IAMJ

Review Article *International Ayurvedic Medical Journal* *ISSN:2320 5091*

PRANAVAYU – PHYSIOLOGICAL UNDERSTANDING: A REVIEW

Vd. Priyanka Bhawsar[1] Dr. Amit R. Nampalliwar[2]

Ph.D.-Ayu.(Sch.), Ph.D. Guide,

Shri.Jagdishprasad Jhabarmal Tibrewala University, J.B. Nagar,Andheri (East), Mumbai, Maharashtra, India

ABSTRACT

There are five types of *Vata* namely; *Prana*, *Udana*, *Vyana*, *Samana* and *Apana*. Head is principle location of *Pranavayu*. Other mentioned locations are neck, tongue, mouth and nose. One of the functional areas of *Pranavayu* is heart. Disturbance to *Pranavayu* functions affect entire *vatadosha* system. The functions of *Pranavata* is said to be *Sthivana* spitting), *Ksavathu* (sneezing), *Udgara* (belching), *Nisvasa* (Inspiration), *Annapravesha* (swallowing), *buddhi*, *Hrudhaya*, *Indriya*, *chittadhruk* (proper functioning of sense organs, heart, intelligence and mind). Respiratory movements of chest are one of the ways for perceiving *Pranavayu*. *Prana*, one of the five types of *vata*, controls the functions of vital organs like heart, brain etc. It is for this reason that *Prana* is considered prime amongst all the types of *vata*. Along with controlling the functions of the heart, it is also responsible for maintaining and sustaining the body functions. Functions of *Pranavata* can be related with the functions of brainstem.

Keywords: *Pranavayu*, *Vata*, Functions of *Brainstem*

INTRODUCTION

Dosha, *dhatu*, *mala* together forms the basis of the body. The balance of these entities represents the healthy state and imbalance will cause various diseases. In normalcy, *dosha* will be performing their own functions and individual *dosha* have their own specific site.

Vata or *vayu* is the most important *dosha* amongst the *tridosha* in the body. The other two *doshas* as well as the *Dhatus* and *Malas* are immobile having no mobility of their own. Just as the clouds are carried from one place to the other by wind all the other constituents of the body are carried from one place to other by *vata*.

It is for this reason that all these constituents the *Dhatus*, the *malas* as well as the two other *Doshas* viz. *pitta* and *kapha* are considered "*Pangu*".

Though *vata* is a single entity in the body,based on the functions performed, it is classified in to five types i.e. *Prana*, *Udana*, *Vyana*,*Samana* and *Apana* as explained by *Devdatta*, the reversed commentator of *Charaksamhita*.

Prana, one of the five types of *vata*,controls the functions of vital organs like heart, brain etc. It is for this reason that *Prana* is considered prime amongst all the types of *vata*. Along with controlling the functions

How to cite this URL: Vd. Priyanka Bhawsar & Dr. Amit R. Nampalliwar: Pranavayu – Physiological Understanding: A Review. International Ayurvedic medical Journal {online} 2016 {cited 2016 July} Available from: http://www.iamj.in/posts/images/upload/3094_3097.pdf

of the heart, it is also responsible for maintaining and sustaining the body functions.

AIMS AND OBJECTIVES

1) The main aim of this article is to understand the various functions of *Pranavayu*.
2) Functional understanding of the brainstem is necessary to understand physiology of *Pranavayu*.

MATERIALS AND METHODS

For this study, the basic and conceptual materials have been collected from the *Ayurvedic* classics ,i.e. *Brihattrayee* mainly the *SusrutaSamhita, Charak Samhita* and other classics with the available commentaries, as well as various reference books to be reviewed.

DISCUSSION

All functions considered together by all compendia can be enumerated and explained as follows.

1) *Pranavalambana* –As long as this *vayu* is functioning in body, it lives.

