

In Ayurveda Concept of Strotas W. S. R. to Blood Capillaries**Dr.Ashish N. Jaiswal¹ Dr.Charandas G. Gadekar²**¹Assistant professor, Rachana Sharir Dept .Dr.Rajendra Gode Ayurved College, Amaravati²Assistant Professor Agadtantra Dept, Dhanwantari Ayurved Medical College, Udgir, Dist. Latur.**Abstract**

As per Various acharyas strotas are channels of nourishments with particular functional entity in the body. It is structurally related to as various organ with due consideration of physiological needs.

Charak has described various facts about strotas in meaning the structure through which the "sravanam" kriya takes place. In context of strotoviddhalakshana sushrutacharya described very well about number, kinds, and functions of strotas.

In broad term strotas refer to channels of circulation present within the body organs with due consideration of physiological needs.

Difference in description about strotas in various litreatures like charak Samhita, sushruta Samhita, ashtangasangrah, ashtanghruday, present day scholars of Ayurveda are not unanimous in identifying strotas in it's structure & functions

Here an attempt is made to study the concept of strotas from various ayurvedic texts & it's co relates with modern science & applied anatomy.

Introduction

Strotas means channel it derived from root , srusravane.. to ooze, to exudate, to permeate, to filter "Sravanatstrotasi" Charkacharya describe in broad concept that structure through which "sravanam" take place. channels of circulation which carry tissue, fluids from one place to another.² Structurally these are the hollow channels originating from the root space spread in whole body to act as transport system for fulfilment of nutritional needs of organism to grid of the end result of metabolism.

Ayurveda emphasised the role of strotas both physiological & pathological states, hence study of strotovigyana is essential for understanding basic functional anatomy in the body.

This is the internal transport system of body & it has importance in health & diseases.

Strotas serves as "Ayanmukhas" to both mlakhya & rasadakhya dhatus. Various interpretation regarding strotas given, Poshak rasa is taken to poshya dhatu by sravana kriya.

Transportation passage through which permeation, oozing takes place.

Structure through which circulation of poshak dhatu take place by "sravanamsyandanam" It is continuous channel which forms closed tubular system, originates from vacant place

"mulatkhadantaram", carries rasa, rakta, spread throughout the body known as strotas apart from sira, dhamani.

Sushruta has explained sira, dhamani from strotas to the fine channels present in the lotus stem through which fluid circulate & exclude.

As per Dalhana all structure through which prana, anna, lala, rasa, rakta circulated throughout the body are term called as strotas.

Akash mahabhuta all visible & invisible structures strotas which progressively variable dhatus, upadhatus, mala, anna, jala, prana, mana, shabda etc.

Materials And Methods

Information about strotas are collected from different sthanas of ayurved samhitas & modern sciences, here critically reviewed & correlate with modern terms.

Strotas

Derivation - terms strotas means channels, it is derived from Sanskrit root srusravane meaning to exudates, to ooze, to filter & to permeate.

Charkacharya described exact nature of the function performed by strotas.³

Definition- Charkacharya defined as sravanatstrotasi meaning the structure through which sravanam takes place. Strotas are transporting passage of dhatus undergoing the transformation. strotas serve as an

ayanmukhas to both the malakhya & rasasdakhya dhatus.⁴

Sraanam kriya is that by which poshak rasa is taken to poshya dhatu⁵.

Transporting passage through which oozing, permeation, transportation takes place.

“Sryavanamsyandanam” means the structure through which circulation of poshak dhatu [nutrients] take place in body.⁶

It is continuous channel which forms the closed tubular system originating from vacant space [mulatkhadantaram] spreads throughout the body , carries materials rasa,raktaetc.known as strotas apart from sira&dhamani

Sushruta excluded sira&dhamani from strotas & comparestrotas to fine channels present in the lotus stem through which fluids circulates &exudate .dalhan accepted that all structures through which prana, anna, lala, rasa, rakta circulated are strotas.⁸

All visible & invisible structures has influence of akashmahabhuta & lumens, strotas which transport the progressively variable dhatus. Updhatus, mala, anna, jal, prana, man, shabd etc From one place to another place in body due to “sraana kriya”

Strotasconstitue the internal transport system of the body & is related to fine chnnels of circulation & pathways carrying out all vital function of the body.

Synonyms

Sira, dhamni, rasayani, rasavahini, pantha, nadi, marg, sharirchhidra, samvritaasamritami, sthana, ashaya, niket.⁹

Number of Strotas

Aparisankhey - strotas are aparisankheya, charakacharya describes 13 strotas .¹⁰ only but sushruta has stated 11 pairs of strotassushruta not described Svedvaha, Majjavah, Asthivah strotas.¹¹

Structures Of Strotas

“Kha” meanings hollow.¹²

Apart from sira&dhamanistroas arise from hollow organ & its mula then spread throughout the body. Strotas is minute branching of vessels.

