A CLINICO-ANATOMICAL APPROACH TO KALA W.S.R. TO PITTADHARA KALA- A CONCEPTUAL REVIEW

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ABSTRACT
Ayurveda, being a medical science, deals with the human body. There are many concepts in Ayurved, regarding human body. Concept of Kala is one of them. Kala are defined as a structure between Dhatu and ashaya. These Kalas are not only mere anatomical structures but also they perform some specific functions and possess specific properties. Kala Sharir gives us information about the important membranes and layers of the body. They also produce and hold the Dhatu. They can be understood by their functions in the body. There are 7 types of Kala described in Ayurveda by different Acharyas. Specific Kala's are located at specific sites one of them is Pittadhara kala. It is situated between Pakwamashaya. Pittadhara Kala can be compared as mucous membrane of small intestine. It play major role in digestion in our body Thus, a precise knowledge of Kala is important for physicians to make a diagnosis at the right time & also to know if the disease is at the level of Kala. There is no clear concept regarding to Pittadhara Kala so now try to it describe about Pittadhara Kala.

KEYWORDS: Kala, Ashaya, Amashaya, Pittadhara Kala, Dhatu, Duodenum.

INTRODUCTION
Ayurveda, being a medical science, deals with the human body. The pioneers of this ancient science were well versed of the human body, both its external and internal form.

The various Samhita (methodically arranged collection of texts or verses) written by different Acharya's contain numerous description about human body. All the major Ayurveda Samhita have a separate section left apart to describe the human body namely SharirSthana. The word Sharira means that which is “related to the body”. It deals with both the structure and functioning of the human form.

Though a separate Sharir Sthana is given in all the Samhita, the references related to the human body are found in all parts of these texts, mostly being described in contexts of their applied aspects in medical practice.

Kala is a thin membrane, which is the lining of the internal cavity of Ashayas, organs, blood vessels and fibrous capsules of joints etc. Kala is important and unique concept described in Ayurveda but still remains unexplained. While analysing the references related to Kala Sharir given in various Samhitas, their relation to the modern concept of Kala were evident.
Kala is a unique concept explained by Acharya Sushrut in Sushrut samhita, Shariristhan in Garbhavakyakaran chapter. We find references in Ashtang Hirdayam, Shariristhan in Angavibhaga Shariram chapter as well as in Ashtang Sangrah and Sharangdhara Samhita. All Acharya have explained seven Kalas which is similar to Sushrut samhita, but in Sharangadhara Samhita, location of fourth Kala is stated to be at Yakrut and Pleeha.

While describing Kala, it is said as the duramen of cores of a piece of wood or stem becomes exposed to view by cutting into it, so the Dhatus of the body may be seen by removing the successive layers. These Kalas are extensively supplied with Snayus bathed in Jarayu and encased in Shleshma.

**PITTADHARA KALA**
The sixth Kala is Pittadhara Kala. It holds all type of food intaken by mouth into intestine. The four kinds are Asit (Chewed), Khadit (Swallowed), Peeta (Drunk liquid), and Leedh (Licked), and brought into Kshudrantra (Small intestine).

Here it is digested and absorbed in due course of time by the action of Pitta (digestive enzymes). Hence the term Kostha is used in reference to Laghuana (small intestine) where Pittadhara Kala is labelled as ‘Grahani’. Acharya Sushrut described Pittadhara Kala is located between Amashaya (stomach) and Pakwashaya (large intestine) and it is also the site of Grahani.

**Modern view**
Kala is a thin membrane, which is the lining the internal cavity of organs, blood vessels and fibrous capsules of joint etc.

Pittadhara Kala can be compared as mucous membrane of small intestine. The small intestine is the longest part of the GIT. It is about 6 meter long. It extends from the pylorus to the iliocecal junction. Anatomically, it is divided into three parts: Duodenum (fixed upper part), Jejunum and Ileum. The latter two parts are mobile.

Clinically, only the mobile part is considered as the small intestine. Its initial 2/5th is called jejunum and terminal 3/5th, the ileum. The small intestine forms convoluted folds (loops) and is located in the central region of abdomen. The mucous membrane of small intestine presents closely packed circular folds (valve of kerckring) with finger like projection on them called villi. The submucosa contain aggregation of lymphoid follicles, the Peyer’s patches which have a maximum concentration in the terminal part of the ileum. The main function of the small intestine is absorption of nutrients from digested food.

