

A Critical Review of Distribution and Functional Aspects of Dhamani Sharira

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Abstract

Ayurveda is the life science which deals with every aspect of life-the health and disease. Since both health and disease is depended on Sharira, the study of Shaareera is important. In Shaareera, many Ayurvedic terminologies are yet to be clarified. Dhamani sharira is one among them. Sira, Dhamani and Srotas are three carriage systems of body which is having some similarities as well as differences between them. In these, Sira and Dhamani are generally considered to be vessels, but by analyzing its functions, Dhamanis are often confused for nerves. Also, the descriptions of Dhamanis as the structures which is pulsative, which carries Rasadi, it more or less points towards the Arteries only. The site of origin of Dhamani is also suggestive of the possibility of interpreting it as the vascular system rather than nervous system. The study taken up here will help to get clarity regarding the modern aspect of Dhamani and the interpretation of Urdhwaga, Adhoga and Thiryak dhamanis.

Introduction

Ayurveda, the science of life has the two main objectives of protecting the health of healthy and curing the disease of the diseased¹. Since both health and disease is depended on the Sharira, study of Shaareera is of paramount importance. Interpretation of Ayurvedic Shaareera terminologies in contemporary science remains to be cleared in many contexts. Among such terminologies,

Dhamani is one. The word Dhamani has its origin from 'Dhamyati' which means to expand. 'Dhmanaath dhamanyah'² says Acharya Charaka which means Dhamanis are the structural entities with evident pulsation. Chakrapani adds that Dhamanis are that which pulsates and it carries Rasa through them. Most of the time, there is a dilemma regarding the uniqueness of canal entities-Sira, Dhamani and Srotas. But there are clearcut differentiation in their characteristics, origin, number, and functions. Table 1 shows the differences between the Sira, Dhamani and Srotas. The reason for confusing between them are due to their nearness in alignment, similarity of descriptions in classical texts, similarity in functions and minuteness³. But just like in an orchestra, different instruments playing background in sync gives the final output of that song, Sira-dhamani and Srotas will function in harmony to maintain the homeostasis of Sharira⁴.

Table 1. Difference between Sira, Dhamani and Srotas

	Sira	Dhamani	Srotas
Vyanjana (characteristics)	Vata vaha-Aruna Pitta vaha- Neela Kapha vaha- Gaura Rakta vaha- Rohini[4]	No specific colour mentioned	Have the colour of respective Dhatu
Mula (Number in site of origin)	40	24	22
Karma (function)	Desantara gamana (Carrying away rasadi from one place to another)	Purana and rasa vahana (carrying of rasa from hrudaya)	Poshana (nutrition)

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Dhamani in Samhitas

Etymological derivation of word Dhamani is 'Dhamyate iti' which means to expand. 'Dhmanaat dhamanyah' says Acharya Charaka, the one which is characteristic of pulsation. 'Dhmanat pooranaat vaahyena rasaadenetyarthaha'⁵- Dhamanis are hollow organs filled with Rasa. In Naadi Parisksha Vidhi, in Sharangadhara Samhita used the term Dhamani, and the exact location was given, near the root of Kara Angushta (root of thumb). The Jeevasaakshi is the pulsatile function of these Naadis⁶.

Origin of Dhamani

Acharya Susruta describes Nabhi as the origin of Sira and Dhamani in Sharira sthana. There is a total of twenty-four Dhamanis out of which ten moves upwards, ten down wards and four oblique⁷. But in Susruta Samhita Sutra sthana, it is said that twenty-four Dhamanis arise from Hrudaya⁸. According to Acharya Charaka, Hridaya produces ten Dhamani⁹. According to Ashtangasangraha, there are twenty-four Dhamanis; they provide nourishment to the entire body, similar to canals carrying water supplying nourishment to a vast plot of land; the Nabhi is surrounded by them (Dhamani), just as an axle hole is surrounded by spokes of a wheel¹⁰.

Dhamani karma

Dhamani which spread upward (Urdhwaga dhamani) supports the body by attending functions such as receiving sensations of sound, touch, sight, taste, and smell; respiration, yawning, sneezing, laughing, talking, shouting and such other functions¹¹.

Dhamanis spreading downwards (Adhoga Dhamani) purvey flatus, urine, faeces, semen, menstrual blood etc. downward. The parts below umbilicus such as large intestine, pelvis, bladder, rectum, anus, penis and legs are supported and maintained by these Dhamanis¹².

Dhamanis spreading transversely divides into hundreds and thousands of branches and purvey sweat to the exterior and Rasa (nutrients) both inside and outside. Also, the medicinal potency of ointments, pouring medicinal liquids in the body, and applications of paste are absorbed into the skin and then to body through these Dhamanis. The sensation of touch of both comfortable and uncomfortable are perceived by these only¹³.