Strotasi described as having same colour of dhatu in which they are different shapes S present vrutta, sthula, anu, dheerga, spread like vein in leaf.¹³

Stroas present anywhere in the body & so man is conglomeration of strotas¹⁴

Body has many structures which have size shape similarly strotas& they are of many kinds.

For the movement of prasadastotas are ayanmukha , through these orifice rasa dhatu travels throughout the body¹³

Structures of strotas similar to fine channels present in lotus stem

Functions

Parinama aapdyamana dhatus , these are called as poshakdhatus, asthayidhatu, margaga dhatu,

Strotas are vishishtha,it has the capacity to discriminate which material are tobeallowed ,to taken into the dhatu & which to be sent out of it .Strotas are the channel for the doshas¹⁴

Structural & functional abnormalities of strotas give rise to diseases .Circulation of rasa dhatus gets obstructed due to the abnormalities of strotas& consequent aggravation of dosha,

Discussion

“Sraana“means oozing, trickling , flowing,in body decreasing & increasing of substavn = ces due to strotas itself.

Exchange of substance take placeat capillary level which can help increasing 7 decreasing of substances in the body due to this reason capillaries can allowed to strotas¹⁵

“Strotomaysharir” & “asnkhyaparmanu” has appreciated this observation

Each cell requires supply of nutriron& removal of waste produscts for maintenance

Function of capillaries is transport of nutrients to tissue, & removal of cellular refuse Sira, dhamani, collectively forms system of circulation

But the difference in between is that dhamani is design for dhamankarpulsation,sira for saran karma,withoutpulsation,only flow. Sraana karma is neutral pressure & according to Ayurveda they are recognised by their specific functions.¹⁶

Dhamani is branched out to minute capillaries which unites into vein, vagbhata has envisaged that sira & dhamani are nothing but special types of strotas. This sira & dhamani considered as macrostrotas while strotas are micro strotas , all the large & visible structure has space [kha] from its moola [root],to anta [end] responcible for transportation of substances are termed as macro or sthulastrotas.fine network like structures

responsible for sravana [exchange] of life sustaining substances through the pores are only micro or suskhamastrotas microchannels or blood capillaries are actual strotas which help in nourishment of body.

As per Ayurveda, purush is an aggregation of strotas, strotas are innumerable.

Innumerable strotas constitute the internal transport system of body. they related to finer channels of circulation, mode of exchange of nutrients is governed by term used in classical literature that is sravana which after analysis of modern as well as ancient focuses upon three biophysical law lawfiltration, diffusion, osmosis. these laws are specifically applicable for exchange of solid, liquid, gas¹⁷

Strotas is specifically designed to facilitate the filtration, osmosis, diffusion]. for achieving this microtubular structures becomes so thin that it is transparent & transmit the colour of contents of tube. this may called in modern terms microcirculatory vessels or blood capillaries

Strotas are fine branches of bigger vessels which originate in organ cavities as hrudaya. Thus hrudaya, dhamani, strotasi & siras constitute sigl which regulate proper circulation unit

Flow of blood & nutrition supply to & the clearance of waste products from sthaya dhatus.

Blood circulation is carried from the heart via arteries to small arterioles, then capillaries or sinusoids, to venules, & back to heart. capillaries are network of microscopic vessels which connect arterioles with venules. Capillaries have intimate contact with tissues for free exchange of nutrients & metabolites across their walls between blood & tissue fluids. dhamani & siras are excluded from the purview of channels described as strotas.¹⁸

Arteries are thick wall big channels of the body convey pure blood from heart to tissues. veins are thin walled, vessels return impure blood from different tissue of the body to the heart¹⁹

Capillaries are minute vessels within the tissues, walls of capillaries are thin, transparent.

Structure of strotas is comparable to that of fine channels & pores present within lotus stem. rasa oozes through the pores of the strotas to nourish the dhatu.

Osmosis sravana, occurs in capillaries of tissues. Main function of capillaries are exchange of nutrients, metabolic waste products, & gases between

the blood & tissue cells. Capillary wall allows the substances by the process of diffusion, filtration, osmosis. O₂ & CO₂ move across capillary wall by diffusion.²⁰

Conclusion

Here attempt to made correlation between ancient & modern knowledge, in following ways

Strotasi are the capillary & their ayanmukha are pores in their wall.

Through these nutrient portion of rasadhatu goes into tissue [sthaya dhatu], & kitta [waste material], produced by dhatus comes into rasadhatu.

Structural & functional features of strotas very closely to structure of known nowadays capillaries.

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