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PHYSIOLOGICAL VARIATION IN RAKTA DHATU W.S.R TO HYPERTENSION

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ABSTRACT

Hypertension is the persistent elevated pressure exerted by blood on the wall of areteries. It is the most alarming health problem of this era. Despite of modern pathophysiology we should treat the condition with the help of ayurvedic principles. It is well known that blood pressure varies directly with the cardiac output and peripheral vascular resistance. Increased cardiac output encountered in increased plasma volume i.e. *rasa-vriddhi*, increased heart rate i.e. *vyan prakopa*. So as per ayurveda *rasa-rakta vikshepana* is continuously working all over the body. It depends on physiological changes in *rakta dhatu* as *rakta gati,rakta dravata, rakta ghanata, rakta dhamani snehansh*. Mainly *vyan vayu prakopa* occurs, particularly vyan vayu is responsible for the rasa rakta samvahana. As per *sharir kriyatmak* view, *vyan vayu prakopa, kapha dosha vikruti* affects the *rakta dhatu*. So, this study will show physiological variation in *rakta dhatu* w.s.r to hypertension.

KEYWORDS: Rakta dhatu, Hypertension, *Vyan Vayu*, Physiology.

INTRODUCTION

Ayurveda is "ayusho veda" which tell us healthy way of living. The ancient ayurvedic classics is like ocean with enumerable pearls of knowledge embedded in it. Hypertension is finding recorded by a sphygmomanometer. A direct disease comparable to hypertension is not mentioned in classics. But ayurveda contains complete description about vitiated dosha lakshanas & complications related to various diseases scatterly described in different context.

That expert doctor should get hint from the given sutrarupa condition and should apply them today's evolved disease conditions. Charak has quoted that physician should not worry about naming particular disease, if it is not known to him.

According to Ayurveda, *Rasa-Rakta* continuously flowing all over the body. *Rakta-Dab* can be determined in 3 ways by Sanskrit samas method, that are:-

1) Rakta and Dab
2) Pressure exerted on blood
3) Pressure exerted by blood

Rakta dhatu changes in hypertension depends upon these factors: -

1) Rakta-gati
2) Rakta-ghanata
3) Rakta-dravata

AIM AND OBJECTIVE

- To review the variations in *rakta dhatu* in hypertension.
- To explain physiological changes in *rakta dhatu* according to *Panchamahabhuta Siddhant*.

MATERIAL AND METHOD

Classics of Ayurveda, *Mahabhuta Siddhant* of ayurveda, *Aptavachan*, available research and information on internet were analysed.

Blood pressure[1]

Blood pressure is the force exerted by circulating blood against the walls of the body's arteries, the mayor blood vessels in the body. A Blood pressure is written as two n numbers, the first (systolic) number represents the pressure so blood vessels when the heart contracts or beats. The second (diastolic) number represents the pressure in the vessels when the heart rests between the beats. Hypertension is diagnosed if, when it is measured on two different days, the systolic blood pressure readings on both days is >= 140 mm Hg and the diastolic blood pressure on both days is <=90mmHg.

Hypertension[2]

HTN is also known as high or raised blood pressure. It is a condition in which the blood vessels have persistently raised pressure. Blood is carrier from the heart to all parts of the body in the vessels. Each time the heart beats, it pumps blood into the vessels. Blood pressure is

created by the force of blood pushing against the walls of blood vessels (arteries) as it is pumped by the heart. The higher the pressure the harder the heart to pump.

Ayurvedic perspective

Methodology

Blood pressure varies directly with – Cardiac output
Peripheral vascular resistance
Increased cardiac output encountered in,

- Increased blood volume : - Rakta Vriddhi
- Increased heart rate: - Vyan Vayu Prakopa.

Increased peripheral resistance is due to,

- Spasm of arterioles : - Vyana Vayu Prakopa
- Thickening of blood vessels : - Kapha Vriddhi.

There is continuous circulation of Rasa-Rakta together all over the body. Vyana Vayu is responsible for continuous circulation of Rasa-Rakta all over body all the time.[3] Rasa-Rakta continuously circulates throughout the body.[4]

Variations in Rakta Dhatu will be determined by these factors:-

1. ***Rakta gati*:-** Blood flows continuously all over the body with specific speed. It is due to vyan vayu. Vyan vayu works by distributing blood to every cell of the body from heart. Vyan vayu plays important role in Rakta Gati. Rakta Gati is reduced due to Vyan Vayu Gati reduced or affected. That weakned Vyan Vayu is responsible for reducing the Rasa-Rakta Gati. That we can correlate with the low blood pressure / hypotension. Vyan Vayu Prakopa will increase Rasa-Rakta Gati.
2. ***Rakta ghanata*:-** If density of blood increases, its fluidity decreases. So if density of blood increased due to ahar-vihariya hetu then the rate of circulation of blood decreases and the blood pressure increases.
3. **Rakta dravata:-** If density of blood decreases, then also blood pressure increases.

In both ways pathology is due to kapha dosha. But in first case earth element is responsible & in in other case water element is responsible. Accordingly, the symptoms are seen in the patient. As those are: -

1) **Earth element: -** Sthira, Sthula guna increases & srotorodhatmak samprapti seen.
2) **Water element: -** Drava, Snigdha, Sheeta guna increases & edema, polyurea, cold extremities, low pulse etc. symptoms are observed.

These variations in the Rakta Dhatu in various dimensions will help to explain the pathophysiology of hypertension.

