

Critical review of verse “*Evama Yeva Pittadhara Saeva Majjadharaiti*”

Review Article

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Abstract

The verse , “*Evama Yeva Pittadhara Saeva Majjadharaiti*” explained by *Dalhanacharya* directly shows the relation of *Pittadhara kala* with the *Majjadhara kala* which is precise according to *Shareer*. This relation has great importance in Ayurvedic treatment factor though this relation is described in *visa-vegantara in kalpasthana*. *Pittadhara kala* is the sixth *kala* among seven *kala* which is situated in the *grahani*. The *Grahani* and *Agni* are inter-dependant as *agni* is located in *grahani*. Therefore, the dushti of *agni* causes *dusti* of *grahani* which leads to various diseases of *Pittadhara* as well as *Majjadhara kala*. As per various references from Ayurveda the medicines, and procedures having action on *Pittadhara kala* are used in the treatment of diseases of *Majjadhara kala*. As per various researches in modern science there is a relationship between Brain and gut. There is bidirectional communication between the central nervous system and the enteric nervous system in the Gut-Brain Axis. The Gut-Brain axis links the emotional and cognitive centres of brain with peripheral intestinal functions. There might be influence of dietary factor in Gut-Brain Axis by affecting neuronal functioning with alteration in microbiota composition. The diseases of central nervous system e.g. Parkinson's Disease, Alzheimer's disease, Schizophrenia, etc. shows the Gut-Brain Axis relations. Hence, it shows there is relationship between *Pittadhara kala* with the *Majjadhara kala* according to *Ayurved* as well as modern science and which could be beneficial for treating many disorders of Nervous system.

Key Words: *Kala, Pittadhara kala, Majjadhara kala, Grahani, Majja, Pitta.*

Introduction

Acharya Sushruta had explained the concept of *kala* (membrane) by giving examples such as, on cutting the wood, its pith is observed, and likewise *dhatu* is found dissecting the musculature. At the boundary of *Dhatu* and *Ashay* (1) *kala* are situated. *kala* are those which are covered by ligaments spread as membranous structure like amniotic membrane and smeared with *shlesma* (mucus) (2) Sushruta has explained seven types of *kala* along with its short, but very significant definition. *Pittadhara kala* is the sixth *Kala* which holds food and drink of four types released from stomach and directed towards intestines. (3) It is placed in between *amashaya* and *pakvasaya*. In anatomy and physiology of our body *Pittadhara kala* is having great importance and also has great clinical

significance. It is the seat for internal *agni*. It holds food going to *pakvasaya*, digests it, absorbs useful part and liberates waste part. When it gets spoiled with *Dosha*, it liberates undigested food material.(4) Due to the strength of *grahani*, supported by *agni* the body remains healthy.

The verse explained by *Dalhanacharya* directly shows the relationship between *Pittadhara kala* and *Majjadhara kala* which is precise according to *Shareer*. (5) This relation has great importance in Ayurvedic treatment factor though this relation is described in *visa-vegantara in kalpasthana*. The digestive fire i.e. *agni* is the entire strength of ‘*Grahani*.(6) The *Grahani* and *Agni* are inter-dependent as the location of *Agni* is in the *Grahani*. Therefore the imbalance in *agni* causes vitiation of *grahani* which ultimately leads to various diseases of *Pittadhara kala* and as well as diseases of *Majjadhara kala*. Hence, we will study here in detail the systematic review of relation of *Pittadhara kala* and *Majjadhara kala* with ayurved and modern perspective.

Aim

To study the critical review of verse “*Evama Yeva Pittadhara Saeva Majjadharaiti*”

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Objective

1. To Study the review of Ayurvedic concept of relationship between *Pittadhara kala* and *Majjadhara kala*
2. To study the review of Modern perspective of relationship between *Pittadhara kala* and *Majjadhara kala*.

Materials and methods

Review of literature on *Pittadhara kala* and *Majjadhara kala* were collected from Classical texts of Ayurveda viz. *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Sangrah* and *Ashtanga Hridaya*. Also the modern science textbooks of Internal medicine were referred for concept of Gut-Brain axis which correlates *Pittadhara kala* with *Majjadhara kala*. The information of research database from various search engines, journals, Ayurvedic samhita, books were referred for recent information. Critical analysis of available literature was done.

