IAMJ

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

A SHAREERA KRIYATMAKA (PHYSIOLOGICAL) UNDERSTANDING OF PRANA VATA

Kamath Nagaraj

Assistant. Professor, Department of Shareera Kriya, Karnataka Ayurveda Medical College, Mangalore, Karnataka, India

ABSTRACT

Dosha, Dathu, Mala together form 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* will be having their own specific site. There are five types of *Vata* namely *Prana, Udana, Vyana, Samana, Apana.* The *Visesha Sthana* of *Prana Vata* is said to *Murdha* (head) and also said to move in chest, throat. The functions of *Prana Vata* is said to be *Sthivana* (Spitting), *Ksavathu*(Sneezing), *Udgara*(Belching), *Nisvasa*(Inspiration), *Anna Pravesha* (swallowing) along with that is responsible for proper functioning of sense organs, *Hrudhaya* (heart) and intelligence. Control center for belching, spitting, swallowing of medulla oblongata can be related to *Sthivana, Udgara, Anna pravesha Karma* of *Prana Vata*. Sneezing center of medulla oblongata controls sneezing reflex which can be related to *Ksavathu Karma* of *Prana Vata*. The respiratory centers in medulla and pons are responsible for control of respiration which can be related to *Nisvasa* function of *Prana Vata*. The centers related to sense organs and heart control the proper function of sense organs and heart which can be related to the *Indriya* and *Hrudhaya* related functions of *Prana Vata*. Some parts of the brain stem(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 the *Buddhi* related function of *Prana Vata.* The functions of Prana vata can be related to the functions of brainstem.

Keywords: *Prana, Vata, Shareera, Kriya,* Brain stem.

INTRODUCTION

The individual is an epitome of the universe. All the material & spiritual phenomenon of the universe are present in the individual. Similarly all those resent in the individual are also contained in the universe. [1] Originating in cosmic consciousness, this wisdom was intuitively received in the hearts of the ancient scholars. They perceived that consciousness was energy manifested into the five basic principles or elements. Man is microcosm of the nature and so the five basic elements present in all matter also exists within each individual. Thus out of the womb of the five elements, all matter is born. The five basic elements exist in all matter. Water provides the classic example: - the solids of iced water are manifestation of the *Prithvi Mahabhuta* (earth principle). Latent heat in the ice (*Agni*) liquefies it, manifesting into *Jala Mahabhuta*

(water principle). And then eventually it turns into steam expressing the *Vayu Mahabhuta* (air principle) the steam disappears into *Akasha* or space.[2]*Bhuta* is that which is not born out of something, but out of which something is born. It is the material cause of substances in the world. When we say *Bhuta* we mean that subtle level of existence, whereas *Mahabhuta* refers to gross level of existence.[3]*Panchikarana* is the process through which invisible *Bhutas* combine with each other and form the visible *Mahabhutas* in such a way that all *Bhutas* are present together in each *Drisya Bhuta* in varying degrees of predominance. Thus in the physical world everything is a combination of *Pancha Mahabhutas* & we cannot see them independently. [4]

Dosha, Dathu, Mala together form the basis of the body.[5] The balance of these entities represents the healthy state and imbalance will cause various diseases.[6] In normalcy, *Dosha* will be performing their own functions and individual *Dosha* will be having their own specific site. By mentioning the various *Sthana* of the each *Dosha* the different function performed by individual *Dosha* in different sites has been emphasised. The sub-types of *Dosha,* its location and function have also been mentioned. [7]

Regarding the *Sthana* of various *Dosha* authors have different opinion. Later authors have added some more *Sthana* of *Dosha*. For example, ears among the location of *Vata*; umbilicus, eyes and skin among the location of *Pitta*; *Kloma*, nose, tongue among the location of *Kapha*.[8]

There are five types of *Vata* namely *Prana, Udana, Vyana, Samana, Apana.* The *Visesha Sthana* of *Prana Vata* is said to *Murdha*(head) and also said to move in chest, throat. The functions of *Prana Vata* is said to be Spitting, Sneezing, Belching, Inspiration, swallowing along with that is responsible for proper functioning of sense organs, heart and intelligence. [9]

Brief Physio- anatomical understanding of the brain stem is necessary to understand physiology of *Prana Vata*.

The brain stem is the part of the brain between the spinal cord and the diencephalon. It consists of three structures: medulla oblongata, pons and midbrain.

Medulla Oblongata: The cardiovascular center regulates the rate and force of the heartbeat and the diameter of blood vessels. The medullary rhythmicity area of the respiratory center adjusts the basic rhythm of breathing. Besides regulating heartbeat, blood vessel diameter, and the normal breathing rhythm, nuclei in the medulla also control reflexes for vomiting, swallowing, sneezing, coughing, and hiccupping. The vomiting center of the medulla causes vomiting, the forcible expulsion of the contents of the upper gastrointestinal tract through the mouth. The deglutition center of the medulla promotes swallowing or deglutition of a mass of food that has moved from the oral cavity of the mouth into the pharynx. Sneezing involves spasmodic contraction of breathing muscles that forcefully expel air through the nose and mouth. Coughing involves a long drawn and deep inhalation and then a strong exhalation that suddenly sends a blast of air through the upper respiratory passages. Hiccupping is caused by spasmodic contractions of the diaphragm that ultimately result in the production of a sharp sound on inhalation.

