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PHYSIOLOGICAL REVIEW OF BLOOD PRESSURE WITH RESPECT TO VYAN VAYU

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ABSTRACT

Human body is composed of dosha dhatu and malas. Vata, Pitta, Kapha are three physiological constituent which help to maintain health by controlling locomotion, transformation and growth respectively. Doshas in its equilibrium state are important to maintain health. Any derangement in this Tridoshas leads to diseases. Out of three doshas Vata dosha is the most important due to its mobile property because of Vata dosha mobilized pitta, kapha and all other constituents. Charaka has explained five types of vata dosha (Prana Vayu, Vyan Vayu, Udan Vayu, Saman Vayu, Apan Vayu) out of which Vyan type of Vata dosha controls every major and minor movement of body in the form of Flexion, Extension, Abduction etc. Vyan Vayu not only controls musculoskeletal movements but also cardiac muscle activities. In this article efforts are taken to explain physiology of Vyan Vayu to control blood pressure with respect to hypertension, which will be definitely useful to understand pathogenesis related to hypertension.

KEYWORDS: Vyan Vayu, Rasraktasavahan, Blood pressure, Heart.

INTRODUCTION

The prime location of Vyan Vayu is hridaya (heart). and whole body is abode of with Vyan Vayu. Vyan Vayu travels at the macro levels as well as micro level so it is called as Krustnadehchari.[6]

Vyan Vayu is the most quick and fast type of vata dosha so it is called as Mahajava.[6]

Vyan Vayu functions are as follows:

1) Rasa-Rakta Samvahana – Circulation of Rasa & Rakta (whole blood) and other essential nutrients through heart to all over body.
2) Aakunchana[2,6] – Flexion
3) Prasarana[2,6] - Extension
4) Vinamana[4]– Downward movement.
5) Unnamana[4] – Upward movement.
6) Tiryak gamana[4] – Lateral movements.
7) Swed sravana[4,6]- Sweat excretion.
8) Asruk sravana[4,6] – Blood oozing (After dilatation of blood vessel) or diffusion.
9) Yoni-shukra Pratipaadana[6]- Emission and ejaculation of Shukra.
10) Srotovishodhana[6]- Cleansing of Strotasa.
11) Jrumbha[6]- Yawning
12) Annaswada[6]- Taste sensation(gestation).
13) Dhatu Tarpana[6]- Providing nutrition to Sharir Dhatu.
14) Sara Kitta Vibhajan[6]- sorting between essential nutrients and waste products.

Ras vikshepana, Asrik sravana, Strotovishodhana, Dhatutarpana are interrelated physiological activities which ultimately depends on normal blood pressure.

Aim

To study Vyan Vayu with respect to blood pressure.

Objectives

To collect reference related Rasraktvikshepana from Bruhtrayee.

To study Vyan Vayu in detail.

MATERIAL AND METHODS

Gati is the function of Vyan Vayu,[2,5,6] Gati means locomotion or movement or flow. walking, running, writing are the examples of locomotion. Flow of the body fluids from one to another place is called as Savahana or Circulation. Rasa rakta savahana is controlled by Vyan Vayu because rasa and rakta are dhatus exists in fluid state and which are carried from heart to periphery and periphery to heart. Vyan Vayu controls pumping action of heart. Due to which blood is pumped out through large artery and propels forward in arterioles and finally in capillaries to provide oxygen and nutrients to every cell.

It is very important to maintain blood pressure in the range of 110-120 mm of Hg (systolic pressure) and 70 – 80 mm of Hg (diastolic pressure) so that every cell can receive oxygen and nutrients to carry out physiological functions. Along with oxygen and nutrients hormones and other nutrients are also distributes to cell and at the same time carbon dioxide and cellular waste products are removed from cell.

Vyan vayu transports Rasa and Rakta dhatu from heart to every cell in every direction like Shabda (sound), Archi (fire) and Jala (water).

Vyan controls microcirculation which is described under the term Asrik sravana And Dhatu purana.

In shushrut samhita capillary network is compared with vein and venules visible on the surface of leaf, in the same way large blood vessels emerges from the heart, from which arteries and arterioles divides and re-divides and finally capillary network forms around every tissue.

Vyan vayu maintains force on the blood flow so that blood (Rasa and Rakta) can easily flow through blood vessels. capillaries around tissue are so thin walled that Oxygen and nutrients can easily diffuse out of blood into tissue, which is explained under the term 'Dhatutarpan'. Dhatutarpana is important for tissue or cell to carry out physiological functions.

Blood pressure is highest in the arteries closer to heart and lower to capillaries, which is maintained by Vyan Vayu. When blood flows from arterioles to capillaries, Arteries dilates andblood flow increases for oxygen diffusion and nutrient.

Vyan vayu controls microcirculation through Akunchana (vasoconstriction) and prasarana (vasodilation) of arterioles and capillaries.

Maintained Microcirculation of Rasa Rakta is by Vyan vayu to carry out all functions designated to Vyan, Such as sweat excretion, diffusion, emission and ejaculation of Shukra etc.

DISCUSSION

Vyan vayu coordinates with Prana vayu as well as Saman,Udan and Apan vayu to carry out physiological functions of all organs. Vyan vayu coordinates all functions by maintaining

normalcapillary pressure at 32 mm of Hg.

Vyana vayu functions	Interpretation
1)Rasa Rakta Vikshepana	Circulation of whole blood and nutrients through capillaries.
2)Gati	Musculoskeletal movements by controlling muscle blood flow.
3)Asruk Sravana	Diffusion or percolation of blood by dilatation of blood vessels.
4)Sweada Sravan	Increase in sweat production by increasing blood flow to skin.
5)Yoni Shukra Pratipadana	Increase in blood flow in cavernous sinus for erectile function.
6)Sroto Vishodhana	Removal of vitiated Dosha from body by Snehan and Swedan by dilatation of blood vessels.
7)Jrumbha	Provides oxygen to brain rapidly.
8)Sara Kaitta Vibhajan	Segregation of digested part of food from intestine from Kitta (waste product) by more diverting blood to small Intestines.
9)Dhatu Tarpana	Providing oxygen and other nutrients to the bodyup to tissue level.

CONCLUSION

Vyana Vayu is a type of Vata Dosha which executes functions of all other types of Vata Dosha. Out of all functions of Vyana Vayu, Rasa Rakta Vikshepan (circulation of Rasa and Rakta dhatu)is the most important function. Vyana Vayu not only controls blood circulation but also local blood flow to the tissue.

Blood pressure regulating factors such as cardiac output, peripheral resistance, heart rate is controlled by Vyana Vayu. According to modern medicine, blood pressure, vasoconstriction, vasodilatation, sweating, blood flow to tissue is controlled by Autonomic Nervous system. So up to some extent, functions of Vyana Vayu can be correlated with Autonomic Nervous System.

To maintain homeostasis, it is important to maintain Rasa Rakta Vikshepana within normal state. Regular practice of Yoga, meditation and Pranayama is the best way to control blood pressure.

As these practices facilitates blood circulation, enhances local blood flow to the tissue and helpsto maintain homeostasis.

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