

A CRITICAL ANALYSIS OF PURISHDHARAKALA AS ASTHIDHARAKALA W.S.R. TO ASHRAYASHRAYI RELATION AND BASTICHIKITSA

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ABSTRACT

In classical Ayurvedic text *Kala* is defined as “*Dhavyashayantargat maryada*”, it means *Kala* is layer or membrane present between *Dhatu* and *Ashaya*. *Acharya Sushrut* has described *Kalasharir* in *Sharirshatana* of *Sushrut Samhita*. Amongst the seven *Kalas* *Pureeshdhara Kala* is the fifth one; its commentator *Dalhan* has stated *Purishdharakala* as *Asthidharakala* in *Kalpsthana* with reference to seven *Vishavegas*. This can be explained by *Ashrayashrayi Relationa* of *Asthidhatu* and *Vatadosha*. The location of *Purishdharakala* and *Vatadosha* is *Pakwashaya*. In classical Ayurveda text, *Basti* has been described as main treatment of *Vatadosha* and *Asthi Dhatu*. This inter-

relation gives new concept of co-relation of *Purishdharakala* as *Asthidharakala*. Same concept has been applied by *Acharya Sushruta* of *Sneha Basti* in *Asthi Bhagna*. *Basti* directly acts on *Vatadosha* and ultimately on *Asthidhatu* as per *Ashrayashrayi Relationa*. As per modern science smooth muscle cell membrane of intestine has far more voltage gated calcium ion channels for generation of action potential i.e. for gastrointestinal movement. This article is an attempt to analyze *Acharya Dalhana's* concept of *Purishdharakala* as *Asthidharakala* with special reference to *Basti chikitsa* in relation with *Ashrayashrayi Relationa* of *Vata Dosha* and *Asthi Dhatu*.

KEYWORDS: *Purishdharakala, Asthidharakala, Ashrayashrayi Relationa, Pakwashaya, Ca ion Channel.*

INTRODUCTION

Kala is the limiting membrane between *Dhatu* (tissue) and *Ashaya* (organ or viscera). 'Dhatvashayantargat maryada'^[1] the term clearly defines *Kala* as a separator between *Dhatu* (tissue) and *Ashaya* (organ or viscera) or in other words *Kala* is layer or membrane present at the junction of *Dhatu* and *Ashaya*. *Kala* are mainly of seven and *Purishdharakala* is the fifth type in the sequence. *Purishdharakala* lines *Pakwashaya* internally from *Unduka* (*Cecum*) to *Guda* (anal canal).^[2] Anatomically *Kala* separates *Dhatu* and *Ashaya* but physiologically it does *Dharan* (to maintain and to nourish) of its respective *Dhatu*. Each *Kala* exhibits specific important function. Function of *Purishdhara Kala* is to separate *Drava mala* and *Ghana mala* (waste products of food), so it is also named as *Maladhara Kala*. While describing the *Kala* in *Sharir sthana* Acharya Sushruta has explained the *Kala* according to *Dhatu* sequential order. But the fifth *Kala* is *Purishdhara Kala* and the fifth *Dhatu* is *Asthi* (bone tissue). But In *Nibandhasangraha* commentary on *Sushruta Samhita*, Acharya Dalhan stated that *Purishdhara Kala* as *Asthidhara Kala*^[3] while describing the *Visha vegas* (stages of snake poison) in *Kalpa sthana*. *Visha* entered in each *Dhatu* chronologically from *Rasa Dhatu* to *Shukra Dhatu*.^[4] It vitiates *Dhatu* and its respective *Kala*. According to *Visha Vegas* (stages of snake poison) Dalhan stated that, in fifth *Vega*, *Visha* entered in the fifth *Kala* i.e. *Purishdhara Kala*. *AsthiDhatu* is fifth *Dhatu* in sequential order. So Dalhan considered *Purishdhara Kala* as *Asthidhara Kala*.