This function is expressed through respiratory movements.It can therefore be derived that *pranavayu* keeps a living person alive.[1]

2) *Swasanam – Nisvasa* is name given by *Vagbhata* to inhalation of air through nose.He states inhalation of air through nose.He states inhalation is due to *pranavayu*.*Prasvasa* is exhalation. Respiration comprises inhalation and exhalation. *Sharangdhara* proposes that process of respiration is due to *pranavayu*.[2]*Charaksamhita* has described channel for *prana* and names it as *pranavahasrotas*.[3]Commentator *Chakrapani* elaborated this verse. He added that existence of special channel is necessary for such important *vata* type as *Prana*. He comments that all types are circulating through all channels yet *pranavayu* has separate channel.[4]

Nuclei in the pons are the pneumotaxic area and apneustic area of the respiratory center. The medullary rhythmicity area of respiratory center adjusts the basic rhythm of breathing. This function can be related with *nisvasa* function of *pranavata*. From the respiratory center the skeletal muscles of ventilation, particularly the diaphragm are alternatively activated to cause air to move in and out of lungs. Breathing occurs rhythmically. This rhythmicity is generated within respiratory centers that are located in the medulla and pons.

3) *Annapravesha* – Ingestion of food is *annapravesha*.Since area of functions of *Pranavayu* extends upwards from abdomen towards mouth, this function comes under territory of *Pranavayu*.[5]

Once food is taken in mouth *pranavayu* directs this food to stomach.Food is one of three "*Bahyaprana*" namely; air ,food and water. *Pranavayu* helps this *prana* to enter inside body through mouth and inside digestive organ, stomach, through esophagus.

Deglutition center of medulla promotes swallowing or deglutition of a mass of food that has moved from oral cavity of the mouth in to pharynx.This can be related with *Annapravesha* function of *pranavata*.

4) *Hrdyadharnam* –

Chetana principle abides in heart. *Rasa* and *Rakta* are circulated by heart. Heart is one of ten *pranaytanani*. Digested food is converted in to *Ahararasa*. This *ahar-rasa* is responsible for strengthening heart. Role of *Pranavayu* in ingestion of food is mentioned above. *Pranavayu* gets involved in strengthening heart more by way of looking after *Oja*, which is located in heart. Since heart is

site of *Prana*. *Pranavayu* takes care of heart and takes care of *Oja* as well.

The cardiovascular center of medulla oblongata regulates the rate and force of heartbeat and diameter of blood vessels. This function can be related with the *Hrudaya* related function of *pranavata*.

5) Control of intellectual functions of mind:

Heart is site of *pranavayu*. Heart is a site of *Jivatma*. As *pranavayu* takes care of heart, it looks after requirement of *Jivatma*. Mind is an instrument for *Jivatma* to grasp feeling of pleasure and misery..

Mind is,"*indriya*" and *Pranavayu* takes care of all *indriyani* of body. This is how this function is included in responsibilities of *pranavayu*.[6]

Some parts of the brainstem (reticular formation of mid brain.) are the components of limbic system which is mainly involved in intelligence and other higher mental functions. This function of brain stem can be related with *Buddhi* related function of *Pranavata*.

6) Control on sensory and motor organs –

By way of taking care of all *indriyani*, *pranavaha* controls and strengthens them.

The anterior part of midbrain contains paired bundles of axons known as cerebral peduncles, which consist of axons of the corticospinal, corticopontine and corticobulbar tracts. It conducts nerve impulses from motor areas in the cerebral cortex to the spinal cord, pons and medulla respectively. Posterior part of midbrain called the tectum, contains four rounded elevations.

The two superior colliculi, serve as reflex centers for certain visual activities (eye movements for tracking moving images and scanning stationary images. Superior colliculi are also responsible for reflexes that govern movements of the head, eyes and trunk in response to visual stimuli.

The two inferior elevations, the inferior colliculi are part of auditory pathway, relaying impulses from the receptors for hearing in the inner ear to the brain.

The medulla also contains nuclei that are components of sensory pathways for hearing and equilibrium (balance).This function of brainstem can be related with the *Indriya* related function of *pranavata*.

