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A Review Study of *Pranavaha Srotas Vikara* With Special Reference to Chronic Obstructive Pulmonary Disease (COPD)

Dr.Saurabh Chandra Rohila[1], Dr. Mukesh Kumar[2], Dr. Shyoram Sharma[3]
[1, 2]MD Scholar (2nd Year), [3]Associate Professor, P.G. Department of Rachana Sharir, Postgraduate Institute of Ayurveda, Jodhpur (Rajasthan)

Abstract: ***Ayurvedic literature refers to the expression "Srotomayam Hi Shariram" which means "the living body is a system of channels consisting of several channels built as an internal transport system to perform various tasks. Srotas are macro channels and pathways in the living body covering visible and invisible organs, molecules, atoms and subatomic layers. Pranavaha Srotas is one of these channels that mediate Pranavayu. In Ayurveda, respiratory diseases are due to binding of Pranavaha Srotas, causing cough, breathing problems and disturbance of the breathing rhythm. COPD is the second largest common lung disease in India after pulmonary tuberculosis. It is common in middle-aged patients and rarely in patients under 35 years of age. COPD is the leading cause of death and morbidity worldwide. It is characterized by progressive and persistent airflow limitation.***

Keywords: Srotas, Pranavaha Srotas, COPD, Clinical Aspect

I. INTRODUCTION

Srotas is a general term that refers to all macro channels and pathways." *Srotas* are channels or pores that exist throughout the visible body as well at the "invisible" or delicate level of cells, molecules, atoms and subatomic layers. These channels to transport nutrients and other substances in and out of our physiology. In *Srotas*, two things are defined through the organs of the body and are known as *Srotomoola* (Root of *Srotas*). The roots of the tree can be compared to *Srotomola*. Any damage to the roots will result in the destruction of the tree, just as damage to the *Rotomola* can affect the entire *Srota*. The *Moolas* can therefore be the physiological and anatomical control center of the roots. *Pranavaha Srotas* are one of those that mediate *Pranavayu*. In *Ayurveda*, respiratory diseases are caused by binding of *Pranavaha Srotas*, accompanied by cough, difficulty in breathing and breathing rhythm. COPD is such a disease which can be co related with *Pranavaha srotas vikara*. COPD (chronic obstructive pulmonary disease) is a group of lung diseases that make breathing difficult and worse over time. The present study has tried to correlate this in every possible way, especially in terms of modern anatomy and pathology.

II. AIM AND OBJECTIVE

A. Aim

Literary study of *Pranavaha Srotas* w.s.r. to *Bruhatrayee*.

B. Objectives

1) To study *Pranavaha Srotas* according to *Ayurveda* and Modern science.

2) To study *Moolasthana* of *Pranavaha srotas* and their importance in treatment of COPD diseases of *Pranavaha srotas*.

III. MATERIAL AND METHODS

References related to proposed title are collected from classical books of *Ayurveda*. Various publications, books, research papers, internet, library, webinars, proceeding webinars, related to topics are collected.

IV. DISCUSSION

Ayurvedic Aspect

According to *Acharya Charak Srotansi, Sira, Dhamani, Rasayani, Rasavahini, Nadi, Panth, Marga, Shariracchidra, Samvrit, Asamvrita, Sthana, Ashaya* and *Niketa* are some synonyms for *Srotas.*

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In the sixth chapter of the *Ashtang Samgrah Sharir Sthan*, *Acharya Vagabhatt* describes the synonym of *Srotas*. These are *Srotansi*, *Sira*, *Dhamani*, *Rasavahini*, *Nadi*, *Panth*, *Ayna*, *Marga*, *Shariracchidra*, *Samvrit*, *Asamvrita*, *Sthana*, *Ashyaya*, and *Niketa.*

Srotas Bhed (Types) - Different texts of *Ayurveda* classified *Srotas* as (Table 1)

Table 1: Classification of *Srotas*

Acharya Charak	Acharya Sushruta	
	Bahirmukhsrotas	Antarmukha Srotas / Yogvahi Srotas -11 pairs
1.Pranavahasrotas 2.Udakvahasrotas 3.Annavahasrotas 4.Rasavahasrotas 5.Raktavahasrotas 6.Manshavahasrotas 7.Medovahasrotas 8.Asthivahasrotas 9.Majjavahasrotas 10.Shukravaashrotas 11.Mutravahasrotas 12.Purishvahasrotas 13.Swedavahasrotas	9 in male and 12 in female, they are, 1. Netra - 2 2. Karana-2 3. Nasika–2 4.Mukha –1 5.Guda-1 6.Mutramarg -1 And 3 extra 12 in females 7.Stanya-2 8. Apatyamarg - 1	1.Pranavahasrotas 2.Udakvahasrotas 3.Annavahasrotas 4.Rasavahasrotas 5.Raktavahasrotas 6.Manshavahasrotas 7.Medovahasrotas 8.Shukravahasrotas 9.Mutravahasrotas 10.Purishvahasrotas 11.Aartavvhasrotas