Review of literature

Kala

Kala (membrane) is the structure which separate *Dhatu* and *Ashaya* as per reference from *Sushrut samhita*. According to *Sharangadhara*, *kleda* or moisture or liquid part present in between *Dhatu* and *Ashaya* is processed by the heat of the body and converts it in to *kala*. (7) According to *Vagbhatacharya* the *kleda* which is present inside the spaces of *Dhatu* get grilled by the *agni* of that *dhatu* which forms the structures as like it is found in wood. It is covered by *snayu*, *slesma* and *jarayu*. (8)

Review of *pittadhara kala*

It is the sixth *kala* mentioned in *samhita*. The *Grahani* is that part of *koshtha* which is site of *Pittadhara kala*. The important function of *Grahani* is to provide the *pachaka pitta* whenever there is requirement for digestion of food. As per *Charakacharya* site of *Agni* where the food is received is called as *grahani*. It is located above the *nabhi*. It holds the undigested food, digests it and propels the digested food downwards towards *pakvashaya*. In the *grahani* during process of digestion the separation of *Sara* fraction from the *Kitta* takes place. (9) If there is imbalance in *Agni* which can disturb the physiology of *grahani*.

Grahani has been identified as the small intestine especially duodenal gland. According to modern science the process of digestion takes place in duodenum where the digestive juice from pancreas breakdown fats, protein and carbohydrates.

Pittadhara kala holds solid and liquid foods of four types which are propelled from the *amashaya* and passes towards the *pakvashaya*. The four types are those which can be chewed (*Ashit*), swallowed (*Khadit*) drunk

(*Peet*) or licked (*Leedh*) and are carried to *koshtha* and get digested by the action of *pitta*. (10) In the *Pittadhara kala*, food is digested by *Pachakagni*. After proper digestion it is absorbed with the help of *saman vayu* and unabsorbed food is passes towards large intestine which is called as *Munchan*.

Review of *Majjadhara kala*

As per reference from *Sushrut Kalpasthana Dalhan Commentary*, *Pittadhara kala* and *Majjadhara kala* are same. As per commentaries by *Indu* on *asthanga samgraha medodhatu* is being converted into *mastulunga* and also the essence of *medodhatu* forms the *Majjadhatu*. Inside the flat bones of skull *Mastulunga* is present. *Mastulunga* is nothing but *Majjadhatu* and which looks like solid *ghrita*. (11)

Majjadhara kala is concerned with *Majja dhatu*. As inside the bones there is bone-marrow likewise *Majja* is present inside the *asthi* as per ayurveda. So *Majja* can be considered as marrow and it become synonymous with nervous system. The skull can be considered as the casing of brain while vertebral column is the casing of spinal cord. As the central nervous system is formed by brain and spinal cord so we can correlate the *Majja dhatu* with nervous system. So the *Majjadhara kala* is associated with the nervous system. There are some diseases like *Parkinson's Disease*, *Schizophrenia*, *Alzheimer's Disease* etc which are assumed to be diseases of *Majjadhara kala* and which are the disorders of central nervous system as per modern science.

Review of enteric nervous system (ENS)

The enteric nervous system is also called as second brain. The ENS is one of the important divisions of autonomic nervous system. The ENS is communicates with the central nervous system through sympathetic commonly known as 'fight or flight' and parasympathetic nerves which is considered as 'rest and digest' mode. When sympathetic stimulates there is acceleration of heart rate and breathing while inhibition of digestion and when parasympathetic stimulates our body is in rest i.e relax mode while gastrointestinal secretions and motility increases. The enteric nervous system is having mesh-like system of neuron which controls the function of gastrointestinal tract.

There are more than 30 neurotransmitters in the enteric nervous system most of which such as acetylcholine, dopamine and serotonin are similar to the once found in the CNS. About 50% of dopamine from body and more than 90% of body's serotonin is in the gut and it is recently being studied for detail understanding of its significance in the brain.

