



PHYSIOLOGY OF MICTURITION - A PANCHABHOUTHIK UNDERSTANDING

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ABSTRACT

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 major function of *Prithvi Mahabhuta* is it improves the size by solidifying the body parts, *Jala Mahabhuta* confluences the body tissues, *Agni Mahabhuta* is responsible for metabolic activities, *Vayu Mahabhuta* divides and differentiates the cell and tissues, *Akasha Mahabhuta* increases the quantity by forming cavities.

The solid and tough structures like organs and at microscopic level and other cellular components are the attributes of *Prithvi Mahabhuta*. The liquid portion present inside the systems i.e. intracellular fluid, secretions from structures which helps in lubrication & moistening, urine volume which is the triggering factor for reflex can be considered as the attributes of *Jala Mahabhuta*. The *Agni Mahabhuta* can be considered as neurotransmitters that are secreted for the initiation & continuation of micturition process. The process of movement of urine from urinary bladder to exterior, systemic control of micturition, transmission of nerve impulse & urine can be considered as the function because of *Vayu Mahabhuta* since the function of *Vayu Mahabhuta* is differentiation & movement. The space present inside various organs and various channels present for the passage of urine can be attributed to *Akasha Mahabhuta*.

Keywords: *Panchamahabhuta*, Micturition, *Shareera*, *Kriya*.

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 present in the individual are also contained in the universe¹.

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 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 *Drisy* *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

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multitudes of the human features are ascribed to the proportion of different *Bhutas* each of different nature. Urine is continuously formed by nephrons and it flows into urinary bladder drop by drop through ureters. When urine collects in the pelvis of ureter, the contraction sets up in pelvis. This contraction is transmitted through rest of the ureter in the form of peristaltic wave up to trigone of the urinary bladder. Peristaltic wave usually travels at a velocity of 3 cm/second. It develops at a frequency of 1 to 5 per minute. The peristaltic wave moves the urine into the bladder. After leaving the kidney, the direction of the ureter is initially downward and outward. Then, it turns horizontally before entering the bladder. At the entrance of ureters into urinary bladder, a valvular arrangement is present. When peristaltic wave pushes the urine towards bladder, this valve opens towards the bladder. The position of ureter and the valvular arrangement at the end of ureter prevent the back flow of urine from bladder into the ureter when the detrusor muscle contracts. Thus, urine is collected in bladder drop by drop⁶.

Micturition reflex is the reflex by which micturition occurs. This reflex is elicited by the stimulation of stretch receptors situated on the wall of urinary bladder and urethra. When about 300 to 400 mL of urine is collected in the bladder, intravesical pressure increases. This stretches the wall of bladder resulting in stimulation of stretch receptors and generation of sensory impulses. Sensory (afferent) impulses from the receptors reach the sacral segments of spinal cord via the sensory fibers of pelvic (parasympathetic) nerve. Motor (efferent) impulses produced in spinal cord, travel through motor fibers of pelvic nerve towards bladder and internal sphincter. Motor impulses cause contraction of detrusor muscle and relaxation of internal sphincter so that, urine enters the urethra from the bladder.

Once urine enters urethra, the stretch receptors in the urethra are stimulated and send afferent impulses to spinal cord via pelvic nerve fibers. Now the impulses generated from spinal centers inhibit pudendal nerve. So, the external sphincter relaxes and micturition occurs. Once a micturition reflex begins, it is self-regenerative, i.e. the initial contraction of bladder further activates the receptors to cause still further increase in sensory impulses from the bladder and urethra. These impulses, in turn cause further increase in reflex contraction of bladder. The cycle continues repeatedly until the force of contraction of bladder reaches the maximum and the urine is voided out completely. During micturition, the flow of urine is facilitated by the increase in the abdominal pressure due to the voluntary contraction of abdominal muscles⁷.

AIM AND OBJECTIVES

To critically analyze the *Panchabhauthik* understanding of physiology of micturition.

MATERIALS AND METHODS

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

DISCUSSION

The individual *Mahabhutas* will be having *Bhavas*. The *Bhavas* of *Akasha Mahabhuta* is audition, auditory apparatus, lightness, minuteness, separation, face, neck and lips. The *Bhavas* of *Vayu Mahabhuta* are touch, touch senses, dryness, inspiration, tissue configuration, vitality, apana region, motor function of body. *Tejah Mahabhuta Bhavas* are vision, visual apparatus, splendor, pitta, digestive power and heat and growth of body. The *Bhavas Of Jala Mahabhuta* are taste, taste organ, coldness, softness, confluence, viscous, humidity, kapha, meda, rakta, mamsa, shukra. The *Bhavas of Pritvi Mahabhuta* are smell, olfactory organ, heaviness, stability and statuette⁸.

The major function of *Prithvi Mahabhuta* is it improves the size by solidifying the body parts, *Jala Mahabhuta* confluences the body tissues, *Agni Mahabhuta* is responsible for metabolic activities, *Vayu Mahabhuta* divides and differentiates the cell and tissues, *Akasha Mahabhuta* increases the quantity by forming cavities. These result in complexity, delightedness or richness, energy, movement, cavitations/perforations in the body⁹.

The solid and tough structures like organs and at microscopic level and other cellular components are the attributes of *Prithvi Mahabhuta*. The liquid portion present inside the systems i.e. intracellular fluid, secretions from structures which helps in lubrication & moistening, urine volume which is the triggering factor for reflex can be considered as the attributes of *Jala Mahabhuta*. The *Agni Mahabhuta* can be considered as neurotransmitters that are secreted for the initiation & continuation of micturition process. The process of movement of urine from urinary bladder to exterior, systemic control of micturition, transmission of nerve impulse & urine can be considered as the function because of *Vayu Mahabhuta* since the function of *Vayu Mahabhuta* is differentiation & movement. The space present inside various organs and various channels present for the passage of urine can be attributed to *Akasha Mahabhuta*.

CONCLUSION

The solid and tough structures like organs and other cellular components are the attributes of *Prithvi Mahabhuta*. The intracellular fluid, secretions from structures which helps in lubrication & moistening, urine can be considered as the attributes of *Jala Mahabhuta*. The *Agni Mahabhuta* can be considered as neurotransmitters that are secreted for the initiation & continuation of micturition process. The process of movement of urine from urinary bladder to exterior, systemic control of micturition, transmission of nerve impulse & urine can be considered as the function because of *Vayu Mahabhuta* since the function of *Vayu Mahabhuta* is differentiation & movement. The space present inside various organs and various channels present for the passage of urine can be attributed to *Akasha Mahabhuta*.

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