Pranavaha Srotas

Mulas of *Pranavaha Srotas*

Both *Acharya Charak* and *Sushruta* regarded distinct *Mula Sthana* of *Pranava Srotas* as well as indications of vitiation. *Acharya Charak* has considered *Hridaya* and *Mahasrotas* as the *Mula* of the *Pranava Srotas*. According to *Acharya Sushruta*, the *Mula* of the *Pranava Srotas* is *Hridaya* and *Rasavahi Dhamni*. The word *"Hṛidaya"* here refers to both the organ heart and the chest or cardiac region. For *Praṇa vayu* to flow normally, the cardiac region is also essential.

Pranavaha Srotas Dushti Hetu

Kshaya of *Dhatus*, *Vegadharan*, *Rukshadi Ahara* and *Vihara*, exercise during hunger and overwork are the factors that vitiate *Pranavaha Srotas.*

Pranavaha Srotas Dushti Lakshana

There are several symptoms associated with aberrant *Pranavaha Srotas*, including *Atishrast, Atibadha, Kupita, Alpa, Shasabda* and *Swasa* with *Shoola.*

Pranavaha Srotas Viddha Lakshana

Krosan, Vinaman, Mohan, Bhraamn, Vepan & Maran are the symptoms of Vidhha on *Pranvaha Srotas*.

Pranavaha Srotas Vikar

S. No.	Ayurvedic	Modern
1.	Kasa	Inflammatory - (Lung Collapse; Bronchial Asthma; Emphysema etc.)
2.	Shwasa	Infectious - (Covid – 19, SARS, Tuberculosis, Measles,

		Pertusis etc.)
3.	Hikka	Interstitial - (Sarcoidosis, Idiopathic Pulmonary Fibrosis etc.)
4.	Swarabheda	Environmental - (Asbestosis, Silicosis etc.)
5.	Rajayakshma	Obstructive - (COPD, Bronchiectasis, Cystic Fibrosis etc.)
6.	Urakshata	Respiratory insufficiency - (Atelactasis; Gas exchange etc.)
7.	Parshwa Shula	Pulmonary (Vascular) - (Pulmonary embolism, Telangiectasia etc.)
8.	---	Pulmonary (Pleural) - (Pleural effusion, and Pneumothorax etc.)
9.	---	Pulmonary (Pleural) - (Pleural effusion, and Pneumothorax etc.)
10.	---	Congenital - (Airway malformations, bronchial atresia etc.)

V. MODERN ASPECT

COPD can be referred to as a *Pranavaha Srotas* disease in *Ayurveda* since the etiological reasons and clinical symptoms mentioned in *Ayurvedic* texts for *Pranavaha Sroto Dushti* are almost identical to those of COPD and occur most commonly in extended circumstances of *Kasa* or *Tamaka Shvasa*. Exposure to air pollution, second-hand smoke, occupational dusts and chemicals, smoking, cold weather, and other risk factors are referenced in Ayurvedic classics such as "*Rajasa Dhoomvatabhyam Shitathanambusevanam Rukshanna Vishmashanat."*

Chronic obstructive pulmonary disease or COPD is a collection of lung conditions that progressively worsen breathing difficulties. The air sacs and airways in the lungs are normally flexible and elastic. The airways carry air into the air sacs during inhalation. The air sacs expand like a tiny balloon as they fill with air. The air exits your body during exhalation because the air sacs contract. In COPD, less air enters and exits the airways due to one or more of the following issues:-

1) Lungs' air sacs and airways lose their elasticity.
2) Many of the air sacs' walls are damaged.
3) Thickening and inflammation of the airway walls.
4) The airways produce more mucus than normal, which can obstruct them.

There are two primary forms of COPD:

a) Emphysema- Emphysema is defined as the “Persistent abnormal air distension distal to the terminal bronchioles.” It Affects the air sacs in the lungs, as well as the walls between them. They get harmed and lose their elasticity.
b) Chronic bronchitis- A condition in which the lining of your airways is inflamed and irritated all the time. The lining swells and produces mucus as a result. Chronic bronchitis is distinguished by a persistent cough with expectoration for at least three months out of the year two years in a row.