Constitution of *Rakta Dhatu: Panchabhatikatva* of *Rakta Dhatu*

Every substance is made of five Mahabhuta. Hence, they are also present in Rakta Dhatu. In spite of existence of five *Mahabhuta, Rakta Dhatu* has dominance of *Teja* and *Jala Mahabhuta*.[5] The rakta dhatu possesses properties like peculiar smell (Visrata), liquidity (Dravata), red colour (Raga), pulsation (Spandanam) and lightness to get circulated (Laghuta) due to Prithvi, Jala, Teja, Vayu, Aakash mahabhuta respectively.[6]

***Vikruti* in *panchabhautik sanghatan of rakta dhatu* in hypertension**

Dravata:- Increase in liquidity that is jala mahabhuta guna; edema, polyurea, cold extremities, low pulse rate symptoms will be seen.

Ragam:- Rakta is anushna in tendency. Increase in teja mahabhuta guna will cause symptoms like Moha, Mada, Murccha, daurbalya, shirashoola, bhrama.

Spandan:- Increase in vayu mahabhuta guna, we see all vyan prakopaka lakshanas and palpitation (pulse) will be increased observed in hypertension.

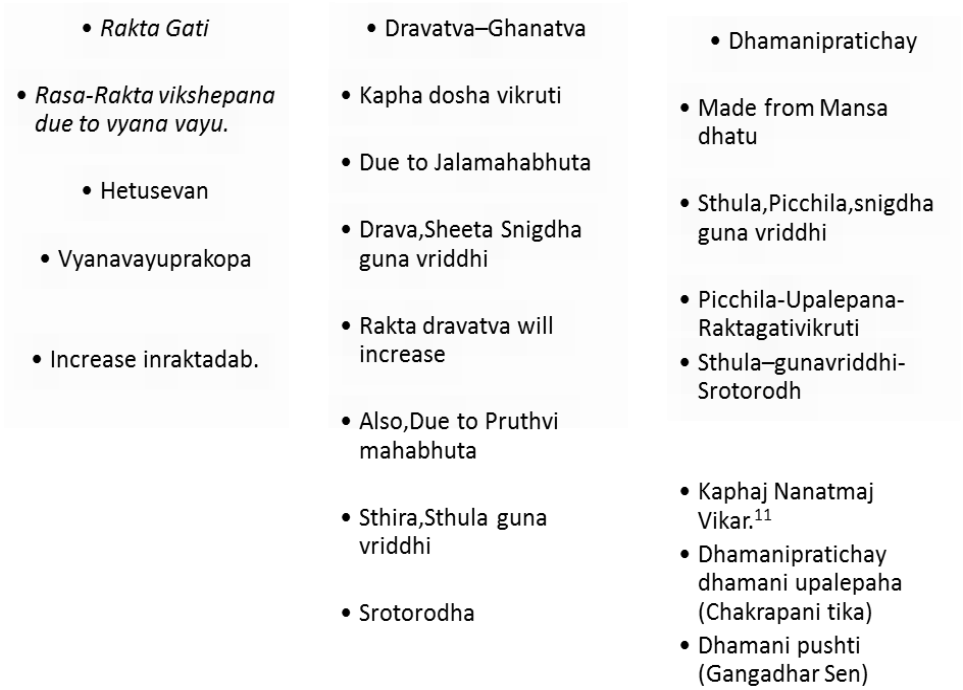
The factors responsible for the increase or decrease in the Rakta gati, ghanata are:-

Vyan vayu:- Rakta gati is decreased as vyan vayu alleviated. The alleviation of vyan vayu is due to avrutatwa. So, the alleviation of vyan vayu lowers the rasa rakta samvahana. That is nothing but low blood pressure or hypotension.

The aggravation of vyan vayu will increase the rate of rasa rakta samvahana.

1. Pitta aggravating[7] ushna, tikshna, ruksha ahar vihar will absorbs the dravata in the rakta dhatu increasing its density.
2. Day sleep, sweet & heavy food, cold environment - these kapha aggravating[8] factors will increase the density of blood directly.
3. Heavy micturition will cause the loss of fluid eventually increasing the density of blood.
4. Indigestion will end up in aama utpatti increasing blood density.
5. Over consumption of salt[9] causes fluid retention in body increasing fluidity of blood.
6. Over consumption of sour[10] food also increases the fluidity of blood.

DISCUSSION



CONCLUSION

It has been found that the percentage of hypertensive patients is rising sharply despite number of antihypertensive drugs in modern medicine. Human race today is looking towards Ayurveda in a search of an ideal and safe treatment. Hence to get the perfect management of hypertension without any side effects. In Ayurveda equilibrium of Doshas, Dhatus, Malas and Agni are considered as healthy state of an individual. So, we can say that while observing hypertension through Ayurvedic spectacle we should consider the pathophysiological changes in the form of vitiation of Dosha (Vata, Pitta and Kapha), Dhatu and Mala Dushti.

After thorough study of literature and fundamentals in both Ayurveda and Modern medicine, it is concluded that Ayurvedic approach to treat a disease according to its Samprapti (pathogenesis) is very practical and should not be overlooked. This review of hypertension showed that the disease can be well managed by following Pathya-Apathyaas mentioned in Ayurveda. Considering detailed conceptual part we can definitely say that Ayurveda describes appropriate lifestyle and diet management called as Aahar and Vihar for maintaining homeostasis and thereby preventing hypertension.

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