A REVIEW ON CONCEPTUAL STUDY OF ANNAVAHA SROTASA
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INTRODUCTION
Ayurveda is a science of life which aims towards maintenance of good health and cure from diseases. It is based on its own fundamental concepts like triguna, tanmatra, panchamahabhuta, tridosha, saptadhatu, agni, rasa, vipaka, srotasa, aashaya etc. which are distinctly different from modern medical science. These form the basis for understanding pathology and treatment of disease. Acharya Charaka indicated the need of detail study of body and body parts to the chikitsaka (physician) for expertise.¹

Srotasa are channel system for transportation and transformation of sharirbhava and dhatu. annavahasrotasa is associated with digestion and flow of food material which later forms rasadhatu. Annavahasrotasa forms basic for maintaining good health and treatment measures like shodhan and shaman chikitsa. Ayurveda epics describes pachan (digestion) process from different perspective including the the concept of grahani, pittadharakala, aharparinamkarbhav, rasa (taste), vipaka and their effect on body and mind etc. All these shaarir (anatomical and physiological) concepts form basic for disease pathology and treatment. Therefore efforts have taken for critical analysis of AnnavahaSrotasa and its correlation to modern science.

Keywords: AnnavahaSrotasa, srotasa, Grahani, annavahinidhamanya

ABSTRACT

Srotasa are channel system for transportation and transformation of sharirbhava and dhatu. annavahasrotasa is associated with digestion and flow of food material which later forms rasadhatu. Annavahasrotasa forms basic for maintaining good health and treatment measures like shodhan and shaman chikitsa. Ayurveda epics describes pachan (digestion) process from different perspective including the the concept of grahani, pittadharakala, aharparinamkarbhav, rasa (taste), vipaka and their effect on body and mind etc. All these shaarir (anatomical and physiological) concepts form basic for disease pathology and treatment. Therefore efforts have taken for critical analysis of AnnavahaSrotasa and its correlation to modern science.

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Srotasa: Srotasa is important and unique concept described in Ayurveda epics. Acharya Charaka described Srotasa as the channels for transportation/flow and parinaman (transformation) of dhatu. All the sharirbhava (bodily substances) cannot form or decay without srotasa. The types of srotasa are as many as murtimantabhava or sharirbhava (bodily substances).² Acharya Dalhan in his commentary described parinaman (transformation) as formation of next dhatu from its previous one. Muritmantabhava present in Sharir (human body) are prana also called vayu (air), anna (food), udaka (water), seven dhatu, three mala, three dosha and artava

INTRODUCTION

Though Ayurveda is most ancient science of life, health and cure, its usefulness in present time is beyond doubt. It has become the need to study the fundamental and applied aspects of Ayurveda in depth with comparison to the science of today.
which represent *shukra* in female. These are seventeen. Three *dosha* are present in whole of the body and thus they do not have separate *srotasa*. Therefore Charaka had described fourteen types of *srotasa*.

Sushrutacharya described *Srotasa* as structures within the body in the form of channels performing *vahANKARMA* (transport) of *dhatu*, and it is different from *Sira* (vein) and *Dhamni* (artery). The characteristics of the *srotasa* are it resembles in color to its *dhatu*, these are variable in size *anu* (small) or *sthula* (large) and also variable in shapes like *vritta* (tubular), *dirgha* (long), *pratana* (branch like). Sushruta have not described *asthivahasrotasa*, *majjavahasrotasa* and *swedvahasrotasa*. Dalhana explain it as *moolasthana* of these three *srotasa* are *sarvasharirgata* (pertaining to whole body) and the *sushrutsamhita* being surgical authority cannot explain symptoms created by puncture of their *moolathana*. Verma et al describe *srotasa* as structural and functional unit of the body designed to carry specific material, molecules, massages, impulses, emotions and thoughts. *Srotasa* are described in Ayurvedic epics to understand disease pathology and their treatment.

