

MANAGEMENT OF ESSENTIAL HYPERTENSION THROUGH SHIRODHARA (TAILADHARA)

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ABSTRACT

Hypertension, in which cause is not known, is considered as Essential Hypertension, as distinguished from Hypertension caused by specific causative factors. Essential Hypertension is one of the major risk factors for the development of cardiovascular morbidity and mortality. In Ayurveda, it is considered as a *vatapradhana tridoshaja vyadhi* (*vata* dominant disease) and we can consider Essential Hypertension as an abnormality of *rakta dhatu* (blood element), also known as *shonita dushti* (blood- imbalance). Though Hypertension is well known in Ayurvedic systems of diagnosis and treatment, effective treatment through Ayurvedic medicines and methods have not been fully standardized. Further, it will be useful to explore new methods and procedures for treatment of such a major problem. *Shirodhara* (treatment to the head through medicated oil) which is a well established course of treatment in Ayurveda has not been used extensively for management of Hypertension. Therefore, a study was undertaken to measure the effect of *Shirodhara* of *taila* (oil), *takra* (butter milk) and *jala* (water) on hypertensive patients. It was observed that *Tailadhara* gave considerable relief, sense of wellness and measurable reduction in Blood Pressure/Essential Hypertension (Mean Arterial Pressure). *Takradhara* and *Jaladhara* had comparatively lesser impact in terms of measurable reduction in Blood Pressure (MAP). Reduction of symptoms (like insomnia – sleeplessness, headache and irritability) and improvement in patients' sense of wellness were noticed during and after the treatment.

Key words: Essential Hypertension, Blood Pressure, blood vessels, blood circulation, *Shirodhara*, *Tailadhara*

INTRODUCTION

The importance of Essential Hypertension (EHTN) can be understood from the extent of its prevalence. World Health Organization has estimated that High Blood Pressure / Hypertension cause 1 in every 8 deaths, making Hypertension the third leading killer in the world. Globally, there are about one billion hypertensive people and about one million people die as a direct impact of Hypertension.

Hypertension is directly responsible for 57% of all stroke deaths and 24% of all

Chronic Heart Disease deaths in India. World Hypertensive League has recognized that more than 50% of hypertensive populations are unaware of this condition. Epidemiological studies demonstrate that prevalence of hypertension is increasing rapidly among the urban Indian population. Prevalence is lower in rural population but is increasing. Increasing hypertension in India is related to increasing adiposity and stress levels.

A cross sectional comparative study conducted over a period of one year com-

prising 1117 adults (more than 18 years) in both urban and rural areas of Gulburga district (Karnataka) revealed that Hypertension (>140mmHg/90 mm Hg) prevailed in 24.26% in urban and 13.16% in rural adults. (1) The prevalence increased with age in both the populations. Awareness status of Hypertension was 52.76% in urban and 9.5% in rural areas. Treatment status among aware hypertensives was higher in the urban area (81.8%) than rural area (49.2%). Family history of Hypertension was present in 52.76% of urban cases and 8.2% of rural cases. Body Mass Index \geq 25 Kg meter square was higher in urban hypertensives (59.79%) than their rural counterparts (21.08%). Sedentary life styles was observed more in urban hypertensives (90%) than rural hypertensives (54.78%). Smokeless tobacco consumption was 2.47 times more among rural hypertensives than their urban counterparts. Overall 69.28% of female hypertensives were found to have attained menopause.

According to a health survey in Rajasthan, 277 persons for one lakh population were diagnosed with Hypertension. In urban Rajasthan, the figure is 541 among one lakh population and in rural Rajasthan 190 among one lakh population was diagnosed with Hypertension ².

A study by Prospective Urban, Rural Epidemiology (PURE), Germany revealed that 40% of the adult population worldwide had Hypertension. Only 30% of the population had optimal blood pressure with another 30% found to be in the pre-hypertensive range. Of the 40% with Hypertension, 46% of these individuals were aware of their condition, 40% were treated but only 13% were controlled. The prevalence of Hyper-

tension is lowest in lowest income countries (around 30%) and highest in upper middle income countries (around 50%).