When we start thinking about or smelling food our digestive system starts secreting. There is most important process i.e. chewing for effective and proper functioning of digestion. There are so many taste buds

on the dorsum of tongue for each taste and stimulation of these taste buds stimulates various effects in the body such as the taste of bitter stimulates digestive secretions.

The enteric nervous system consists of --

- a) Sensory neurons - for detection of food substance.
- b) Stretch receptors - for detection of tension in gut which indicates bulk of food
- c) Motor neurons - which controls activity of digestive glands i.e. secretion and contraction of smooth muscles i.e. peristalsis.
- d) Neurotransmitter – it consist of acetylcholine, GABA, nor epinephrine, serotonin etc.

The vagus nerve is largest nerve in the body having important role in digestion. It is divided into nerves of sub mucosal layer and deep nerves. The nerves in sub mucosa stimulate secretion while nerves deeper within the muscles stimulate peristalsis. These networks of nerves communicate with the brain via the central nervous system.

The orchestra of hormones in the human being is a complex mechanism and the balance or relationship of hormones to one another maintains the equilibrium. The increased levels of some hormones give feedback to reduce levels of other hormones for compensation. There is one factor i.e. stress which can alter the hormonal balance in body e.g. irregular menstrual cycle.(12)

The Connections

As the Gastrointestinal tract arises from the same cells in the embryo like respiratory and urinary tissue, there is soothing effect on stomach, intestine and throat with the consumption of demulcent herb like marshmallow which reflexively soothes the urinary tubules and respiratory passages.

The several Gastrointestinal conditions are positively correlated with the stress factor e.g. IBS , Ulcerative Colitis. Particularly the chronic stress factor aggravates the secretion of inflammatory mediators – communication chemicals which are recognised by enteric nervous system that can initiate or exacerbate inflammation.

Conversely the condition of digestive system and their function can affect one's mood. In chronic constipation there is stagnation in the gut, gas, bloating which leads to feeling of depression and unhappiness. There maybe irritability of the emotions because of poorly digested food or junk food. As per TCM (Traditional Chinese medicine) anger is well-known factor to and effect of liver heat.

Review of gut-brain axis

There is bidirectional communication between the central nervous system and the enteric nervous system in Gut-Brain axis with linking of emotional and cognitive centres of the brain with intestinal functions. There is linking of brain to gut-microbiota and gut-

microbiota to brain in Gut-Brain Axis by means of neural, endocrine, immune, and humoral aspect. Recently in clinical practice an example of this interaction is constituted by functional gastrointestinal disorders particularly in Irritable Bowel Syndrome which is considered now as disorder of microbiome Gut-Brain Axis. There is important role of probiotic strains as a preventive therapy in neurological disorders associated with stress response, anxiety and memory function.(13)

There is involvement of enteric nervous system in Parkinson disease with progressive pathological changes in the central nervous system as per some evidences. There is impairment of cardinal motor functions in Parkinson Disease. There is no treatment available to modify the disease condition of PD patients. Levodopa is only the gold standard therapy in which there is restoration of dopaminergic neurotransmission by which motor symptoms get reduced, whereas there is no treatment on non-motor symptoms in Parkinson's Disease. Dysfunction of Gastrointestinal tract is one of the most common non-motor symptoms which are usually associated with accumulation of alpha-synuclein and low-grade inflammation of mucosa in the enteric nervous system.

The various components of the gut could provide an important role in the gut-brain axis. There is a bidirectional communicational system between the central nervous system and gastrointestinal tract. There may be influence of Dietary components in the gut-brain axis by altering the composition of microbiota or neuronal functions get affected in both the ENS and the CNS. According to some research evidences, Parkinson Disease could initiates in the Gut. The food-based therapies might have an impact on pathology of Parkinson Disease and also there might be improvement in non-motor as well as motor symptoms of Parkinson Disease.(14)