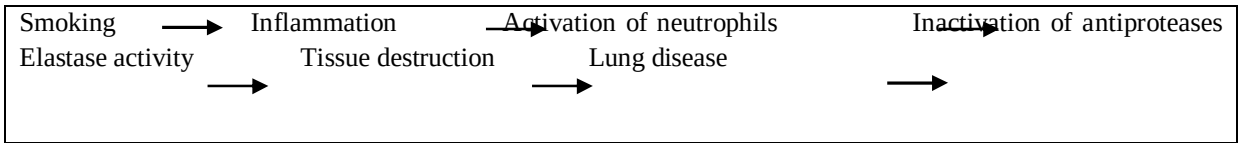
Emphysema and chronic bronchitis are common in COPD patients; however, the severity of each condition varies from person to person.

The risk factors for COPD include:-

- Smoking-This the main risk factor. Up to 75% of people who have COPD smoke or used to smoke.
- Long-term exposure to other lung irritants**,** such as second hand smoke, air pollution, and chemical fumes and dusts from the environment or workplace
- Age- Most people who have COPD are at least 40 years old when their symptoms begin.
- Genetics-This includes alpha-1 antitrypsin deficiency, which is a genetic condition. Also, smokers who get COPD are more likely to get it if they have a family history of COPD.
- *Asthma*- People who have *Asthma* have more risk of developing COPD than people who don't have *Asthma* but most people with *Asthma* will not get COPD.

- Aetio-pathogenesis: According to *Ayurveda*, the pathophysiology of any disease is caused by faulty nutrition and lifestyle habits. Diet articles, dietary habits, and lifestyle faults are etiological factors of COPD described in ancient and current literature.
- Pathogenesis: In COPD, inhaling harmful chemicals, mainly cigarette smoke, promotes inflammation of the lung tissue. If the regular protective and/or healing systems are overloaded or fail, inflammation causes tissue damage. Mucus hypersecretion, airway constriction and fibrosis, parenchymal deterioration, and vascular alterations are all symptoms of lung tissue injury. These pathological alterations result in airflow restriction and other physiological abnormalities, which result in COPD clinical characteristics.

The pathophysiology of *Pranavaha Srotodusti* expressed in terms of *Kasa* and *Shvasa* mimics the above-mentioned description and may be characterised as vitiated *Prana* and *Udana* located in *Pranavaha Srotas* enforces *Kapha*, resulting in blockage of *Pranavaha* channels. On the basis of this, the pathophysiology of COPD may be defined as the following-



- Clinical features: COPD is characterised by a chronic sputum-producing cough and shortness of breath on exertion for many years, as well as a history of excessive tobacco or smoking. Coughing in cold weather, wheezing, chest tightness, recurrent respiratory infection, dyspnoea; peripheral oedema secondary to over right ventricular failure, cyanosis, and percussion note is normally resonant, medium to coarse crepitation, and rhonchi that change in intensity and location are other clues for COPD diagnosis.

Atisristam-Atibaddhama (too lengthy or too limited respiration), *Kupita* (disturbed pattern of respiration), *Alpa-alpam* (shallow or frequent respiration) and *Shashbdam Sashulam* (respiration connected with sound and pain) are the typical signs of *Pranavaha Srotas* vitiation. Most of the clinical aspects identified for COPD are also noted in classical medicine, either as general symptoms or as particular *Doshika Kasa* or *Tamaka Shvasa* traits.

- Management of COPD by *Ayurveda*: *Ayurveda* describes three basic measures for the prevention or management of any disease as *Nidanaparivarjana*, which involves lifestyle changes and eating pattern, *Shamana* (pacification therapy), and *Shodhana* (biopurifactory methods). Considering this, the management of COPD can be summarised as follows:
- ❖ Avoidance of etiological factors:
- ❖ Modification of lifestyle:
- ❖ Similarly due to importance diet articles may be done:

Shodhana (biopurification) should be conducted on a regular and seasonal basis, with strong patients undergoing *Vamana*, *Virechana*, and *Niruhabasti* as well as *Nasya* treatment in suitable seasons. This form of therapy reduces *Kapha* and may help to dry up extra mucous secretions in the *Pranavaha Srotasa* (respiratory system).

VI. CONCLUSION

The *Srotas* philosophy is built on the three primary features listed below.

1) To generate a certain *Bhavas* or substance *utpatti* of *bhav.*
2) To move or transport this *Bhavas* from one location to another another location represents the *Vahana* of these *Bhavas.*
3) To keep these specific *Bhavas* secret signifies *Stravanath Srothansi*. These *Bhavas* have a specific root or marg. Some *Srotas* have all three features while others only have one.

Srotas is determined by the passage of materials via it. It is also connected to *Moolsthana. Charak* and *Susruta* assign *Moolsthana* based on their function, such as storage of *Bhavas* or relay hub of *Bhavas.* Second *Moola* is seen as a system for doing these *Bhavas***.** *Pranavaha Srotas* is the most important and primary *Srotas* in the body. It is made up of external nares, nasal chambers, pharynx, trachea, bronchus, and bronchioles that transfer oxygen or carbon dioxide to the lungs. The pulmonary veins convey these gases from the lungs to the heart. All bodily cells receive oxygen from the heart. The exchange of gases then happens at the tissue cell level. Because the heart is so vital in this process, it is stated as *Moolsthana* of the *Pranavaha Srotas*.

