojas which is situated in hridaya.

Pathologic Consequences of Hypertension (Upadravas)

Hypertension is a risk factor for all clinical manifestations of atherosclerosis. It is an independent predisposing factor for heart failure, coronary artery disease, stroke, renal disease, and peripheral arterial disease (PAD). Nidanasevana if continued then ojas vikriti will take place. This will lead to further complications.

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Heart (hridaya)

Heart disease is the most common cause of death in hypertensive patients. Hypertensive heart disease is the result of structural and functional adaptations leading to LVF coronary heart diseases. These conditions can be collectively understood with the help of ojokshaya lakshanas.

Brain (shira)

Hypertension is an important risk factor for cerebrovascular accident (CVA). This will lead to dysfunction and loss of function of the body parts. This condition can be understood with the help of ojjovimsransa lakshanas.

Kidney (basti)

Hypertension is a risk factor for renal injury. Renal failure secondary to renal hypertension is common which showing oedema and uremic coma symptoms can be understood with the lakshanas of ojjovyapana.[9] That's why Charakacharaya highlighted to take care of hridaya and ojas, because their departure from normal lead to death.

Management

According to modern science screening, diagnosis and control of B.P. by various medicines according to pathology are suggested and in prevention lifestyle changes like salt and fat intake restrictions along with exercises are mentioned.

Ayurvedic management

For management purpose the hypertension can be divided into two types,

1. Acute cases of symptomatic or malignant hypertension which can be reverted by following avarana treatment according to dosha predominance.
2. Chronic cases, can be managed by mainly treating the risk factor. In this stage the shodhana and samana oushadas can be given. But the prevention is more important than cure, because according to conventional medicine complete cure is not possible in the hypertension. Importance of prevention is well said in bhagavatgita,It is better to avoid the diseases rather than treating them.

Prevention through Ayurveda

The prevention can be divided into two: general prevention and prevention for risk factors General prevention: Proposed for health conscious people and people with family history of hypertension. Following changes can be done in diet (Aahara) and daily routine (Vihara).

Aahara

Mental as well as physical health is dependent on aahara. Abiding by the regimes of food preparation and consumption will be helpful. Following food items can be incorporated into routine diet.

Food items	*Karmas*	Benefits
Ajjamamsa / Goat meat (grilled / boiled)	*Shariradhatus amanya* (does not increase *kapha*)	Contains more mono unsaturated fat[12]
Amalki / Gooseberry	*Tridoshaghna m,rasayanam*	Reduce TC, LDL, VLDL and increase HDL cholesterol[13]
Ardraka / Ginger	*Vatasleshma vibandhahara*	Lowers blood pressure, reduces inflammation, acts as an antioxidant, reduces cholesterol and acts as a blood thinner[14]
Draksha / Grapes	*Shita , madhura, snigdha*	Good for HTN and anxiety[15]
Dugdha / Milk	*Ojovardhaka, rasayana*	ACE inhibition action

Also vartaka, shigru, mugda are can be beneficial in hypertension. Avoid: excess of any rasa including lavana, vidhahi, atisnigdha, atiruksha aahara. (heavy food, deep fried food, fast food , bakery items, tea, coffee etc), Taking meals frequently because all these affect the agni and bring about the dosha vitiations.

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Vihara

Following the proper dincharya (Daily Routine) is good for health. But due to difference in working schedules and busy lifestyle following dinacharya in total may not be possible so, practicing as far as possible could be thought of. At least on weekend full dincharya can be incorporated and rest of the days as much as practicable can be practised. Vyayama (Exercise) should be done regularly with ardhashakti (Half of power). Doing exercise increase tolerance, it is best in obesity and bad effect due to wrong food habits can also be minimized due to it. According to research exercise is good in prevention; treatment and control of hypertension especially aerobic exercises are proven to be effective in all types of hypertension with resistant hypertension.

Yoga

Yoga is considered as a form of aerobic exercise with mind involvement. Ample numbers of researches proven the effect of yoga in stress managing and are effective in hypertension, reducing cholesterol, blood sugar, specially pranayamas (chandranuloma, bhramari pranayama), meditation, asanas like suryanamaskara, sukhasana, padmasana, ardhamatsendrasana, bidalasana are more helpful.[19],[20] So it can be used in prevention as well as treatment of hypertension. Avoid: Sleeping in day time, late night work which bring about the dosha vitiation.

Ritucharya

Observing the ritucharya can help to overcome the effect of environment on body, by making changes accordingly in the food habits, routines and shodhana procedures so as to prevent diseases due to changing seasons. Their role in preventing Hypertension is scientifically evaluated. Few studies are available in this regard.

1) Vasantikavamana (Seasonal emesis) which has showed good result in the patients of hypertension. The systolic B.P of 160 mm of Hg reduced to 140 mm of Hg and remained stable in sansarjana kala.[16] It is better to avoid in uncontrolled hypertension. However study to see the effect on dyslipidemic patients should be carried out.
2) Sharatrituvirechana (Seasonal Purgation): The study conducted as a part of dissertation on healthy volunteers[17] showed that participants reduced their weight, there was statistical change in T. cholesterol and LDL reduced significantly and HDL increased significantly. In this study it also noted that reduction in lipid peroxidation and increase in anti oxidants like superoxide dismutase after shodhana. In the formation of atherosclerotic plaque oxidation of lipid is important which causes invasion of monocyte at the site causing atheroma can be prevented if virechanais given as a preventive measure. According to Ayurvedavirechanais the shodhanafor pitta and anuomana of vata can be utilised in prevention of hypertension. Further studies are needed with seasonal diet and shodhana procedures in this regard.

Prevention of risk factors

Above mentioned risk factors can be broadly divided into santarpanaja (over nutrition) and aptarpanaja (poor nutrition).

Prevention for *Santarpanaja* risk factors[10]

In this obesity, impaired glucose tolerance and dyslipidemia can be taken. Along with the above mentioned general prevention protocol inclusion of Triphala, yava (barley), mudga (green gram), patola (pointed gourd), takra (buttermilk) in routine diet. Honey with water should be taken after diet. And in vihaara (Daily Routine) along with vyayama (excersice) , abhyanga (Body oilation) with tila taila (Sesame oil) and udvartana (Dry Powder Massage) should be done. These all are helpful in reducing kapha and meda (Fat).

Prevention of *Apatarpanaja* risk factors

In this stress, smoking and excess of alcohol consumption can be taken. Along with above mentioned general prevention protocol ghrita (Ghee), dugdha (Milk), kharjura (Dates), dadima

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(pomegranate) should be incorporated in diet. Abhyanaga with tila taila and meditation along with other yoga can help in this condition Like this many promising modalities are there in Ayurveda which can prevent and treat hypertension. However further extensive research is needed in this regard.

CONCLUSION

Hypertension is silent killer of the world which is responsible for heavy morbidity, mortality and economical burden on healthcare system. Due to change in food and work habit of mankind its prevalence is increasing in society. In Ayurveda, hypertension is not mentioned but it can be treated with the *Doshadusti Lakshanas*. Treatment of this disease is not accomplished with the cure. So the prevention is the main area of interest. It can be achieved by adopting Ayurvedic lifestyle.

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