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Review Article

CRITICAL ANALYSIS ON DERIVATION OF VATA DOSHA WSR PHYSIOLOGY OF DEFECATION REFLEX

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ABSTRACT

Background: The word *Vata* derived from the verbal root 'Va' meaning is *Gati* and *Gandhana*. *Vata* is responsible for *Gati* (movement), *Jnana* (knowledge or perception) and *Prapti* (obtaining or receiving).

Aims & Objectives: To critically analyze the physiological points emphasized in the derivation of *Vata Dosha* by considering the defecation reflex.

Materials & Methods: The *Ayurvedic classics* were scrutinized regarding the references for derivation of *Vata Dosha*. Later, physiologico-anatomical aspects of the defecation with reference to reflexes were studied from modern physiology books. Later, supportive correlation was done between *Ayurvedic* and modern views to build valid and reliable hypothesis regarding derivation of *Vatadoshain* relation to the various anatomical and physiological aspects of the reflexes.

Discussion & Conclusion: Physiological importance is emphasized in the word *Gamana*, *Gnyana*, *Prapti*. *Prapti* refers to physiology of receiving the impulses from the stimulus and receiving the motor response by the effector organ. *Gamana* refers to movement of impulses from sensory nerve to defecation center and from defecation center to effector organ even it signifies the motor response generated in rectum, anal canal and sphincters. *Gnyana* refers to perceiving of the sensory impulses and generating appropriate response by the defecation center.

Keywords: *Gamana*, *Gnyana*, *Prapti*, defecation, physiology.

INTRODUCTION

An individual is an archetype of the universe. All the material & phenomenon of the universe are present in an individual. Similarly all those present in the individual are also enclosed in the universe¹.

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 space². *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, where as *Mahabhuta* refers to gross level of existence³. *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 *Drisyā Bhuta* in varying degrees of

predominance. Thus in the physical world everything is a combination of *Pancha Mahabhutas* & we cannot see them independently⁴.

Thus the five basic elements *Akasha*, *Vayu*, *Teja*, *Jala* and *Prithvi* are present in one substance. This proves that all five elements are present in all matter in the universe⁵. Visualization of the identity of the individual with the universe paves the way for salvation. The body is described as the modified form of *Mahabhutas* hence the description of the identity of the individual & the universe relates to *Mahabhutic* composition only. The multitudes of the human features are ascribed to the proportion of different *Bhutas* each of different nature.

The balances of *Dosha* are presents the healthy state and imbalance will cause various diseases. In normalcy *Doshas* will be performing their own functions and individual *Doshas* will be having their own specific sites. The word *Vata* derived from the verbal root 'Va' meaning is *Gati* and *Gandhana*. *Vata* is responsible for *Gati* (movement), *Jnana* (knowledge or

perception) and *Prapti* (obtaining or receiving)⁶. Word meaning of *Vata* in derivation suggest the physiological functioning of *Vata* in the body in different dimensions.

Brief Physio- anatomical understanding of the defecation reflex is necessary to understand physiological points emphasized in the derivation of *Vata Dosha*.

