

PATHOLOGICAL UNDERSTANDING OF PRANAVAHA SROTAS

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ABSTRACT

Pranavaha Srotus plays a vital role in maintaining the homeostasis of the body, not only due to movement of vital *Prana* in this srotus but also as it is the major route through which the pathogens enters inside the body. Pranavaha Srotus is also directly and indirectly related with other srotus of the body like Udaakvaha, Annavaha and the Raktavaha Srotus. Hence understanding the pathological state of the same under the purview of contemporary medical sciences helps for the better understanding of the pathology. Vitiating factors, symptoms of vitiation and extent of the involvement leads to the right path in treatment.

Keywords: *Annavaha, Raktavaha, Srotus, Contemporary Homeostasis*

INTRODUCTION

Respiratory system is broadly divided in to two, as upper and the lower respiratory system. The upper respiratory tract is consisting the parts like the nose, nasal cavity, nasopharynx, oral cavity, while the lower respiratory tract contains Larynx, laryngeal pharynx, trachea, lungs, and alveoli. Major function of Respiratory system are like conduction of the air, gaseous exchange, pulmonary circulation, excretion of the metabolic waste in the form of carbon dioxide. It also helps to maintain intra thoracic and pleural pressure, pulmonary blood pressure, expansion and compliance of the lung, surfactant action. Airways possess a total cross-sectional airway diameter much greater than that of the trachea. Further the whole control of the respiration is through the respiratory centers present in occipital lobe of the cerebrum through, inspiratory, expiratory,

pneumotaxic, apneustic centers. The Respiratory system can be compared to Pranavaha srotus in Ayurveda. The word Prana has got wide range of understanding. Prana is the vital force of the body which imparts life. Being the quality of Atma it carry out all physiological biochemical activities of the body, pressure gradient changes, responsible for maintenance of the equilibrium and homeostasis of the body. Ayurveda explains the twelve factors which constitute the Prana. That is prana can only exist in combination and integrated function of the 12 factors like Agni (body metabolism) Soma (fluid system) Vayu (Nervous control) satwa, raja and tama (limbic, hypothalamus) the five sense organs in the form indriyas and the structurally in combination of subtle form of the Panchamahabutas. Pranayathanas which are considered as vital areas of body where

Prana is located and injury to these points may prove fatal. There is also mentioning of PranaVata as one of the major type of Vata which is present in Shiras (cranium) and do the functions of respiration, deglutition and other body activities and spiritual understandings. Hence Prana is related to each cellof the body.

The Moola of Pranavaha Srotus is Hridaya and Maha Srotus which are not directly related with Respiratory system as mentioned by contemporary medical science. Word Prana means the vital force of the body which maintains the body. Most of the functions of PranaVata which is situated in the head are attributed to Upper motor neuron functions. Further it is told that Pranavaha srotus is the area where PranaVata moves continuously. Meanwhile Pranavaha Srotodushti lakshana doesn't include disorders like Shwasa, Kasa, Prathishya etc. instead look like disturbance of rate and rhythm of respiration controlled by the Respiratory centers of the brain. One can witness CNS depressing drugs also depress the respiration like the Morphine, etc. But treatment of Pranavaha srotus is done as per Shwasahari kriya as Shawsa is not only the manifestation of the respiratory system, it can occur in cardiac, metabolic and respiratory and the CNS pathologies.

Description

Classics explain certain important causes for the vitiation of the Pranavaha srotus. One among them is due to emaciation i.e. Different elements which end up in body cachexia or emaciation ultimately end up in involvement of Pranavaha Srotus. As respiratory tract is most common entry for many life threatening infections, especially

in immune compromised state of person and which ranges from simple respiratory viral infections to Tuberculosis like chronic diseases.