The *Ashaya* is a cavity which gives *Ashraya* to the *Ashrayi* i.e. *Dosha, Dhatu and Mala*. *Asthi Dhatu* is an *Ashaya* which gives *Ashraya* to the *Vata Dosha*. There is an *Ashrayaashrayi relation* between *Vatadosha* and *Asthi Dhatu*.^[5] With increase in *Vata dosha* there is decrease in *Asthi Dhatu* and vice versa. *Pakwashaya* is the main location of *Vatadosha*, *Asthidhatu* is also the one of the location of *Vatadosha*. In *Ayurveda*, *Basti chikitsa* is main treatment for *Vatadosha vikaras*. *Basti* is administered in *Pakwashaya* to subside the *Vikriti* of *Vatadosha* and also the *Asthi Dhatu*. *Basti* contents are well absorbed through membrane of *Pakwashaya* i.e. *Purishdhara Kala*.

In modern physiology the smooth muscle layer of large intestine consist of *Ca ion channels*, which are responsible for generating action potential for gastro intestinal movement. It is due to its motor function, *Auerbach's plexus* which is situated between the longitudinal and

circular muscle layer,^[6] which is responsible for GI movements and these movements are responsible for holding the stool (*dharan karma*) for appropriate time till excretion.

This correlation of *Purishdhara Kala* as *Asthidhara Kala* can be explained by *Ashrayashrayi sambandha* (relation) *vata dosha*, *asthi dhatu* and concept of *Basti chikitsa*. So this unique concept of *Kala* has physiological and clinical importance in *Ayurveda*, so this study would be beneficial to add knowledge regarding *kriyasharir and chikitsa*.

Aim

To study the *Purishdhara Kala* as *Asthidhara Kala* with special reference to *ashrayashrayi relation* and *Basti chikitsa*.

Objectives

1. To study *Ayurvedic* concept of *Kala*
2. To study *Ayurvedic* and *Modern* concept of *Purishdhara Kala* and correlation of *Purishdhara Kala* with *Asthidhara Kala*
3. To study *Ashrayashrayi relation* of *Asthi Dhatu* and *Vata Dosha*
4. To study *Purishdhara Kala* as *Asthidhara Kala* with special relation to *Ashrayashrayi relation* and *Bastichikitsa*

Concept of Kala

Kala is unique concept explained by Acharya Sushruta in *Sharirshatana* of Sushruta Samhita. *Kala* is a barrier between *Dhatu*(tissue) and *Ashaya* (organ or viscera). The *Ashaya* is cavity which gives *Ashraya* to the *Dosha*, *Dhatu* and *Mala*. The *Dhatu* lies within the *Ashayas*. Sushruta has explained this concept by giving example of pith of wood, snayu and jaraayu.^[7] The cross section of wood shows the different layers of its internal structures layer by layer. Similarly *Kala* is visible on dissection of *Dhatu*.

The microscopic observation of different layers of tissues and different structures are separated by thick or thin membranous layer or fascia, that thin membrane or fascia between *Dhatu* (tissue) and *Ashaya* (organ or viscera) is the portion of *Kala*. The inner lining membrane i.e. mucous membrane of organ is considered as *Kala*. Acharya Sushruta has also defined *Kala* is extensively supplied with *Snayus* immersed in *Jarayu* and encased in *Shleshma*^[8] In that sutra, the words (*Pratichhanna*, *Santata*, *Vestita*) have been used. Though they are different from each other, they indicate the same meaning i.e. *Nirmiti* (production).