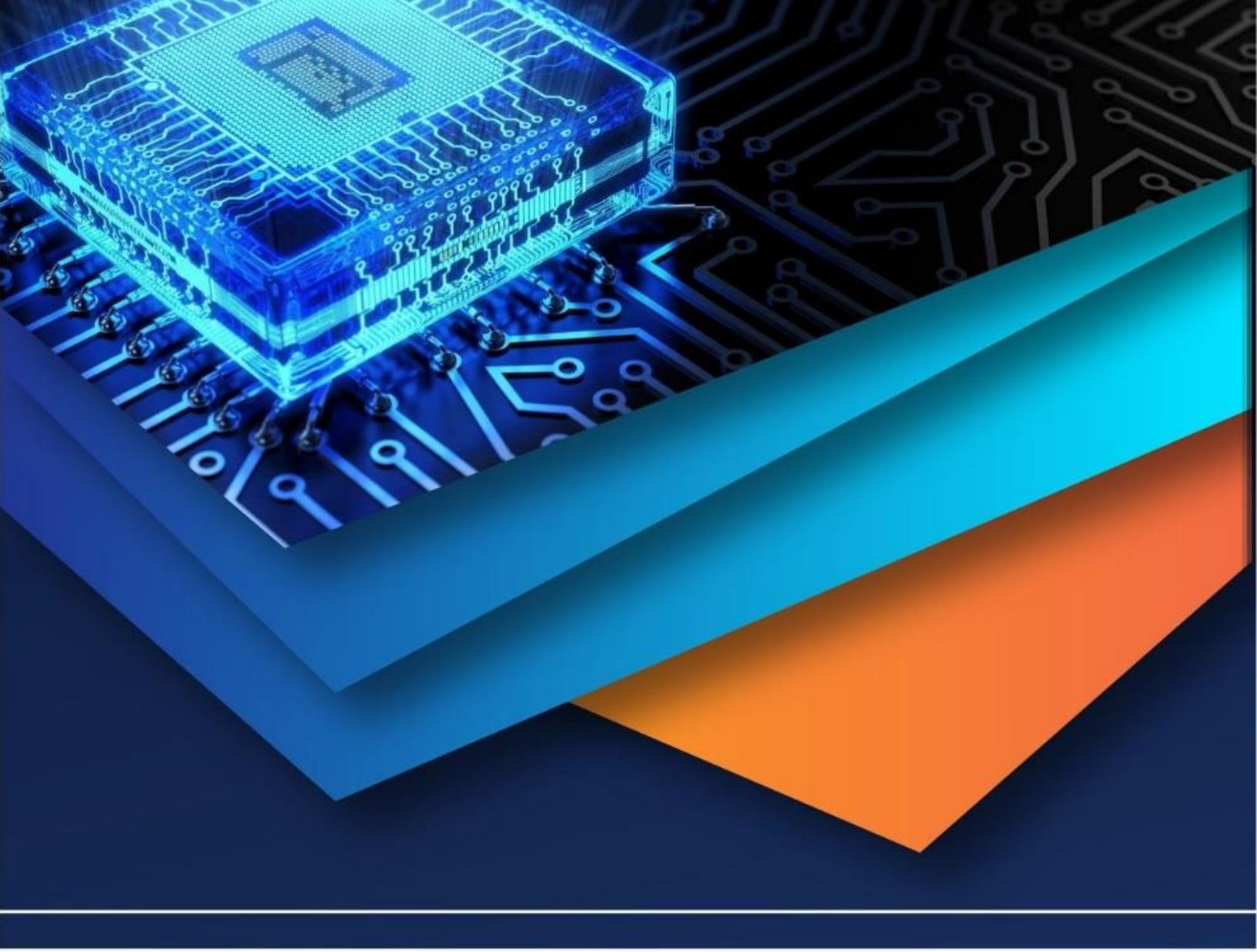
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The passage and exchange of gases proceeds from the nose to the alveoli, from the alveoli to the heart via the pulmonary veins, from the heart to all cells of the body via the arteries, and from all cells of the body to the heart again via the veins. This entire route is comprised of *Pranavahini Dhamanya*.

COPD, being a chronic progressive illness with permanent alterations, necessitates early detection and therapy. Extra diet attention, dietary pattern changes, and lifestyle changes along with appropriate use of *Rasayana* can play a significant role in the prevention or advancement of COPD.

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