One more key factors which causes the affliction respiratory tract is withholding of natural body reflexes. Maximum protective body reflexes are related to Pranavaha Srotus only as it is the common route for the entry of disease causing agents. Kasavega, Shwasavega, Hikka, Udgara, Kshavathu, etc natural protective reflexes prevent the entry of diseases causing agents and remove the physical, and chemical noxious substances from the body when it is intact and entry of virus, bacteria, allergic substances or other foreign substances through the Respiratory tract are thus prevented. Sustained habit of withholding, or hampering these protective reflexes like, tobacco, smoking, etc may make the person more vulnerable disorders of respiratory tract.

Further intake of dietary food which is predominantly dried (Rooksha), and life style and other activities which causes the dryness of respiratory mucosa disturbs the normal configuration of respiratory tract and acts as primary causes of disease. Atrophy of columnar epithelial cells with change in configurations of mucosal structure and quality of secretions, seeds many disorders and mucosa may be hyperactive or hypersensitive.

Bodily and mental activities when performed without considering body tolerance capacity and body threshold level, for a long duration create stress resulting in gradual decline in total working capacity. Such activities make the person mentally down and badly effect the physical capacity

and gradually it interfere with body immunity. Urakshatha, Sahasajanya Rajyakshama are few of the examples.

Symptoms of Vitiation of Respiratory system:

While explaining the symptoms of the vitiated Pranavaha Srotus vitiation, it has been observed that abnormalities related to breathing pattern, rate and rhythm and associated complaints has been given prime importance rather than structural symptoms of respiration, like Hikka, Shwasa, Prathishaya etc.

Athisrustham or Tachypnea, refers increased respiratory rate has been explained as symptom of Pranavaha Sroto Rogas. This is common finding seen, not only in respiratory disorders but also in conditions like fever, increased metabolic rate, respiratory acidosis, alkalosis, allergic, and chronic and acute presentations of the Respiratory system like foreign body aspiration, aspiration pneumonias, spontaneous pneumothorax, cardiac asthma, neuromuscular disorders may also produce this presentation.

Atibaddam or obstructed respiration is one more finding of Pranavaha Srotodusti. Disturbances thoracic, pleural cavities, negative intra thoracic pressure may cause hindrance in inspiration and expiration like in constrictive and obstructive disorders of lung. Abnormal rate rhythm and force of respiration has been referred as Kupitham. This shows the completely disturbed pattern of respiration.

Shallow breathing or “Alpaalapam” is one more finding in Pranavaha Srotodusti, characterized by less oxygenation and gaseous exchange in to the blood. This can

also understood that less force of respiration with hair hunger as evidenced pleurisy, pneumonia other end stage disorders.

Change in the pitch, and rhythm and force of respirations leading hypoventilation apnea and hyperventilation as evidenced in Chain stroke breathing, biots breathing, can be considered under the symptom “Abhikshana”. Meanwhile audible abnormal breath sounds with varied pitch has been referred as “Sashabda”. like Wheeze, strider etc. Painful respirations are referred as “Sashoola” as in injuries to chest, pleurisy, etc. Word Uchwsantha refers to expiratory wheeze with forced expiration

Analysis of Doshas involved in the manifestation of disorders of Pranavaha Srotus also helps in pathological understanding. The major Doshic involvement which is related to the respiratory system is Vata and Kapha. Prana as well as Udanavata plays key role in pathological manifestations. PranaVata is usually localized to Shiras and involved in Shwasa prakriya or ventilation along with other protective reflexes of the body. Meanwhile UdanaVata, vital among all as per Sushruta is situated in the chest and circulates between the Nasa and the Nabhi, cause for production of the voice, through expiratory air. By considering above explanations one can come to conclusion that PranaVata is responsible for the Inspiration and Udanavata is responsible for Expiration. Probabaly the Pranavata represent the respiratory control system of the brain which initiate and maintains the respiration and begins with expiration Udanavata carry on respiration at chest level while PranaVata acts as a respiratory

controlling system. Hence find several speech problems in Shawsa Roga like deena swara, alphaswara, swarabeda, vikritha swara will be observed in Mahasvasa, urdwasvasa, kasa, swarabeda, which highlight the involvement of UdanaVata. Kapha dosha especially the avalambka kapha which is situated in the uras perform the role defense system of the Pranavaha Srotus like mechanical, chemical, immunological and cytotoxic defense of the respiratory tract along with alveolar macrophages and the pleural fluid.