Blood Circulation as per Ayurveda

Circulation of blood is a very vital process in the human system. It was known in India, much before William Harvey reported in 18th century about blood circulation. The *Atharva Veda* refers to the blood circulation in the human body in the following terms (*AV-Brahma Prakashana Sukta, 10-2-11*): ³

“Ko asminnapo vyadhada vishuvrata: puruvrata:

Sindhu srityaya jataa: “Tivra arunaa lohinistamra dhumraa Urdhva avachi: purushe tirashri”

[Who does form in men the blood turning in all directions (i.e., having circulation throughout body and limbs) to flow in the blood vessels which are red, hasty, copper-hued and purple, running all the ways upward and downward in men's body?]

Rakta (blood) is a *drava dhatu* (liquid element). Therefore, it has natural property of flowing. To maintain the circulation up to the end tissue, additional force is required which is provided by the contraction and relaxation of the heart. In Ayurveda, *thridosha- vata* (*gati/* principle of movement/nervous system), *pitta* (principle of secretions/metabolism) and *kapha* (carrier of nutrients), seven *dhatu* (*rasa* (lymph), *rakta* (blood), *mamsa* (flesh), *meda* (fat), *asthi* (bones), *majja* (bone marrow) and *shukra* (semen) and three *mala* (excretions-sweat, urine and stools) are considered as fundamental for the functioning of the body.

According to Acharya Sushruta, formation of *Hridaya* (heart) of a foetus occurs by the essence of *kapha* and *asruk* (blood) ⁴.

Therefore, both *kapha* and *asruk* should be in its normal ratio and status to maintain the normal functioning of the heart.

Muscles of heart are nourished by the essence of *Rakta*. *Kapha* has properties like that of *oja* (body immunity), retains the *bala* (strength) of heart, which is utilized for the *rasa rakta samvahana* (blood circulation). *Hridaya* is considered as *chetana sthana* (source of vibrancy). In modern science, the movement of heart is considered myogenic (caused by muscles), whereas other muscles of the body only work after giving stimulation by the nervous system.

Physiology of the heart can be explained by its *vyutpatti* (etymology of the word). The three elements of ‘*hri*’, ‘*da*’ and ‘*ya*’ combine to form the word ‘*Hridaya*’. This also shows the three main functions of heart viz. *aharana* (receives), *dana* (gives) and *ayana* (movement).

Blood Vessels

The blood vessel in which *dhamana* (pushing/movement) and *spandana* (pulsation) occurs is known as *Dhamani* (blood vessel). The name indicates its function. Acharya Charaka has described *Dhamani* as centrally hollow, harder than *Sira* and a *pitrajabhava* (of paternal origin) ⁵. Acharya Charaka has mentioned *hridaya* as the root of *Dhamani*. *Dhamani* circulates *rasa-rakta*, propelled out by *Hridaya* and nourishes all the body tissues (*Dhatus*). Therefore, *dhamani* is called as “*oja vaha*” (channel of vitality) also. *Bala* (strength) of the body depends on it. Through *dhamanis* a pressure is exerted by the *rakta* at the walls of *dhamanis*, which depends on the elasticity of the *dhamani*. If any pathology occurs in *dhamani*, adverse effect is seen on the Blood Pressure.

The vessels in which *sravana* (movement) takes place known as *Sira* (vein). Like *Dhamani*, *Sira* is also mentioned as *pitrajabhava*. These are the pulsation less vessels. They are formed by the *mridu paka* (soft growth) of *Meda sneha* (fatty material). They also forms as an *updhātu* (sub-element) of *Rakta*. They carries blood from the body to the heart.

The structure in which *sravana* (flow) occurs is known as *srotas* (channels). Chakrapani has described *srotas* as those in which nutrients of *dhatus* are transported from one place to another. They nourish cells of the body. Waste products produced by the cells are transported through the *srotas*.