**AnnavahaSrotasa**: **AnnavahaSrotasa** is one of the type of *srotasa* described in all important *samhita*. As the concept of *srotasa* denotes the channel for transportation/flow and transformation of *dhatu* or *sharirbhav*, *annavahasrotasa* can be considered to Alimentary tract except colon from modern medical science. The *pakashay* (colon) and further part of alimentary tract is included in *Purishvahasrotasa*. Moolasthana of *AnnavahaSrotasa*: Acharya Chakrapani described *mula* as *prabhavasthana* meaning anatomical seat of respective *srotasa* where disease pathology of that *srotasa* begins. *Moolasthana of srotasa* are described in terms of their abnormality, disease pathology and its treatment. As per *Sushrut, Amashaya* (stomach) and *annavahinidhamanya* are *moolasthana* of *annavahasrotas*. Injury to these produces fullness in abdomen, pain in abdomen, loss of appetite, vomiting, thirst, vertigo and death. As per Charak these are *Amashaya* (stomach) and *vamaparshwa* (left upper quadrant of abdomen). Affection of *annavahasrotasa* shows symptoms like loss of desire to food, anorexia, indigestion and vomiting.

**Organs of AnnavahaSrotasa**: The digestive system is composed of two groups of organs – the gastrointestinal tract and accessory digestive organs. The gastrointestinal tract is a continuous tube extending from mouth to anus. The organs of gastrointestinal tract include mouth, most of pharynx, esophagus, small intestine and large intestine. The accessory digestive organs include the teeth, tongue, salivary glands, liver, gall bladder and pancreas. The digestive system perform basic processes of ingestion, secretion, mixing and propulsion, digestion (mechanical and chemical digestion), absorption and defecation. *Ayurveda* epics describe *Purishvahasrotasa* separately including formation and propulsion of *purish* (stool), causes and symptoms of its diseases and their treatment.

**Mukh (mouth)**: Yogaratnakara described it as *saptangamukhmuchyate*. It extends from lips to the pharynx and can be divided into vestibule and oral cavity. It performs mechanical processing through actions of teeth tongue and palatal surface and also mixes food bolus with mucous and salivary gland secretions. The pharynx connect mouth to the esophagus.

**Annalika (esophagus)**: The esophagus is a narrow tube, passage between pharynx...
and stomach transporting food bolus from mouth to stomach. It gains importance in terms of its function and its diseases like esophageal varices, achalasia cardia, mediastinal syndrome causing dysphasia, trachio esophageal fistula etc.

**Amashay (Stomach):** AcharyaCharak described location of amashaya in between nabhi (umbilicus) and stana (nipples). It perform the function of pachan (digestion) of all type of food material.\(^{(12)}\) Stomach is a muscular bag forming widest and most distensible part of digestive tube.

**Grahani:** Sushrutacharya described that grahani is located between amashaya (stomach) and pakwashaya (large intestine) and it is the site of pittadhara-kala.\(^{(13)}\) AcharyaCharaka described grahani as a seat of agni and it is called so because of holding up the food. It holds up the food and release it after it is digested.\(^{(14)}\) This description of grahani indicate it to be whole of the small intestine including duodenum, jejunum and ilium.

**Pittadharakala:** AcharyaVagbhat described its location in between amashaya (stomach) and pakwashaya (large intestine) and it is the site of antaragni. It receives food bolus from amashay and performs shoshan (absorption) and pachan (digestion), then transmit pakwa anna to pakwashaya. If it became weak by dosha then transmit apakwa anna to pakwashaya.\(^{(15)}\) Description of kala resembles to mucous membrane and epithelium.\(^{(16)}\)

**The process of Annapachan (digestion) according to Ayurveda:** Pranavayu takes anna (food) to the koshtha. Here it is disintegrated by drava (fluid) and made smooth by sneha. Samaanvayu increases the agni. Thus the timely taken and balanced food get digested properly leading to promotion of life span. Agni performs the pachan karma (digestion) below amashaya for vision into rasa (nutritive fraction) and mala (waste fraction) as the same cooks the rice grains with water kept in vessel into boiled rice.\(^{(17)}\)

**AharParinamkarBhava:** Ushma, Vayu, Cleda, Sneha, Kala and Samayoga are 6 aharparinamkarbhava (essential factors for transformation of food). Each of these have specific function such as ushna (heat) digest, vayu absorbs, cleda (moisture) generates looseness, Sneha produces softness, kala (time) brings sufficiency; samayoga (balanced use) brings about the equilibrium of dhaut. If the component under transformation are reconcilable, they are converted into respective body parts but if they are contradictory, they inflicts the body parts.\(^{(18)}\)

