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ANATOMICAL AND PHYSIOLOGICAL REVIEW ON *PRANVAHA STROTAS* W.S.R. TO RESPIRATORY SYSTEM

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Abstract

Sharir Rachna is one of the important subjects of medical science, Ayurveda presented several concepts related to the *Sharira* and the concept of *Srotas* is one of them. *Srotas*described as per medicinal point of view and surgical point of view by *Acharya Charak* had *Acharya Sushrut* respectively. Ayurveda explained anatomy and physiology of different types of *Srotas* and *Pranavaha srotas* is one of them which is considered as important *Srotas*, that supply *Pran* throughout the body. *Pranvaha srotas* is related with the rate of respiration and circulation of oxygen throughout the body. *Pranavha srotas* is related to the lungs, heart and other pulmonary structures. This article explores anatomical and physiological review on *Pranvaha strotas* W.S.R. to the respiratory system/lungs.

Key Words: *Ayurveda*, *Srotas, Pranavaha srotas, Lungs, Oxygen*

Introduction

Ayurveda described many anatomical structures of body along with their physiological functions, *Srotas*is one structure defined as channels, through which the transportation of different biomaterials takes places. *Srotas* carry *Dhatu*or essence of *Dhatus* and other elements to their destination. Physiologically *Srotas*play vital role in the process of bio-transformation, nourishments and detoxification [1-4].

The *Swaroopa* of *Srotas* can be explained according to their colour which is almost similar to that of material carried by *Srotas*, they are tubular, small in size, their shape may be straight or reticulated. *Srotas* are hollow organs mainly associated with *Aakash Mahabhuta*, *Aacharya Charaka* categorised 13 types of *Srotas* while *Aacharya Sushruta* explained 11 pair of *Srotas*. These micro-channels (*Srotas*) are named as per the substance which they carry and, in this view, various *Srotas* are named as *Rasavaha Srotas, Udakavaha Srotas* and *Pranavaha Srotas,* etc*.*

Srotamsi is involved in the process of transformation are transportation. Anatomically *Srotas* is described as dynamic system of inner transportation, through which *Sravanam karma* take places. *Sravanam karma* of *Srotas* includes moving, flowing, permeation and oozing of different constituents [3-5].

Pranavaha Srotas:

This *Srotas* carry *Prana*thus named as *Pranavaha Srotas*; *Aacharya Chakrapani* described *Pranavaha Srotas* as micro-channels that carry *Vata*(*Prana*). The system which carries *Prana Vayu* and transport *Prana Vayu*to other parts and finally eliminates *Vayurupa Mala* is forms *Pranavaha Srotas. Pranavaha Srotas* is considered as essential *Srotas* of body since it carries *Prana* and is related with the lungs, heart and other pulmonary systems of body. These are responsible for inhalation and exhalation of air; provides vital energy this energy utilizes for various physiological activities.

Pranvahasrotas is the pathway for *Pranswaropivayu,* as per modern science *Pranswaropivayu* can be corelated with oxygen. *Pranvaha srotas* helps in the transportation

of oxygen throughout the body and also facilitate detoxification of air. In contemporary science cardiopulmonary system transports oxygen as similar to the *Pranvah srotas*.

The functions of *Pranavaha Srotas* are inspiration of *Prana Vayu* and expiration of *Udan Vayu,* this *Prana vayu* transported throughout the body *via Hridaya* and *Vyan Vayu* helps in this process. *Avalambaka Kapha* is situated between *Hridayavaran* and *Phuphusavaran,* it supports the functions of *Hridaya*. Similarly, *Sleshaka Kapha* of *Pranavaha Srotas* support *Sandhan* of *Peshisi* [5-7].

Anatomical and Physiological Consideration:

Vital air serves as source of energy which is required for physiological activities and these all carried through the *Pranvah srotas*. This system works around where *Pran* resides i.e.; *Sankhau, Hriday, Basti, Nabhi, Shukra, Oja* and *Rakta*, etc. The *Sthan* of *Pran*includes *Sirhapradesh*, *Urah* and *Kantha*, etc. *Swaskriya* merely depend upon the *Pranvayu* this *Vayu* holds soul and body, *Vayu* considered as strength of body and this *Vayu* is transported by *Pranvahsrotas*.

The major breathing sites as per Ayurveda are as follows:

- ✓ *Murdha*
- ✓ *Nasik*
- ✓ *Kantha*
- ✓ *Uras*

There are two *Moolsthan* of *Pranavaha Srotas* from where it is regulated while cardiopulmonary system itself consists of two interdependent system. Amongst two interdependent system of cardiopulmonary system, one is respiratory system that transfer oxygen to blood and forms oxygenated blood and another one is cardiovascular system which carry oxygenated blood to all over the body. Heart and lungs are the principal organs of the cardiopulmonary system.

Hriday and *Rasvahinidhamni* are described as *Moola* of *Pranvahsrotas* (according to *Acharya Sushrut*). *Acharya Charak,* explained *Hriday* and *Mahasrotas*as two *Mool* of *Pranvah*

Srotas. Ancient authorities suggest *Moordha* as main seat of *Prana,* however *Hridaya, Mahasrotas* and *Rasavahani dhamani*are to be considered as roots of *Pranavaha srotas* [7-9].

Rasavaha & *Pranvaha strotas* resembles the pulmonary & circulatory system of modern science. *Hridaya* is situated in thoracic cavity, as *Koshthanga*thus *Hridaya* is also forming circulatory system of body as anatomical structure of *Pranvaha strotas.*

Pranavaha Srotas originating from *Hrdaya* and *Rasavahinis dhamanis,* in reference to the anatomical consideration of *Rasavahinis dhamanis*, *Pranavahi Dhamanis* founds in its place. With reference to *Pranavahi Dhamanis,* it is also stated that there are "*Svasavahinis*" which resembles bronchi of respiratory tract.