(*Snayu, Jarayu. and Shleshma*) are the three basic principles in the formation of *Kala*. But at a time all of them are not necessarily required for the formation of *Kala*. *Kala* may be formed from embryonic mesoderm, ectoderm, endoderm (*Snayu, Jaraya and Shleshma*) individually or sometimes it may be formed by their combinations. Hence these three are called root cause in the formation of *Kala*. These three structures i.e. *Snayu, Jarayu* and *Shleshma* can be compared with fibrous, serous and mucous layer respectively. From above discussion, the nature of *Kala* becomes clear.^[9] Acharaya Vagbhata has defined the embryological development of *Kala*. According to Acharaya Vagbhata the *Kleda* which lies in the internal part of *Ashaya* that becomes *Pakva* by *Dhatvagni* and forms *Kala*.^[10] From the above references *Kala* is considered as thin membrane which covers the internal and external layers of organ. There are seven *Kala* explained in *Ayurvedic* context. Though *Kalas* are described in *Sharirsthana* but it also has physiological importance. *Kala* helps in holding, movement, supporting, absorption, secretion and lubrication in different parts of body. Each *Kala* has its own specific function. *Purishdhara Kala* is the fifth *Kala* exhibits the important function in the body.

Purishdhara Kala

Purishdhara Kala also named as *Maladhara Kala*.^[11] This *Kala* is present in the *Aantra* (intestine) which is near and around the *Yakruta* (liver). According to Acharya Sushruta, *Maladhara Kala* is located in *Unduk* (caecum) which helps to separate the waste products. *Malavibhajan* (separation of nutrients and formation of mala) occurs within the *Antakoshta* which contains *Pakwashaya* (large intestine). The main function of *Purishdhara Kala* is to sort out nourisher (*Sara*) and non nourished part (*kitta*) of food. *Poshak* constituent (nutrients) are absorbed from the *Purishdhara Kala* and *Malabhag* (waste products) stored for appropriate time (*Dharan*) till the excretion.

Asthidhara Kala

Asthidhara Kala is not included in *Sapta Kala* but Acharya Dalhan has considered the *Purishdhara Kala* is same as *Ashtidhara Kala*. Acharya Dalhan has described this concept while explaining the *Visha Vegas* in *Kalpasthana*. During *Visha Vegas* (stages of snake poison), *Visha* entered in each *Dhatu* from *Rasa Dhatu* to *Shukra Dhatu* from their respective *Kala* in sequential order. *Visha* (snake poison) crosses the *Kala* one by one and by vitiating the respective *Dhatu* creates the *vishavegas*. *Visha vegas* take the *Ashrayas* of the seven *Kala* for appropriate period and exhibit the symptoms accordingly. "*Parvabheda*" is one of the

symptoms related with *Asthi dhatu* when *Visha* is in fifth stage i.e. in *Purishdhara Kala*^[12], so Acharya Dalhan considered *Purishdhara Kala* as *Ashtidhara Kala*.

Ashrayashrayi Relation of Asthi Dhatu and Vatadosha

Dhatu and *Mala* are the structural units and *Dosha* are functional units. Hence *Dosha* are called as *Ashrayi* and *Dhatu* are called as *Ashraya*. *Ashti Dhatu* is *Ashraya* and *Vatadosha* is *Ashrayi*. Interrelation between *Ashraya* and *Ashaya* are called as *Ashrayashrayi Relation*. Commonly with augmentation of *Dhatu*, there is equal rise in *Dosha* and same rule is applied for the diminution of *Dhatu* and *Dosha*. But in *Vatadosha* this rule is applied reversely. As *Vatadosha* increases *Asthi Dhatu* decreases. According to *Ashrayashrayi relation* there is correlation between *Ashti Dhatu* and *Vata Dosha*. This interrelationship between augmentation and diminution of *Asthidhatu* and *Vata Dosha* can be applied for Dalhans concept of *Purishdhara Kala* as *Asthidhara Kala*.