The abnormal cough reflex has been very well explained by Charaka in the context of Samprapthi of the Kasa as explained by Charaka. The normal Vayu moving in the downward direction is misdirected in upward direction and attain Udanabhava. In process it fill and create abnormal pressure changes in all the cavities Sakthiand Uras, resulting pain, discomfort and postural changes. Later the fill orbital and cranial cavity leading to irritation of cough center and resulting in forceful expulsion of expiratory air with loud sound, which is called 'Kasanaat' followed by with or without expectoration of the sputum.

Contemporary medical sciences explain production of the cough is due to pressure changes in the abdominal & thoracic cavities due to muscular action controlled by the nerve stimulation. There will be sudden closure and sudden opening of the doors of cavities in the act of coughing. When glottis is closed raised pressure in the thoracic cavity make the forceful opening of the glottis and air comes out with loud sound leads to cough.

Inhibition of the protective reflexes has negative effects on Pranavaha Srotus as witnessed in clinical practice. Inhibition of Mutra Vega leads to Vinamana or abnormal bindings of the body including the thoracic area, while that of Chardi leads to Hrilasa. Kshavathu Vegadharana leads to Manyasthamba and Arditha along with Indriya dourbalya. UdgaraVegadaharana is the cause of Hikka, Kasa while PipasaVegadharana leads to Kanta Shosha. Excessive Dharana of Ashru leads to Pratishaya, Pinasa, and stiffness of neck while Nidra Vega Dharana leads to Jrimba. By suppressing the KasaVega Kasa will increase further, suppression of Shrama Shwasa and Trishna leads to cardiac problems. All the above protective reflexes of the body mediated by the Autonomic nervous system prevents the entry of pathogens inside the body and expel out noxious substances, also alerts the body immune system. Hence forceful suppression of same many leads to respiratory diseases. To understand the same with an example, Tobacco smoking demotilse the cilia and hamper the normal process of kasavega while instillation of Tobacco to the Nose may hamper normal vega of sneezing.

Concept of Cor-pulmonale can be well appreciated by analyzing the classical references given by Charaka. Chronic disorders of the lung which indirectly hampers the heart functioning due to high resistance in pulmonary vasculature and parenchyma disturbing venous return and gaseous exchange resulting in increased pressure in the right atrium with raised JVP has been referred as Cor-pulmonale.

Moola of Pranavaha Srotus is Hridaya which is structurally not the part of Respiratory system as per modern anatomy although its relationship with lung functionally is obvious. While describing pathology of Shwasa morbid states of Kapha and Vata have been highlighted, and disease has been rooted and takes origin from the Pitta Sthana. Treatment failure in the early course of the disease leads to chronicity and later it involves the Hridaya and does Shoshana of the Rasa Dhatu.

Hemoptysis is one of the frequent finding in the disorders of Pranavaha Srotus. Kshataja Kasa has been presented with bouts of dry cough followed by blood mixed sputum as evidenced in injuries to chest like spontaneous pneumothorax, rupture of the mitral valve, tuberculosis, or some time in pulmonary edema. Meanwhile in Kshayaja Kasa patient produce which is mixed pus, blood mucous mixed foul smelling sputum which is slightly yellowish color as witnessed in emphysema, Broncheiostasis, lung abscess etc. Rajaykashma is the immune compromised stage of the body where person is prone to acquire tuberculosis like chronic conditions were blood mixed thick yellowish sputum is seen. Hemoptysis in Urakshata, is followed by cough and blood.