The medulla also contains nuclei that are components of sensory pathways for gustation (taste), audition (hearing), and equilibrium (balance). The gustatory nucleus of the

medulla is part of the gustatory pathway from the tongue to the brain; it receives gustatory input from the taste buds of the tongue. The cochlear nuclei of the medulla are part of the auditory pathway from the inner ear to the brain; they receive auditory input from the cochlea of the inner ear. The vestibular nuclei of the medulla and pons are components of the equilibrium pathway from the inner ear to the brain; they receive sensory information associated with equilibrium from proprioceptors in the vestibular apparatus of the inner ear.[10]

Pons: The pons lies directly superior to the medulla and anterior to the cerebellum and is about 2.5 cm long. As its name implies, the pons is a bridge that connects different parts of the brain with one another. These connections are provided by bundles of axons. Like the medulla, the pons consists of nuclei, sensory tracts, and motor tracts. Signals for voluntary movements from motor areas of the cerebral cortex are relayed through several pontine nuclei into the cerebellum. Along with the medulla, the pons contains vestibular nuclei that are components of the equilibrium pathway from the inner ear to the brain. Other nuclei in the pons are the pneumotaxic area and the apneustic area of the respiratory center. Together with the medullary rhythmicity area, the pneumotaxic and apneustic areas help control breathing. [11]

Mid Brain: The anterior part of the midbrain contains paired bundles of axons known as the cerebral peduncles. The cerebral peduncles consist of axons of the corticospinal, corticopontine, and corticobulbar tracts, which conduct nerve impulses from motor areas in the cerebral cortex to the spinal cord, pons, and medulla, respectively. The posterior part of the midbrain, called the tectum, contains four rounded elevations. The two superior elevations, nuclei known as the superior colliculi, serve as reflex centers for certain visual activities. Through neural circuits from the retina of the eye to the superior colliculi to the extrinsic eye muscles, visual stimuli elicit eye movements for tracking moving images (such as a moving car) 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 the auditory pathway, relaying impulses from the receptors for hearing in the inner ear to the brain. These two nuclei are also reflex centers for the *startle reflex*, sudden movements of the head, eyes, and trunk that occur when you are surprised by a loud noise such as a gunshot. [12]

AIMS & OBJECTIVES: To critically analyze the *Prana Vata*

MATERIALS & METHODS

The *Bruhat Trayi* were scrutinised regarding the references for the *Guna* and *Karma* of the *Prana Vata*. Later, physiologico-anatomical aspects of the central nervous system were studied from modern physiology books. Later, supportive correlation was done between *Ayurvedic* and modern views to build valid and reliable hypothesis regarding *Prana Vata* in relation to the various anatomical and physiological aspects of the central nervous system.

DISCUSSION

Dosha, Dathu, Mala together form 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* will be having their own specific site.

There are five types of *Vata* namely *Prana, Udana, Vyana, Samana, Apana.* The *Visesha Sthana* of *Prana Vata* is said to *Murdha*(head) and also said to move in chest, throat. The functions of *Prana Vata* is said to be *Sthivana* (Spitting), *Ksavathu*(Sneezing), *Udgara*(Belching), *Nisvasa*(Inspiration), *Anna Pravesha* (swallowing) along with that is responsible for proper functioning of sense organs, *Hrudhaya*(heart) and intelligence.

The vomiting center of the medulla causes vomiting, the forcible expulsion of the contents of the upper gastrointestinal tract through the mouth. It is also responsible for the spitting the food out and also responsible for belching. This function of the Brain stem (Medulla Oblongata) can be related to the *Sthivana, Udgara Karma* of *Prana Vata.*

Sneezing center of medulla causes sneezing reflex. Sneezing involves spasmodic contraction of breathing muscles that forcefully expel air through the nose and mouth. This function of brain stem (Medulla Oblongata) can be related with the *Ksavathu* function of *Prana Vata.*

Nuclei in the pons are the pneumotaxic area and the apneustic area of the respiratory center. Together with the medullary rhythmicity area, the pneumotaxic and apneustic areas help control breathing. This function of brain stem (Medulla Oblongata and pons) can be related with the *Nisvasa* function of *Prana Vata.*

The deglutition center of the medulla promotes swallowing or deglutition of a mass of food that has moved from the oral cavity of the mouth into the pharynx. This function of brain stem (Medulla Oblongata) can be related with the *Annapravesha* function of *Prana Vata.*