**HISTOLOGY OF SMALL INTESTINE**
A. The innermost layer is mucous membrane that is made up of
   a. Lining epithelium
   b. A layer of connective tissue (lamina propria)
   c. Thin layer of smooth muscle (muscularis mucosae)
   d. The mucous membrane rests on a layer of loose areolar tissue (submucosa)
   B. The gut wall derives its main strength and form because of a thick layer of muscle (muscularis externa) that surrounds submucosa.
   C. Covering the muscularis externa there is a serous layer.

**CLINICAL ANATOMY OF KALA**
Pittadhara Kala received semi digested food propelled from Amashaya (stomach) and contained in Pakwashaya. It distinctly hold the food till the food is totally digested and also digest the all four types of food (Asit (Chewed), Khadit (Swallowed), Peeta (Drunk liquid), and Leedh (Licked)). Pittadhara Kala resembles Grahani. It has Agni (metabolic fire in it. Pittadhara Kala also situated at Grahani. Anatomically Grahini is correlated with Duodenum which is the part of small intestine. Physiologically it has several glands, they secrete the digestive juices and help in digestion.

**DISCUSSION**
All Acharyas are agreed and accepted that Kalas are demarcating line between Dhatus and Ashayas i.e. Dhatwashayantarmaryada. The Kalas are seven in number i.e. Mamsadhara, Raktadhara, Medodhara, Shleshmadhara, Purishdhara, Pittadhara, Shukradhara Kala.
Ayurveda classics define the location of Pittadhara Kala, found in “Pakwa-Amashaya Madhya”.

Acharya Sushruta has stated that responsible factor for the generation of heat in the body is known as Pitta. There are five types of Pitta and Pachaka Pitta is one of them.[19] Pachakagni is described by Acharya Sushruta. Pitta is often referred to as Agni. Thus, referring to all the alternative words used for Agni, the Pitta can also be called as Anal, Pachakagni, Jatharagni. Sixth Kala is Pittadhara Kala. In Sharira Sthana, Acharya Susruta has described the seat and functions of Pittadhara Kala which resides in between Amashaya and Pakwashaya. This Kala receives four types of food materials namely Astha, Khadita, Peeta and Leedha and facilitates its assimilation, absorption and digestion. Afterwords it allows the passage of food material further down into Pakwashaya.[20][21]

Acharya Susruta in Uttarantra 40th Chapter of “Aitisarpratisheedha Adhyaya” has quoted that the sixth Kala which is located in between Amashaya and Pakwashaya which hold Pitta known as Pittadhara Kala. Pittadhara Kala is denominate as Grahanii. This Kala is also called as Grahanii because it receives food material. Its functions are manifested in the form of Agni or Pachakagni.

In Ayurvedic classics it is clearly mentioned that the area which lies in between Amashaya and Pakwashaya is “Kshudrantra”. Therefore the Kshudrantra i.e. small intestine is the probable structure where the Pittadhara Kala lies. Acharya Sushruta has coined a synonym i.e., Grahanii for Pittadhara Kala in Uttarantra chapter 40. So structurally it may be presumed that Pittadhara Kala is extended from the distal end of stomach upto the ileocaecal junction.

In Amashaya, Chaturvidh Ahar is digested, absorbed and assimilated through Pittadhara Kala by the help of Pachaka Pitta and residual part is transported to Pakwashaya for further processing.

Same different function are present in duodenum and that is Grahanii or site of Pittadhara Kala.

CONCLUSION

The maximum digestion takes place in duodenum which is supported by- the large length of small intestine provides more surface area for absorption. The intestinal glands are scattered over the entire mucosa of jejunum and ileum. Villi are large as well numerous in the duodenum and jejunum. So, we conclude that the greater length, circular folds as well intestinal glands are the main characteristics of small intestine which helps in performing digestion and absorption which is the basic function of Pachak Pitta so we can easily correlate with Pittadhara Kala.

Anatomically Pittadhara Kala is extended from the distal end of stomach upto the ileocaecal junction. So it can be concluded that in Ayurveda, Pachaka Pitta with the help of Samana Vayu and Kledaka Kapha performs the Pachana Karma, Kledaka Kapha helps in binding of the food particle to villi and microvilli and Pachakagni provides energy or ATP for active transport in process of absorption. If any changes (anatomical or physiological deformity) of Pittadhara Kala occurs it causes digestive disorder and produce Mandagini (low digestive power). Mandagini thus produce Ama and Ama is the main cause of all Roga. So disturbances of anatomy and physiology of Pittadhara Kala are clinically importance in human health and disorders.

REFERENCES