Allergy has got intimate relationship with diseases of Pranavaha Srotus which are at times fatal due to bronchospasm. Many respiratory diseases like allergic bronchial asthma, allergic bronchitis, allergic rhinitis, tropical eosinophilia are more common in day to day practice. Even Charaka highlighted certain allergic dietetic factors which vitiate the Pranavaha Srotus. Masha

among legumes, Tila taila among vegetable oils, meat of certain animals among non-vegetarian food, fish among the aquatic animals, cow's milk among the animal milk, curd among milk products, Raja, Dhooma like environmental hazards, certain climatic changes like humidity, cold, winter season, cloudy environment are common allergic ailments explained.

Pranavaha Sroto disorders also leads to certain central nerve system symptoms during end stage disease. Dyspnea recurrent Kasa or Hikka interferes with adequate ventilation with establishment of hypoxic state of the blood, with cerebral ischemia. Thus in case of TamakaShwasa repeated bouts of Kasa leads to altered consciousness, unconsciousness in ChinnaShawsa UrdwaShawsa and MahaShwasa. Patients of Vyapetha Hikka and Gambhira Hikka will become unconscious along with pralapa.

In disorders of Pranavaha srotus cough is a very common presentation. Vataja Kasa is condition with scanty sputum, while. Productive cough with yellowish, copious sputum expectorated with burning sensation is called as Pittaja Kasa, as seen in inflammatory cough. Thick, copious whitish sputum with less discomfort for expectoration is seen in Kapahja Kasa. Condition with foul smelling, yellowish, and pus mixed sputum is seen in Kshayaja Kasa (Pyogenic cough). Expulsion of the sticky sputum from bronchial tree by bouts of cough gives the relief has been evidenced in Tamaka Shwasa, (Asthmatic cough), explained blood, mucous mixed thick foul smelling sputum followed by cough is seen in Rajaykashma.

Mode of onset and progression of disorders of the Pranavaha Srotus is very typical. Urakshata due to injurious causes will always present as acute presentation while same due to Kashaya is Chronic presentation. Rajaykshama which is syndromic presentations develop over long duration, with immune compromised state and chronic manifestations and complications. Vataja Kasa may be an acute presentation with severe discomfort; same is also true with PittajaKasa with rapid progression. But KaphajaKasa is slowly progressive nature with chronicity and less discomfort to the patient. Long standing diseases like Kshyaja Kasa and Kshtahaja Kasa slowly progress with cachexic state. Acute onset and rapidly progressive nature is seen in Maha Shwasa, MahaHikka Urdwa Shwasa, Gambhira Hikka, Chinnashwasa, Vyapetha Hikka, while acute in chronic presentation with episodic nature is seen in Tamakashwasa.

Respiration has got direct relationship with ongoing metabolic changes of the body and also leads to Shwasa. Hence certain dietetic, exercise induced, disease states which results in abnormal metabolic changes may also cause Shwasa.

An injury to the chest or Uras is one of the important causes of vitiation of PranavahaSrotus. Uras being place of certain vital Marma like, Stanamoola, Stanarohita, Apalapa and Apalasthamba injuries to the same may be life threatening. Injuries to Stanamula results in Kasa and Shwasa, with Pyothorax (Kapha Poorna Kosta) while in Stanarohita there will be Shwasa and Kasa associated with Hemothorax (Rakta Poorna Kostha). Injury to Apalapa Marma leads to

Pneumothorax like conditions (Vata Poorna Kostha).

CONCLUSION

Explanations given under the heading of Pranavaha srotodushti can be comprehensively analyzed to find out its extent and range of involvement. It is obvious that this srotus has been not only limited to respiratory system, but also the circulatory and central nervous system. Hence blindly considering Pranavaha srotus as respiratory system may not help in pathological understanding of Pranavaha srotus and may leads to wrong diagnosis and treatment failure.

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Source of support: Nil,

Conflict of interest: None Declared

Cite this article as

Shrinidhi Kumar Acharya: Pathological
understanding of Pranavaha Srotas
ayurpub 2016;I(4):185-191