Structure and Function of Arteries

The term "angeion" means a vessel in Greek. It can be blood vessel or lymph vessel. Angiology is the medical specialty concerned with the study of diseases of the circulatory and lymphatic system. A number of tubes known as arteries travel away from the heart and carry oxygenated blood to the peripheral parts of the body, i.e. organs and tissues¹⁴. Largest artery called Aorta leaves from heart and gives branches of large and medium sized arteries. It divides and redivides to form arterioles and finally capillaries which ultimately supply oxygen and nutrients to the tissues. Arteries do not possess valves with in them. As heart pumps with great pressure, blood reaches till the capillaries in and against gravity. After supplying to the tissues, blood return to heart through a series

of blood vessels- capillaries, venules and veins which are guarded by valves¹⁵.

Distribution of arteries: From the left ventricle, ascending aorta ascends and forms arch of aorta, gives three branches namely brachiocephalic, left common carotid and left subclavian among which brachiocephalic trunk again divides into right common carotid and right subclavian arteries. Branches of these large arteries will supply the superior part of body- the head and neck, thorax and upper limbs¹⁶. Arch of aorta continue to form descending aorta which descends down to form thoracic aorta, abdominal aorta and divides into left and right common iliac arteries¹⁷.

Material and Method

To approach the objectives scientifically, data from Ayurveda samhitas and modern text books, national and international journals, magazines, online resources, prior work done, presented papers, etc. are critically analysed and relevant information were collected.

Discussion

Blood vessels are referred to as Siras and Dhamanis in general. However, according to acharyas, Dhamani are the structures which can evidently pulsate and carries the nutrients to the cells and tissues. Function of Sira is 'Deshantara gamana'¹⁸ carrying away -from the tissues and organs- of the contents. The functions of Dhamani such as perception of vision, hearing, taste, pronunciation etc., assisting the movement of urine, faeces, semen and the perception of sense of comfort touch and pain may be interpreted as the functions of nerves. But it is important to understand that no nerve can function properly if the blood supply to that tissue or organ is impaired. The central retinal artery is equally important as the optic nerve for the perception of vision. If blood supply to the urinary bladder is impaired, its functions will be disturbed even though the pudental nerve is intact. Similarly, cutaneous perceptions are impaired if blood supply to skin in that area is blocked. The descriptions of functions of Dhamani actually depicts the presence of arteries in these areas and the importance of blood supply.

Urdhwaga dhamanis can be interpreted as the blood supply to head and neck and

parts above umbilicus; small and medium arteries arising from the brachiocephalic trunk, left common carotid artery, left subclavian artery and thoracic aorta. Adhoga dhamanis can be understood as the branches of abdominal aorta which supply the trunk region below umbilicus and the lower extremities. Tiriyag dhamanis can be taken as the cutaneous or peripheral vessels supplying the superficial and deep layers of the skin which helps in absorption of potency in the medicines used for ointments, immersion bath etc.

Though, 'Dhamanis' have been said to be 'Nabhiprabhava'¹⁹ originated from Nabhi or umbilicus even then generally they are always stated to be attached with the Hridaya (heart). Hridaya and Nabhi are quite separate organs situated in different regions of the body. But when considering the two stages in life; intra uterine and extra uterine, the mode of oxygen and nutritional supply is also two different ways. In intra-uterine life, one umbilical vein and two umbilical arteries provides the nutritional supply and removal of waste products from the embryo or fetus. So the point of oxygen and nutritional supply in intra uterine life can be considered as umbilicus- the Nabhi. After delivery, when lungs came into action, this is replaced solely by the circulatory system with the heart as the centre- the Hridaya. In Sarira Sthana, Acharya Susruta describes Dhamani vyakaranam Shaareeram as the ninth chapter followed by Garbhini vyakaranam Shaareeram as the next chapter. So it is wise to understand that Adhyaya Dhamani vyakaranam Shaareeram may be described in the intra-uterine life point of view whereas in Sutrasthana, description of Dhamani in the Rasa- rakta Utpatti

context (Susruta Samhita Sutrasthana Chapter 14) may be in extra-uterine life point of view.

Conclusion

The Urdhvaga Dhamani primarily regulate the internal functions of the head, neck, thorax, and upper extremities can be considered as the arteries arising from the brachiocephalic trunk, left common carotid artery, left subclavian artery and thoracic aorta, while the Adhoga Dhamani can be considered as branches of abdominal aorta which are responsible for the abdominal organs and lower extremities. In contrast, the Tiriyag Dhamani supply cutaneous and peripheral tissues, nourishing both the superficial and deep layers of the skin and is best correlated as the cutaneous blood vessels. The site of origin of Dhamani in intrauterine and extra uterine life is considered as two different organs i.e., Nabhi and Hridaya. The pulsating nature of Dhamani makes them unique, serving as a vital indicator of health and disease and is best to be understood as the arteries in body.

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