

CONCEPTUAL STUDY OF KALA SHARIR WITH CO-RELATION TOMEMBRANE

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ABSTRACT

Anatomy is science that deal with the different structures of human body like bones, joints, Twacha, different sense organs and kala etc. Relevant knowledge of anatomy is very important for better understanding of disease and their cure in forms of medicinal or surgical process. Kala is unique ayurvedic concepts explained by Acharya Shushruta in Shushruta Samhita. Acharya Shushruta while explaining the detailed development of body parts in Garbhavyakaran Sharir Chapter of Sharir sthan mentioned the concepts of kala. There are total seven kala in body. Kala is limiting membrane or layers in our body situated between Dhatu and Aashaya. These are Extremely minute particles and invisible to naked eye, similar to cell. They can be understood by their function in the body. The word kala stand for the property or a quality so these are special membranes in the body which are having important role in performing body physiology. There are many layers or membranes in the body which form an envelope over the organs. The cell membranes separating each cell from each other can be considered as Kala.

KEYWORD: Cell membrane, Shushruta Samhita, Acharya Shushruta, Dhatu, Aashaya, Garbhavyakaran sharir.

INTRODUCTION

As we know, the diagnosis of any disease is very important before treatment, similarly the knowledge of sharir (Anatomy & Physiology) is also important before diagnosis so, the knowledge of Sharir is the base of treatment.

Sharir is a part of Sharirsthana of Samhitas in which many important Anga, pratyangas are described. Kala is also one of them. Acharya Shushruta has described about kala in Garbhavyakaran chapter of Sharirsthana. He stated that kala is a thin membranous layer which separates underlying Dhatu from its Aashaya. Kala means layers or membranes in the body. As the cross section of the wood will show the different layers and parts of its internal structures as layer by layer and thin layer separates the different layers of structures. Similarly, the membrane appears by the cross section of the fleshy part of the body or any muscular regions or any internal parts of the organs. It is also a limiting membrane or covering between Dhatus and Aashayas.

In our whole lifespan, formation and development of Bhavpadarthas are going on by these kalas. The Dhatus together with the malas are formed by the Kalas which are minute and invisible. Their activity results in production of the several tissues (Dhatus). In uttarottar

(successive) Dhatu formation, Shukra Dhatu is formed as extract of all Dhatus.

ETIOLOGY

Concised pali – English dictionary by A.P. Buddhatadut Mahatre, Motilala Banasidas publisher, Reprint 1989

Kala – A sweat low sound Indisent & confused noise.

Klaa: k: jala and la :- A small part of anything or any single part or portion of whole. All kala are included directly or indirectly in mruduavaya. There are 64 kala. The term for the seven substrata of the elements or dhatu of human body (viz flesh, blood, fat, phlegm, urine, bile & semen but according to Hema Chandra, rasa 'chyle', asthi bone and majja 'marrow' take place of phlegm urine & bile).

64 kala from monier's

Ayurveda Sharir has many terminologies which are fairly explained at many places in ancient compendia. Especially many terminologies like Kandara, Kurcha, Mansarajju, Sanghat, Simanta are described in fifth chapter of Shushruta Samhita. Kala is one of prime topic described by Shushruta in Sharirsthana. There are many basic principles of Ayurved like Tridosha, Panchamahabhut, Dravyaguna etc. used by Ayurvedist for management of diseases. But till date there is no

such any clinical significance of kala sharir is established.

AIM AND OBJECTIVE

To find out the applicability of Kala sharir described in Ayurved and co relate with membranes in the light of contemporary science.

MATERIAL AND METHOD

From various Classical texts i.e. Charaka Samhita, Shushruta Samhita, Ashtanga Sangraha and Ashtanga Hridaya and Evidence based resources as journals, books and data based information from various modern texts.

Kala and Membranes

Kala are seven in number & have been identified in ayurveda as limiting membranes. They are the inner lining of various body viscera's. According to Shushruta, kala are sheshma or mucoid material. They have also been recognised as inner most limiting lining of dhātu (tissue) and Ashaya (body cavities).

In modern anatomical language they can be termed as mucous membranes. The epithelium are those lining or layers of cells which cover the tissue surfaces & all body cavities opening on it. Embryologically epithelium are derived from all 3 germinal cells. They are mesothelial cell layers lining internal cavities & proximal parts of urogenital tract lining. They line pericardial, pleural & peritoneal cavities endothelium's are those lining which line blood vessels & lymphatics.