Discussion

Pakshaghate virechanam

Mastishika is the adhishtana of *pakshavada* which is referred as *Mustulunga*. Dalhana describes the word *Mustulunga* as *Ghridakaram* and *Mastishka Majja*. He further described *mastishika Majja* as *Majja dhara kala* and again say's that *Majja dhara kala* and *pitta* as *pitta dhara kala* are one and the same. In *pitta dhara kala* vikriti, *virechan* is the best shodhan chikitsa. As *Majja dhara kala* and *pitta dhara kala* are same, *virechan* may also act well in *Majja dhara kala* vikriti. So, *virechan* can be adopted in case of *Pakshavada*.(15)

Bhram chikitsa

The *Bhrama* i.e. vertigo is the one of the symptom related with *Majjadhara kala*. The *sutshekhar ras* is the drug which is mainly having action on

pittadhara kala. As per context of Rasayogasagar the *sutshekhara*(16) is effective in *Bhrama* so therefore it indicates that the drug having action on *Pittadhara kala* is also shows action on symptom of *Majjadhara kala*.

Murcha is one of the complication of *mastiska caya*(17) which is disease of *Majjadhara kala*. In Sushrut samhita there are six types of *murcha* are mentioned in which there is important role of *pitta dosha*.(18) So it indicates the relation between *pittadhara* and *Majjadhara kala*.

As per sushrutacharya *tama pravasha* is one of the symptom of *majjagat jwar* (19) and also the *tama pravesh* symptom is present in *tamak shwas*. In treatment of *Tamak Shwas virechan* is indicated (20). As the *virechan* is treatment of *pitta dosha* which shows that there is relation between *Pittadhara kala* and *Majjadhara kala*.

Parkinson gut relation

There is prime connection exists between our brain and gut. We often talk about a "gut feeling" when we meet someone for the first time. We're told to "trust our gut instinct" when making a difficult decision or that it's "gut check time" when faced with a situation that tests our nerve and determination. This mind-gut connection is not just metaphorical. Our brain and gut are connected by an extensive network of neurons and a highway of chemicals and hormones that constantly provide feedback about how hungry we are, whether or not we're experiencing stress, or if we've ingested a disease-causing microbe. This information superhighway is called the brain-gut axis. The enteric nervous system is often referred to as our body's second brain. There are hundreds of millions of neurons connecting the brain to the enteric nervous system, the part of the nervous system that is tasked with controlling the gastrointestinal system.

The hypothalamic-pituitary-adrenal axis, or HPA axis, is another mechanism by which the brain can communicate with the gut to help control digestion through the action of hormones. This circuitry of neurons, hormones, and chemical neurotransmitters not only sends messages to the brain about the status of our gut, it allows for the brain to directly impact the gut environment. Some Research studies reveal that uses of probiotics are helpful in reducing symptoms and occurrence of problems related to nervous system & mental health disorders.(21)

Gut- Brain Axis and Schizophrenia

The clinical trial on patients suffering from schizophrenia indicates the presence of raised levels of bacteria of lactic acid in the gut flora which includes *Lactobacillus casei*, *Lactobacillus lactis* and also in the *Streptococci species* such as *Streptococcus mutans* and *Streptococcus thermophilus*. There were changes in adaptive Th2 immune responses which is

known to be present in schizophrenia with increased presence of the bacteria. Administration of probiotics to these individuals altered the microbiome and appeared to normalise some behavioural symptoms.(22)

Brain- Gut Relation in Alzheimer's disease

This is the most frequent cause of dementia characterized by a progressive decline in cognitive function associated with the formation of amyloid beta (A β) plaques and neurofibrillary tangles. Alterations in the gut microbiota composition induce increased permeability of the gut barrier and immune activation leading to systemic inflammation, which in turn may impair the blood-brain barrier and promote neuroinflammation, neural injury, and ultimately neurodegeneration. There is a important role of gut dysbiosis and interactions of gut microbiota-host in neurodegeneration.(23)

Conclusion

There is relationship between *Pittadhara kala* and the *Majjadhara kala* according to ayurved as well as modern science. Though this relation is mentioned in vishavega it can be applied in Ayurvedic treatment of diseases of *Majadhara kala* i.e. disorders of Nervous system.

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