**Concept of vipaka:** In Ayurveda Food materials are considered to have six rasa (taste). These are madhura (sweet), amla (sour), lavana (salt like), katu (pungent), tikta (bitter) and kashay (astringent).\(^{(19)}\) Vipaka is transformation of food material after ingestion by the action of jatharagni (digestive fire of stomach).\(^{(20)}\) Vipaka is also described as Prapaka. These are three, madhuvipaka, amlavipaka and tiktvipaka. During pachan (digestion) Katu, tikta and kashay rasa usually transformed into katuvipaka, amla rasa transform into amlavipaka, while madhur and lavanarasa transform into madhuvipaka. The effects of vipaka are katuvipaka adversely affect shukra (semen), obstructs elimination of mala (faeces) and mutra(urine), and aggravates vata. Madhuvipaka helps elimination of mala (faeces) and mutra (urine), and increases kapha and shukra (semen). Amlavipaka aggravates pitta, helps elimination of mala (faeces) and mutra (urine) and adversely affect shukra. Among these madhuvipaka is guru and other two vipaka are laghu.\(^{(21)}\)
Stages of Annapachan (digestion): The food composed of six rasas after its ingestion undergoes the stages of prapaka (preliminary digestion). Firstly MadhurPrapaka (predominance of sweetness) arises because of kapha (mucus secretion) of frothy character. Thereafter AmlaPrapaka (predominance of acid) arises during the process of digestion of partially digested food because of secretion of pitta in amashaya(stomach). Lastly KatuPrapaka (predominance of pungency) arises when food reaches pakwashaya (large intestine) where it is absorbed by Agni and gets converted into paripindit (solid mass) and va-yu.(17)(22)

DISCUSSION

The concepts of srotasa described in Ayurveda are the channel system for transportation and transformation of sharirbhava and dhatu pertaining to important phenomenon essential for continuity of life. AnnavahaSrotasa is related to structural and functional units associated with mechanical and chemical digestion in mouth, stomach and small intestine as well as absorption from stomach and small intestine. Here absorption of food material forms the first dhatu i.e. rasa dhatu. Pawar et al justifies annavahasrotasa as unique or super controller of all srotas as it form the basis for vamanadishodhanchikitsa as well as dipanpachanadi shamanchikitsa.(23) The view of description of sroto-moolasthan in chikitsapradyan and shalyapradhan samhita is different. CharakSamhita being the chikitsapradyan (physician authority) described the symptoms of affection of moolasthan. Whereas,SusrutSamhita, being shalyapradhan, (surgical authority) described the symptoms of viddha (puncture) of moolasthan. Annavahinidhamanya described as annavahasrotasa moolasthan in SushrutSamhita can be considered as por-
tal vein and cisterna chyli with thoracic duct as both of it carries blood rich in nutrient absorbed from the gastrointestinal tract. Glucose and galactose, fructose, amino acids, dipeptides, tripe tides, short chain fatty acids are absorbed by brush border of small intestine, diffuse to blood capillary of villus and ultimately carried through portal vein to the liver. While long chain fatty acids and monoglycerides diffuse to brush border (microvilli) of small intestine & then to the lacteal of a villus, later it is carried through cisterna chyli, thoracic duct and poured into blood stream in left subclavian vein.(24)

The organs described in samhita text are amashay representing stomach and grahani representing whole of small intestine including duodenum, jejunum and ilium. The concept of kala resembles to mucous membrane and epithelium. Pitta is considered as agnirupa. Pitta can be considered to gastric secretion essential for partial digestion at stomach as well as pancreatic, biliary and intestinal secretion essential for digestion of food material in small intestine. Pittadharakala described to be present in between amashaya and pakwashaya that means in grahani (small intestine) is mucous membrane and epithelium of small intestine where digestion and absorption of food bolus takes place. Ayurveda epics state the process and stages of digestion from its own perspective which is different from modern science. Aharparinamkarbhava plays important role in digestion. Concept of vipaka is unique and it is considered during selection of medicine.

CONCLUSION

With above discussion the following conclusion can be drawn
1) AnnavahaSrotasa described in Ayurvedic epics is related to structural and functional units associated with me-
chanical and chemical digestion in mouth, stomach and small intestine as well as absorption from stomach and small intestine where absorption of food material forms the first dhatu i.e. rasa dhatu.

2) Annavahinidhamanya described as annavahasrotasa moolasthan in SushrutSamhita can be considered as portal vein, and cisterna chyli with thoracic duct.

3) Grahani represent whole of small intestine including duodenum, jejunum and ilium.

4) Pittadharakala is mucous membrane and epithelium of small intestine where digestion and absorption of food bolus take place.

5) Aharparinamkarbhav and vipaka are unique concepts of Ayurveda forming basic for chikitsa (treatment)

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