Nidana (Aetiology)

Ayurvedic texts refer to conditions like *Raktagata vata* (*vata* in blood), *Rakta vega vridhhi* (increase in blood-speed), *Raktachapadhikya* (increased movement of blood), *Dhamani prapurana* (arterial pulsation) and *Rudhira mada* (efflux of blood). But Essential Hypertension has not been explained specifically as such in Ayurvedic texts. The following factors have been found associated with Essential Hypertension

- i) *Kulaja* (Inheritance / Genetic Influence),
 - ii) *Vaya* (Age),
 - iii) *Linga* (Sex),
 - iv) *Samhanana* (constitution),
 - v) *Mano dosha* (Temperament and stress),
 - vi) *Jati prasakta, Prakriti* (Races and environment),
 - vii) *Ahara* (Food),
 - viii) *Lavana* (Salt),
 - ix) Physical Activity and
 - x) Smoking
- ### **Classification of Blood Pressure (BP)**

Oxygen (bound to hemoglobin in red blood cells) is the most critical nutrient carried by the blood. In all arteries apart from the pulmonary artery, hemoglobin is highly

saturated (95-100%) with oxygen. In all veins, apart from the pulmonary vein, the hemoglobin is de-saturated at about 75%.

The Blood Pressure in blood vessels is traditionally expressed in millimeters of Mercury (mm Hg). In the arterial system, this is usually around 120 mmHg systolic and 80 mm Hg diastolic. In contrast, pressures in the venous system are constant and rarely exceed 10 mm Hg. Based on the 7th report of the Joint National Commit-

tee⁶ on detection, evaluation and the treatment of High Blood Pressure (JNC 7), the following classification has been adopted:

Clinical Trials

33 Subjects were selected on random basis from among the persons who came to the OPD of Hubli Ayurveda Mahavidyalaya Hospital. Of these, three persons were Christians and two were Muslims, while the remaining were Hindus.

Classification of Blood Pressure on the basis of severity

Blood Pressure Classification	Systolic (mmHg)	Blood Pressure Diastolic (mmHg)
Normal	<120	And <80
Prehypertension	120-139	Or 80-89
Stage 1 Hypertension	140-159	Or 90-99
Stage 2 Hypertension	>160	Or >100

The subjects were above 40 years and below 61 years. 9 subjects belonged to Hubli while one each hailed from Dharwad and Gadag, the neighbouring towns. Four of the subjects were taken up for all the three courses of treatment. *Shirodhara* was conducted for 45 minutes. BP readings were recorded before treatment as well as after treatment for 10 days to arrive at the comparison of the status of the subjects before and after the treatment.

For convenience of measuring the effect, Mean Arterial Pressure (MAP) was adopted as the indicator. MAP is defined as the average pressure in a patients arteries during one cardiac cycle. Diastole counts twice as much as Systole because 2/3rd of the cardiac cycle is spent in diastole. It is considered as a better indicator of perfusion to vital organs than Systolic Blood Pressure. MAP may be calculated using the following formula: $MAP = [(2 \times \text{diastolic}) + \text{systolic}] / 3$

The 33 patients between the age group of 40-60 were assigned into 3 groups. They were given *Shunthi churna* (*Zingiber officinale*) for *amapachana* (for improvement of digestion) and *shirodhara* with *Bhadradarvadi gana sadhita taila* (medicated oil consisting of 15 herbs like *Devadaru* (*Cedrus deodara* etc) (Group A), *Bhadradarvadi gana sadhita takra* (Group B) or *kevala jala* (only water) (Group C) after *mridu abhyanga* (light massage) and *sveda* (fomentation). This was followed by *avachurnana* (application on bregma) with *Rasnadi churna* (*Pluchia lanteolata*) as *pashchat karma* (post-operative procedure) and *Brahmi vati* (*Bacopa monnieri*) (250 mg) thrice daily, with *ushnodaka* (hot water) *anupana* (adjurent). Total duration of treatment was 42 days. 3 groups of patients were given the above mentioned procedures of treatment. Each group consisted of 11 persons. 4 persons were common to all the three procedures. Blood Pressure was

measured carefully for a period of 10 days, before and after the procedure of treatment.