The *Swarupa* of *Prana Vayu* is subtle since the *Vata*is not visible or *Pratyakshagamya*, this *Prana Vayu* identified by their works in the forms of *Vata*. Head & chest mainly considered as two main sites of *Prana Vayu*. The extension of this system includes throat, mouth, nose, heart and vessels. Umbilicus is considered as place where *Pranas* of the living beings resides, which is surrounded by the *Siras.* These *Siras* from the heart circulates *Prana* to different parts of the body.

Gangadhar Tikka described *Hridaya* & *Vaksha (Phusphusa* i.e.; *lungs*) as the organs of *Pranavaha Srotas*. *Vyan Vayu* helps in the secretion of *Avalambaka Kapha* which is secreted by micro tubules & alveoli (*Vayu Kostha*) in *Phuphusa*. *Hridayavaran* & *Phuphusavaran* also considered as important parts of this system.

Mahasrotas is one of the *moolas* of *Pranavaha srotas*, this terminology suggested that *Pranavaha srotas* possess large tube-like structure with large diameter. *Dhamani* as part of *Srotas* carry *Rasa*throughout the *Sharira* and maintains *Poshana* [8-10].

The vitiation in *Pranavaha srotas* leads many pathological conditions as depicted in Figure 1.

Figure 1: Pathological manifestation associated with vitiation of *Pranavaha srotas*

Modern View:

Respiratory system is formed by nasal cavity, nose, pharynx, trachea, bronchus and bronchioles, etc. Capillaries and vessels surround these sacks, inhaled air filtered in the nose and saturated with water vapours. Expiration process facilitate partial recovery of this heat transfer. Air goes to trachea followed by secondary and tertiary bronchioles and alveoli.

The gas exchange unit of lung composed by branched respiratory bronchioles and alveoli clusters. Epithelial cells of alveoli facilitate oxygen up take and excretion of carbon dioxide. Transportation of gases through the lungs is the function of blood, the physico-chemical changes facilitate gas transport at this stage.

Diffusion process involves in the respiratory exchange of gases between lungs and blood across the alveolar and capillary walls. Alveolar capillary membranes are the layer through which respiratory gases diffuses. Heart as pumps generate circulation to the lungs from right part and left heart serves to the other body part. The deoxygenated blood drains from vena cava and discharges blood in to left atrium [11].

Conclusion

Pranavaha srotas is considered as one of the essential *Srotas* of the body which comprises nose, alveoli, nasal chambers, trachea, bronchus, bronchioles and pharynx, etc. This system carries oxygen or carbon dioxide throughout the body *via*lungs. These gases

transported to heart from the lungs by pulmonary veins. The exchange of gases occurs at the tissue/cellular level. Heart is mentioned as *Mulsthana* of *Pranavaha srotas* since it plays vital role in the functioning of respiration. Nose, alveoli, heart, pulmonary veins, arteries and microchannels, etc. are major functional component of this system. Thesebody parts form a path which includes in *Pranavahini dhamanya.* Ayurveda philosopher mentioned *Pranavaha Srotas*as *Mahastrotasam*. As per moder science the nose, nasal cavity, pharynx, larynx, trachea, bronchi and branches, as well as the lungs, which involves alveoli, or terminal air sacs, are the most prominent parts of a respiratory system.

References

1. Kashinath Shashtri, Charak samhita of Agnivesha revised by Charak and Dradhbal, published by Chaukhamba bharti academy, reprint 2012 ch. su30/12.
2. Kaviraj Dr Ambikaduttshastri, Sushrut samhita edited with Ayurveda tattva sandipika, edition 2018, published by Chaukhambha Sanskrit sansthan, Varanasi.shu.sa 9/12.
3. Kashinath Shashtri, Charaksamhita of Agnivesha revised by Charak and Dradhbal, published byChaukhamba bharti academy, reprint 2012 ch. Su 29/3.
4. Kashinath Shashtri, Charak samhita of Agnivesha revised by Charak and Dradhbal, published by Chaukhamba bharti academy, reprint 2012 ch. su12/8.
5. Kashinath Shashtri, Charak samhita of Agnivesha revised by Charak and Dradhbal, published by Chaukhamba bharti academy, reprint 2012 ch. chi28/3.
6. Kashinath Shashtri, Charak samhita of Agnivesha revised by Charak and Dradhbal, published by Chaukhamba bharti academy, reprint 2012 ch.vi 5/7.
7. Kaviraj Dr Ambikadutt shastri, Sushrut samhita edited with Ayurvedatattva sandipika, edition 2018, published by Chaukhambha Sanskrit sansthan, Varanasi.shu.sa 9/12.
8. Yadavji Trikamji Aacharya, Charak Samhita Ayurveda Deepika Vyakhyan, Chaukhamba Surbharti Prakashan, Varanasi, 2013, pp.249.
9. Yadavji Trikamji Aacharya, Charak Samhita Ayurveda Deepika Vyakhyan, Chaukhamba Surbharti Prakashan, Varanasi, 2013, pp.249.
10. Yadavji Trikamji Acharya, Sushruta Samhita Nibandhasangrah Vyakhyan and Nyayachandrika Panjika Vyakhyan, Chaukhamba Surbharti Prakashan, Varanasi, 2012, pp.386.
11. Sir Monier-Williams Sanskrit English dictionary, Newedition, Marwah Publications New Delhi - 1986, 652.