7) Sputum expulsion, sneezing and belching –

Mucous expulsion accumulated in airways of neck and thorax through oral cavity is function of *pranavayu*. This along with sneezing and belching is specific function of *pranavayu* due to its typical '*gati*' or direction. Since functions of *Pranavayu* are inhalation, ingestion etc. direction of *Pranavayu* could be from outside of body. But direction of expectorating mucous is from inside out.Direction of belching is from inside out so is of sneezing.

Whenever there is any obstruction to its direction, since *pranavayu* is vitally important for life, clearance of obstruction is supposed immediate.This could be the reason of allotting functions like expulsion of mucus, sneezing, belching to pranavayu.

Commentator *Dalhana* of *Sushruta-samhita* defines some of these functions as follows:

1) Spitting sputum is *sthivana*. i.e. to forcefully clear tracheal and pharyngeal mucous.[7]

2) Expulsion of accumulated intense *prana* and *udana* through nose is *ksavathu*.[7]

3) Expulsion of gases aborally through mouth with noise is *udgar*.

Nuclei in the medulla also control reflexes for vomiting, swallowing, sneezing, coughing and hiccupping.

Vomiting center of the medulla causes vomiting; the forcible expulsion of contents of upper gastrointestinal tract through the mouth. It is also responsible for spitting the food out and also responsible for belching.

This function of brainstem (medulla oblongata.) can be related to *sthivana*, *udgarkarma* of *pranavata*.

Sneezing involves spasmodic contraction of breathing muscles that forcefully expel air through the nose and mouth.

This function of brainstem can be related with the *ksavathu* function of *pranavayu*.

Hiccupping is caused by spasmodic contractions of the diaphragm that ultimately result in the production of a sharp sound on inhalation.

CONCLUSION

Functions of *Pranavayu* are varied but come in a particular system. It is responsible for upward movement but it crosses the *kanthapradesh* and reach the
moordha. Its function can be co-related with the functions of brainstem.

REFERENCES

1. Vd.Yadavji Trikamji Acharya, *Sushrita-Samhita* with *Dalhana* commentary,Choukhamba orientalia, Varanasi, 4th edition, 1980, *Su*.Ni. 1/13,page 259.
2. TripathiBrahmanand, *Sarngadharasamhita Purvakhanda* 5/89, Chaukhamba Prakashan, Varanasi, 3rd edition 1998.
3. Pandit K. Shastri& G. Chaturvedi, *CharakSamhita* of *Agnivesha*, Chaukhamba Bharati Acadamy,Varanasi,19th edition,1993, Ch.Vi.5/9, page 710.
4. Pandit K. Shastri & G. Chaturvedi, *Charak Samhita* of *Agnivesha*, Chaukhamba Bharati Acadamy,Varanasi,19th edition,1993, Ch. Chi.15/6,
5. Pandit K. Shastri & G. Chaturvedi, *Charak Samhita* of *Agnivesha*, Chaukhamba Bharati Acadamy,Varanasi,19th edition,1993, Ch.Sha.1/19,
6. Dhargalkar Nandini, *Sharirkriyavijana*,part-1,Chaukhamba Sanskrit series, Varanasi, 3rd edition,2011.
7. Vaidya Ranjeetrai Desai, *Ayurvediya KriyaSharir*, ShriVaidyanath Ayurveda Bhavana limited, Nagpur, 7th edition
8. Tortora G.J., Derickson B., Principles of Anatomy and Physiology, 11th edition. United States of America: John wiley and sons;2007,pp. 503 to 505.
9. Guyton A. C.& Hall J.E., Textbook of Medical Physiology, Harcourt Barce & Company Asia Pte. Ltd., Singapore, eighth edition; 1991.

CORRESPONDING AUTHOR

Dr. Amit R. Nampalliwar
Ph.D. Guide, Shri.Jagdishprasad Jhabarmal Tibrewala University,
J.B. Nagar, Andheri (East),
Mumbai, Maharashtra, India
Email: dr.n.amitkumar@gmail.com

Source of Support: Nil
Conflict of Interest: None Declared