Result/observations regarding effect of Shriodhara (Tailadhara) on BP/EHTN

The measurement of the effect of treatment discussed above was done with a gap of 45 minutes to 1 hour i.e., before starting the procedure and after the completion of the procedure on the same given day. These results might have been affected by the 'confounding factor' of the impact of lying down by hypertensive individuals, particularly on SBP (DBP does not undergo substantive change during resting). However, the confounding factor of resting for a period of 45 minutes, if any, cannot be practically separated from the holistic impact of the procedure of treatment. The study led to the following significant observations:

(i) Group A which underwent *Tailadhara* had the most noticeable improvement in terms of MAP whereas, *Jaladhara* (Group C) had comparatively less impact. *Takradhara* (Group B) was still less in effect. The mean improvement for A, B & C groups is found to be 14 units in A group, 1.5 units in B group and 7.9 units in C group (MAP). The variance within the group was high in A & B group and less in C group. The dispersion in terms of standard deviation was also high in A group and much less in B & C groups. Group A which underwent *Tailadhara* had more beneficial results as compared to the others.

(ii) The long term effect on MAP could not be measured since the measurements could not be taken after a sufficiently long period of time (like six months).

(iii) Analysis of variance through 'f' test was done to arrive at inter-group comparison. The 'f' ratio worked out to 2.18. If the calculated value of 'f' is greater than the

table value of 'f' at a certain level of significance for degrees of freedom, we consider the 'f' ratio as significant. On the other hand, if the calculated value of 'f' is smaller than its table value, we conclude that 'f' ratio is considered as insignificant.

In this case, Null Hypothesis was formulated as: there is no significant difference between the means of these three groups i.e., $H_0 = A=B=C$. The Research Hypothesis was formulated as: there is a significant difference between the means of these three groups i.e., $H_1 \neq A \neq B \neq C$. In this case, degree of freedom between the groups (n-1) is 2. Degree of freedom within the groups is (n-1) i.e., 32. The table value of 'f' at these degrees of freedom is at 3.32, which is higher than the calculated value of 'f' ratio. The inference is in favor of Null Hypothesis that there is no statistically significant difference between the means of the three groups.

(iv) The treatment for ten days was considered to be adequate for measuring the effect on MAP before and after the treatment. But it primarily reflects the short term improvement only on daily basis. The long term benefit which might have been internalized will have to be measured after a gap of few months. The change in MAP measured before treatment for the nine days does not reveal any significant improvement although individual cases showed trend of marginal improvement. Therefore it is felt that for reconfirming the effects, the experiment may be conducted on a larger group of subjects over a longer period of treatment. To assess permanent improvement and benefits, the same subjects may have to be re-examined after a period of time, say, six months.

(v) Four subjects underwent all the three procedures of treatment. They show differing degrees of improvement in the subsequent procedures of *Takradhara* and *Jaladhara*. However, since the number is not large enough it was not appropriate to draw any specific conclusion regarding whether they had achieved any level of saturation in the first level of procedure of *Tailadhara*.

(vi) Though relevant association factors like obesity, diet, alcoholism and tobacco consumption were noted, since the sample was not large, no inference could be drawn regarding these factors and EHTN in this study.

CONCLUSIONS

(i) *Shirodhara* of *Bhadradharvadi gana sadhita taila* leads to substantial measurable improvement in EHTN, measured in terms of Mean Arterial Pressure after treatment.

(ii) For assessment of long term benefits and improvements, study may be undertaken on the same subjects after a gap of six months.

As an outcome of this study on Essential Hypertension, the following suggestions can be made to tackle the problem: (a) Target high risk groups like consumers of alcohol and tobacco and those who are obese and having Body Mass Index > 23. (b) Identify people who are not aware and who were not able to achieve proper control of EHTN. (c) Start screening and treating people with Hypertension. (d) Advise appropriate changes in life style and diet. (e) Improve awareness in general through different means and campaigns including campaigns on World Hypertension Day on May 17 every year.

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