Basti chikitsa

Basti is the main treatment and it possesses wide spectrum effects. It is also called as *Ardha Chikitsa* (50% of treatment modality) in *Ayurveda*.^[13] Though *Basti* is given in *Pakwashaya* its active ingredients i.e. *virya* of *Basti* spreads in the entire body to get desire action. According to *Ayurveda*, *Basti* contents are absorbed from *Purishdhara Kala* which is present in the *Pakwashaya*. Acharaya Charak described the prime function of *Basti* is on *Vata Dosha* and specially the *Sneha Basti* is major treatment for *Shudhavatarogas*.^[14] As *Vata Dosha* and *Asthi Dhatu* has *Ashrayashrayi Relation*, *Basti chikitsa* is also important treatment described for *Asthi vikaras*. So in mechanism of *Basti chikitsa*, *Purishdhara Kala* plays an important role to absorb active ingredients of *Basti*. So in present study the references of *Basti chikitsa* are applied to prove the concept of *Purishdhara Kala* as *Asthisara Kala*. References for *Bastichikitsa* in *Asthyashraya vikaras* (diseases of bone tissues) from various classical texts are as follows:

- *Basti chikitsa* is effective in treating the diseases of all *Thrividha Rogamarga*, *Sandhishula* (pain in joints) and *Asthisula* (pain in bones) are the *Marmagata Roga*.^[15]
- *Asthisula* is the common symptom which present in *vatavriddhi*^[16] and *Asthiakshaya*,^[17,18] It is subsided by *Bastichikitsa*
- *Asthiakshula*, *Dantanakha bhang* are the symptoms described in an *Asthiakshaya* and *Tikta-Kshir-Sarpish Basti* is the the treatment described for the *Asthyashrayanam Vyadhi*^[19] in Charak Samhita Sutrasthana.

- According to Acharya Charaka in Siddhithana *Snehabasti* is recommended particularly for those who are stiffened, contracted, lame, afflicted with dislocation and fracture, in those aggravated *Vayu* is moving in extremities.^[20]
- Acharya Sushruta stated that in all kinds of *Asthibhagna Snehabasti* is very effective.^[21]
- According to *Kashyapa Vata Sansarga Fakka* (rickets) is treated by *Basti chikitsa*.^[22]
- In *Ashtangasangraha*, *Atisara* is one of the Vikar described under *Dantodbhedajanya Roga*.^[23]

Co-relation of Purishdhara Kala with Ca ion channel in smooth muscle layer of large intestine

The smooth muscle cell membrane has far more voltage gated calcium ion channels. The flow of calcium ion to the interior of muscle fiber is mainly responsible for action potential. Important feature of calcium entry into the cell during action potential is that this calcium acts directly on the smooth muscle actin and myosin contractile mechanism to cause contraction. Thus calcium performs two functions at once. Slow waves of potential in visceral smooth muscle can initiate action potential. The potential of slow wave rises above the level of approximately -35 millivolts then action potential develops and spread over the visceral smooth muscle mass and contraction occurs. Series of rhythmic contraction occurs in smooth muscle mass. This type of activity controls the rhythmical contraction of gut. Calcium ion activates the ATP activity which required for action potential and contraction of smooth muscle of large intestine. This contraction of smooth muscle layer helps in propulsion mass movement of large intestine to move chyme from ileocecal valve to transverse colon.^[24] So these Ca ion channels present in smooth muscle layer of large intestine are responsible for gastrointestinal movement and it holds the stool for appropriate time till excretion.

Absorption in the large intestine

Approximately 1500 ml of chyme pass through the ileocecal valve into the large intestine, each day most of the water and electrolytes are absorbed in the colon, also all the essential ions are absorbed. Most of the absorption in the large intestine occurs in the proximal half of colon giving this portion the name absorbing colon.^[25]

DISCUSSION

References gathered by us from various classical texts and modern science in order to correlate hypothetically *Purishdhara Kala* as *Asthidhara Kala* are as follows:

- There is *Ashrayashrayi sambandha* between *Asthi Dhatu* and *Vata Dosha*. *Vata Dosha* resides in *Asthi Dhatu*. As *Vata Dosha* increases *Asthi Dhatu* decreases. It is stated by Acharya Vaghbhat in *Ashtang Hrudaya*.
- According to *Vishvegas*, *Visha* entered chronologically in *Dhatu* and fifth *Dhatu* is *Asthi Dhatu*. So Dalhan stated that *Purishdhara Kala* is also called as *Asthidhara Kala*.
- Going to the treatment profile of both, the *Asthi Dhatu* and *Vata Dosha*, *Basti* holds the main stay in controlling the augmented *Vata Dosha* and diminished *Asthi Dhatu*. The active ingredients of *Basti* i.e. *virya of Basti* contents are absorbed from the *Purishdhara Kala* present in the *Pakwashaya*. According to the modern science, most of the absorption takes place from the absorbing colon i.e. from the proximal half of large intestine. According to Sushruta the main site of *Purishdhara Kala* starts from *Unduk* (cecum) i.e. first part of large intestine. So we can say that maximum absorption in large intestine is from the *Purishdhara Kala* present in the large intestine (*Pakwashaya*).
- As there is *ashrayashrayi relation* between *Asthi dhatu* and *Vata Dosha*, the treatment modality for its *Vikaras* (augmented *Vata Dohsa* and diminished *Asthi Dhatu*) is same i.e. *Basti*. It is administered in *Pakwashaya* (large intestine). The membrane present inside it i.e. *Purishdhara Kala* plays an important role for absorption of *Basti* contents. Concept of *Ashrayashrayi relation of Vata Dosha, Asthi Dhatu and Basti chikitsa* proves that *Purishdhara Kala* is same as *Asthidhara Kala*.
- According to Acharya Kashyap in *Fakka roga* the child is unable to stand even after completing a year. *Fakka* is correlated to rickets, where the absorption of *ca* and phosphorous are decreased from the gut leading to bending and softening of bones. Acharya Kashyap has described the *Basti* as the one of the *Chikitsa* (treatment) for *Vata Sansarga Fakka Roga*. So according to *Ayurveda* above concept of *Basti chikitsa and Ashrayashrayi sambandh* for *Vata Dosha* and *Asthi Dhatu* is applied for the treatment of *Fakka roga*.
- Acharya Kashyapa described *Atisara* as *Dantobhedjanya roga*. *Purishashaya* (*Pakwashaya*) is the *adhithana* (site) of *Atisara vyadhi*. In *Atisara* the vitiated *Doshas* due to *Agnimandya* takes the *ashraya* of *Pakwashaya* and liquefied mala are excreted through *guda marga*.^[26] *Purishdhara Kala* is situated in *Pakwashaya*. So *Purishdhara Kala* has role in *Samprapti* of *Atisara vyadhi*. The function of *Purishdhara Kala* is *Malavibhajan* (i.e. separation of nutrients and formation of mala) gets disturbed. In

ayurvedic text *Danta* is mentioned as *Uphatu* of *Asthi*. So it is considered, the *Purishdhara Kala* is same as *Asthidhara Kala*.

- In modern physiology, intestine has smooth muscle layer which consist of ca ion channels which are responsible for GI movements. Calcium ion activates the ATP activity which required for action potential and contraction of smooth muscle of large intestine. This contraction of smooth muscle layer helps in propulsion mass movement of large intestine to move chyme from ileocecal valve to large intestine. Due to gastrointestinal movement there is retention and absorption of water and electrolytes in proximal part of large intestine. Calcium is *Parthiv* dravya. It can be considered as part of *Asthi Dhātu*. The smooth muscle layer consists of ca ion channel for motor functioning of intestine. Due to presence of ca ions in smooth muscle layer in large intestine (*Pakwashaya*), smooth muscle layer can be considered as *Purishdhara Kala* is same as *Asthidhara Kala*.

CONCLUSION

Theory of *Ashrayashrayi Relation* between *Vata Dosha*, *Asthidhatu* and concept of *Basti chikitsa* in *Asthi* and *Vata vikaras* certainly facilitate to understand the Acharya Dalhan's concept of *Purishdhara Kala* as *Asthidhara Kala*.

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