As said above Shushruta has identified seven such lining or layers which are known as kala.

Mamsadhara kala

The first kala is mamsa dhara kala with in this kala the network of sira (veins), snayu (fibrous tissue) & dhamani (arteries) are spread. Shushruta has compared the anatomical picture of mamsadhara kala with that of lotus stalk present in muddy water.

Raktadhara kala

The second kala is raktadhara kala. This kala can be easily compared with endothelial lining of arteries, veins & lymphatics. The rakta dhara kala allows blood to flow in blood vessels. Blood circulates with in arteries and veins.

Therefore all the blood manufacturing & hemopoietic organs like Yakrit (liver) & pleeha (spleen) are the seat of rakta dhara kala. The word sira has been used here for artery and vein both.

Medodhara kala

Third kala is known as medodhara kala. This kala supports the meda. Meda is found in anu asthi means short bones where as majja is found in sthool asthi or

the large & heavy bones. Vasa (fat) is found in udargraha (abdomen) or peritoneal sac. Peritoneal sac is termed as vapavaham (omentum).

Shushruta has identified majja of 2 types as follows:

- Sarakta meda (red bone marrow)
- Peeta meda (yellow marrow) Found in long bones.

The red bone marrow is found in short bones. The explanation concerning sarakta & peeta meda has been defined by Shushruta. Shushruta has explained the term sneha which oozes out through manspeshi (muscles) asvasa (fat).

Shleshmadhara Kala

The fourth kala is known as Shleshmadhara kala present in synovial membrane. This is present practically in all sandhi (joints). It has been compared like the lubricant in a wheel axis which permits the (wheel) to move round in free manner. Similarly the shleshma with the shleshmadhara kala allow all bony joints to move freely on their respective axis. This synovial membrane is lubricated with synovial fluid.

Purishdhara kala

The fifth kala is known as purishdhara kala. This kala is meant for supporting fecal matter. It is found in pakvashaya (large intestine & rectum) with abdominal cavity. This kala extend from yakrit (Hepatic) to whole large intestine or the remaining segments of large intestine which surround other viscera's of abdomen purishdhara kala (membrane) has property of separating, kitta & sara bhaga right from unduk (caecum). This version of purishdhara kala is appropriate because most part of food is absorbed in small intestine & fecal matter processed from caecum upwards & passes through ascending colon, hepatic flexure, transverse colon, descending colon, rectum & sigmoid colon. Thus location of purishdhara kala is pakvashaya is very precise.

Pittadhara kala

The sixth kala is pittadhara kala it holds all the four type of food intaken by mouth into intestine. The four kinds are asit, khadit (swallowed), peeta (druka-liquid) & leedh (licked) & brought into kshudrantra (small intestine). Here it is digested & absorbed in due course of time by the action of pitta (digestive enzymes). Here the term koshtha is used in reference to laghu antra (small intestine) where pittadhara kala is labeled as 'grahani' Shushruta has also described pittadhara kala in following.

Shukradhara kala

The last & 7th kala is identified by Shushruta is shukradhara kala. According to shushruta this has its functional present all over the body in all living being, according to shushruta it is found within whole body. Here the term shukra is used for oestrogenic & androgenic hormones which circulate in the entire

body. They have been compared with sugar cane juice or ghrīt (ghee) present in milk. As these items can not be independently identified in milk or can be similarly shukra in form of hormone cannot be isolated from body, but its action can be realized by every living being.

OBSERVATIONS AND RESULTS

There are seven kalas present in the body and these are the limiting membranes between Dhatus and Aashyas. Kala are not only the partition between the Dhatu and Aashaya but also they possess some properties and perform some activities in the body.

CONCLUSION

Kala sharir give us important information about membrane and layer of body which take part in many important functions of the body. They also produce & hold the important components of the body like blood, mucus, stools etc. since the kala are the sites of the production & holding many important body elements, the disease also should logically have origins from them or at least show their initial manifestation in the kala. Thus a precise knowledge of kala is important for the physicians to make a diagnosis at the right time & also to know if the disease at the level of kala. According to the Ayur the disease are formed only when tissues are contaminated or vitiated by doshas. Even before the disease gets manifested in the ashay or dhatu they would have damaged the kalas. These kala gives the early signals of an impending disease. (just like one need to open the gate of the compound before reaching the main door or entering the home). Thus the knowledge of kala sharir is important to help in precise diagnosis of disease & also enables the doctors to provide timely treatment.

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