Voiding of feces is known as defecation. Feces is formed in the large intestine and stored in sigmoid colon. By the influence of an appropriate stimulus, it is expelled out through the anus. This is prevented by tonic constriction of anal sphincters, in the absence of the stimulus. Mass movement drives the feces into sigmoid or pelvic colon. In the sigmoid colon, the feces is stored. The desire for defecation occurs when some feces enters rectum due to the mass movement. Usually, the desire or defecation is elicited by an increase in the intrarectal pressure to about 20 to 25 cm H₂O. Usual stimulus for defecation is intake of liquid like coffee or tea or water. But it differs from person to person⁷. Act of defecation is preceded by voluntary efforts like assuming an appropriate posture, voluntary relaxation of external sphincter and the compression of abdominal contents by voluntary contraction of abdominal muscles. Usually, the rectum is empty. During the development mass movement, the feces is pushed into rectum and the defecation reflex is initiated. The process of defecation involves the contraction of rectum and relaxation of internal and external anal sphincters. Internal anal sphincter is made up of smooth muscle and it is innervated by parasympathetic nerve fibers via pelvic nerve. External anal sphincter is composed of skeletal muscle and it is controlled by somatic nerve fibers, which pass through pudendal nerve. Pudendal nerve always keeps the external sphincter constricted and the sphincter can relax only when the pudendal nerve is inhibited. When rectum is distended due to the entry of feces by mass movement, sensory nerve endings are stimulated. Impulses from the nerve endings are transmitted via afferent fibers of pelvic nerve to the defecation center, situated in sacral segments (center) of spinal cord. The center in turn, sends motor impulses to the descending colon, sigmoid colon and rectum via efferent nerve fibers of pelvic nerve. Motor impulses cause strong contraction of descending colon, sigmoid colon and rectum and relaxation of internal sphincter. Simultaneously, voluntary relaxation of external sphincter occurs. It is due to the inhibition of pudendal nerve, by impulses arising from cerebral cortex⁸.

AIMS AND OBJECTIVES

To critically analyze the physiological points emphasized in the derivation of *Vata Dosha* by considering the defecation reflex.

MATERIALS AND METHODS

The *Ayurvedic classics* were scrutinized regarding the references for derivation of *Vata Dosha*. Later, physiologico-anatomical aspects of the defecation with reference to reflexes were studied from modern physiology books. Later, supportive correlation was done between *Ayurvedic* and modern views to build valid and reliable hypothesis regarding

derivation of *Vata Dosha* in relation to the various anatomical and physiological aspects of the reflexes.

DISCUSSION

Rectum is distended due to the entry of feces by mass movement, sensory nerve endings are stimulated. Impulses from the nerve endings are transmitted via afferent fibers of pelvic nerve to the defecation center, situated in sacral segments (center) of spinal cord. The center in turn, sends motor impulses to the descending colon, sigmoid colon and rectum via efferent nerve fibers of pelvic nerve. Motor impulses cause strong contraction of descending colon, sigmoid colon and rectum and relaxation of internal sphincter. Simultaneously, voluntary relaxation of external sphincter occurs. *Vata* is responsible for *Gati* (movement), *Jnana* (knowledge or perception) and *Prapti* (obtaining or receiving). Physiological importance emphasized in the word *Prapti* of *Vata Dosha* derivation can be understood as Receiving (*Prapti*) of the sensory stimulus by the sensory nerve endings present in the rectum. Physiological importance emphasized in the word *Gamana* of *Vata Dosha* derivation can be understood as Impulses from the nerve endings are transmitted via afferent fibers of pelvic nerve to the defecation center, situated in sacral segments (center) of spinal cord. The center in turn, sends motor impulses to the descending colon, sigmoid colon and rectum via efferent nerve fibers of pelvic nerve. Physiological importance emphasized in the word *Gnyana* (knowledge, perception) of *Vata Dosha* derivation can be understood as Perceiving the impulses and generating the appropriate response by the defecation center. Physiological importance emphasized with reference to motor part in the word *Gamana* of *Vata Dosha* derivation can be understood as strong contraction of descending colon, sigmoid colon and rectum and relaxation of internal sphincter. Simultaneously, voluntary relaxation of external sphincter occurs.

CONCLUSION

Physiological importance is emphasized in the word *Gamana*, *Gnyana*, *Prapti* mentioned in the derivation of *Vata Dosha*. *Prapti* refers to physiology of receiving the impulses from the stimulus and receiving the motor response by the effector organ. *Gamana* refers to movement of impulses from sensory nerve to defecation center and from defecation center to effector organ. It signifies the motor response generated in rectum, anal canal and sphincters. *Gnyana* refers to perceiving of the sensory impulses and generating appropriate response by the defecation center.

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