The two superior elevations, nuclei known as the superior colliculi, serve as reflex centers for certain visual activities. Through neural circuits from the retina of the eye to the superior colliculi to the extrinsic eye muscles, visual stimuli elicit eye movements for tracking moving images (such as a moving car) 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 the auditory pathway, relaying impulses from the receptors for hearing in the inner ear to the brain. These two nuclei are also reflex centers for the *startle reflex*, sudden movements of the head, eyes, and trunk that occur when you are surprised by a loud noise such as a gunshot. This function of brain stem (Mid Brain) can be related with the *Indriya* related function of *Prana Vata.* The medulla also contains nuclei that are components of sensory pathways for gustation (taste), audition (hearing), and equilibrium (balance). This function of brain stem (Medulla Oblongata) also can be related with the *Indriya* related function of *Prana Vata.*

The cardiovascular center regulates the rate and force of the heartbeat and the diameter of blood vessels. This function of brain stem (Medulla Oblongata) can be related with the *Hrudhaya* related function of *Prana Vata.*

Some parts of the brain stem (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 the *Buddhi* related function of *Prana Vata.*

CONCLUSION

There are five types of *Vata* namely *Prana, Udana, Vyana, Samana, Apana.* The *Visesha Sthana* of *Prana Vata* is said to *Murdha*(head) and also said to move in chest, throat. The functions of *Prana Vata* is said to be *Sthivana* (Spitting), *Ksavathu*(Sneezing), *Udgara*(Belching), *Nisvasa*(Inspiration), *Anna Pravesha* (swallowing) along with that is responsible for proper functioning of sense organs, *Hrudhaya*(heart) and intelligence.

Control center for belching, spitting, swallowing of medulla oblongata can be related to *Sthivana, Udgara, Anna pravesha Karma* of *Prana Vata*. Sneezing center of medulla oblongata controls sneezing reflex which can be related to *Ksavathu Karma* of *Prana Vata*. The respiratory centers in medulla and pons are responsible for control of respiration which can be related to *Nisvasa* function of *Prana Vata*. The centers related to sense organs and heart control the proper function of sense organs and heart which can be related to the *Indriya* and *Hrudhaya* related functions of *Prana Vata*. Some parts of the brain stem(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 the *Buddhi* related function of *Prana Vata.* The functions of Prana vata can be related to the functions of brainstem.

REFERENCES

1. Acharya JT. Charaka Samhita with Ayurveda Dipika commentary of Chakrapani Datta. Reprint ed. Varanasi (India): Chaukambha Orientalia; 2007. p. 325.
2. Acharya JT. Charaka Samhita with Ayurveda Dipika commentary of Chakrapani Datta. Reprint ed. Varanasi (India): Chaukambha Orientalia; 2007. p. 326.
3. Acharya JT. Charaka Samhita with Ayurveda Dipika commentary of Chakrapani Datta. Reprint ed. Varanasi (India): Chaukambha Orientalia; 2007. p. 325.
4. Acharya JT. Charaka Samhita with Ayurveda Dipika commentary of Chakrapani Datta. Reprint ed. Varanasi (India): Chaukambha Orientalia; 2007. p. 326.
5. Acharya JT, editor, Reprint ed. Susrutha Samhita with Nibandhasangraha commentary of Dalhana, sootrasthana; Dosha datu mala ksaya vridhi vignaniyam adhyayam: chapter 15, verse 3. Varanasi (India): Chaukambha Orientalia,2010;67.
6. Acharya JT, editor, Reprint ed. Charaka Samhita with Ayurveda Dipika commentary of Chakrapani Datta,sootrasthana; kuddaka chatuspadam adyayam:chapter 9, verse 4. Varanasi (India): Chaukambha Prakashan,2007;62.
7. Paradakara HSS, editor, 9th ed. Ashtanga Hrudaya with Sarvangasundara commentary of Arunadatta and Ayurvedarasayana commentary of Hemadri.sootrasthana; dosadivignaniyam adhyayam:chapter 11,verse 4-18. Varanasi (India): Chaukambha Orientalia; 2005;192.
8. Paradakara HSS, editor, 9th ed. Ashtanga Hrudaya with Sarvangasundara commentary of Arunadatta and Ayurvedarasayana commentary of Hemadri.sootrasthana; dosadivignaniyam adhyayam:chapter 11,verse 1-3. Varanasi (India): Chaukambha Orientalia; 2005;192.

9. Paradakara HSS, editor, 9th ed. Ashtanga Hrudaya with Sarvangasundara commentary of Arunadatta and Ayurvedarasayana commentary of Hemadri.sootrasthana; dosabediya vignaniyam adhyayam:chapter 12,verse 4-5. Varanasi (India): Chaukambha Orientalia; 2005;192.
10. Toratora GJ, Derickson B. Principles of anatomy and physiology.11th edi. United States of America: John wiley & sons.Inc;2007,503.
11. Toratora GJ, Derickson B. Principles of anatomy and physiology.11th edi. United States of America: John wiley & sons.Inc;2007,505.
12. Toratora GJ, Derickson B. Principles of anatomy and physiology.11th edi. United States of America: John wiley & sons.Inc;2007,505.

CORRESPONDING AUTHOR

Dr. Kamath Nagaraj

Assistant. Professor, Department of Shareera Kriya, Karnataka Ayurveda Medical College, Mangalore , Karnataka, India

Email: nagaraj.kamath1989@gmail.com

Source of support: Nil

Conflict of interest: None Declared