

Udakavaha Srotas and Its Applications

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Abstract

Extensive knowledge of the srotas is needed because; the whole body is made up of millions of srotasses. When there is vitiation or block occurring in these transport systems of the body, there occurs stagnation of unwanted things, depletion of nutrition, and destruction of tissues and imbalance of body-mind health. These in turn lead to many diseases. A physician knowing the srotasses, their roots of origin, their end points, the materials they carry, the kind of deformity or damage or vitiation occurring in them will be the best in identifying the disease and site of pathology. He will be very efficient in aborting the disease process. Thus, the knowledge of Srotasses not only helps in learning about the anatomy of transport system of the body but also to understand their physiology and pathology. Proper knowledge of physiology and pathology is the key for success in treatment. This will help to properly explain our health issues to the doctor, so that he or she shall help you to get rid of those problems at the earliest.

Keywords: Srotas; Udaka; Kloma; Talu etc.

Introduction

Those from which Sravana or flow of body substances take place or those through which the materials flow in the body are called Srotases [1].

Thus Srotasses are the channels of the body through which the materials needed for tissue building, nutrition and other nutrients flow from one corner of the body to the other. We can tell that the materials are transported through the channels from the place of production to place of need [2].

Srotas are the pathways through which Rasa, rakta etc tissues are transported or the pathways through which the tissues flow are called Srotas.

According to Chakrapani, the commentator of Charaka Samhita, the channels which transport the Poshaka dhatus (the part of the rasa etc tissues which flow to provide nutrition to the successive tissues) are called Srotas [3].

Poshaka Dhatu

Dhatus or tissues are of 7 types according to Ayurveda. They are: Rasa (Lymph, plasma or serum) Rakta (blood cells) Mamsa (muscles or flesh) Meda (fat) Asthi (bone) Majja (bone marrow) Shukra (semen)

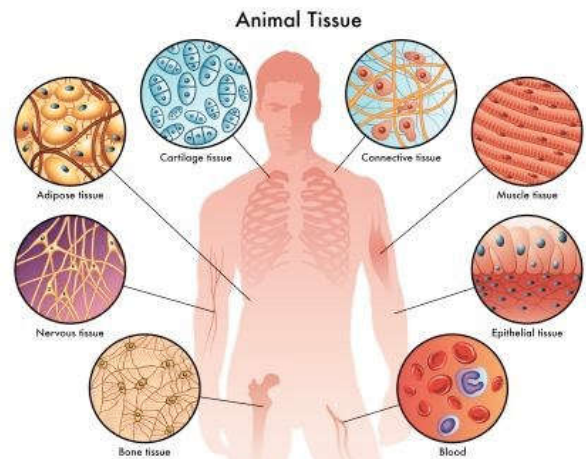


Fig. 1: Types of tissues

All these tissues are a product of Ahara rasa or nutrient essence of food. First of all the food is properly digested in the stomach and intestines. The essence of the food is called Ahara Rasa or Poshaka Rasa Dhatu. This is the first tissue. This comes to the heart

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and is circulated all over the body to provide nutrition to all the dhatus or tissues.

Each dhatu has a dhatvagni or tissue fire. When the nutrient juices or essence of food in circulation comes to them, they take the materials or portions needed by them according to law of selective absorption.

Tissue fire of Rasa dhatu, Rasa Dhatvagni acts on the nutritive Rasa and breaks it into Poshya or sthayi rasa dhatu (the rasa dhatu proper). Thus the Poshaka (that which provides nutrition) rasa gets converted into Poshya or sthayi rasa (that which is nourished).

The sthayi rasa dhatu nourishes the rasa dhatu components all over the body. The other part of the nutritive essence gets converted into Poshya Rakta dhatu which moves ahead to nourish Rakta dhatu (blood tissue).

In Rakta dhatu, the tissue fire of blood tissue, Rakta Dhatvagni acts on the Poshaka Rasa dhatu and converts it into sthayi rakta dhatu (local blood tissue) and another part becomes poshaka Mamsa dhatu, the portion which nourishes the next tissue i.e. Mamsa dhatu or muscle tissue.

This procedure continues until the final tissue Shukra dhatu or semen is formed.

According to Ayurveda, the tissues are formed one after the other in that successive order. The predecessor dhatu will form the successive dhatu. Thus, Rasa forms Rakta, Rakta forms Mamsa, Mamsa forms Meda, Meda forms Asthi, Asthi forms Majja and Majja forms Shukra dhatu in that order.

Finally after Shukra dhatu, Ojas (essence of all the tissues) is formed, which determines the immunity and healthy life span of an individual (in a condition wherein its quality and quantity is balanced).

Thus the flow of Poshaka dhatu (the part of tissue which nourishes the successive tissue) flows in the channels called Srotas. (The sthayi dhatu or the local tissue will not flow because they stay at their places and support the body).

The Srotasses are the channels in the body which are involved in the uninterrupted transportation of tissues which are in the process of transformation or converting themselves so as to be suitable for forming their successive dhatus or tissues. (This definition also gives the similar meaning of Srotas as explained above in elaboration) [4].

Those which carry or transport materials like Prana (life element or oxygen or air), anna (food), vaari (water), mamsa (muscle tissue), meda (fat) etc are called Srotases [5].

Structure (Characteristics and Qualities) of Srotas

Srotasses are distributed from the root to any terminal portion of the structure or body [6].

Srotasses are located within the spaces of the body; they spread all through the body and carry essential materials. They are totally different structures from Siras (veins, lymphatics etc) and dhamanis (arteries, nerves).

The srotas has the colour of the dhatu (tissue) that they are carrying or transporting. They are of different shapes and sizes namely, round, thick, large, small, microscopic, elongated and form network and branches [7].

With this description, each and every cell can be considered as a srotas since the transportation mechanism is taking place in and out of the cell.

Describing the varieties of Srotas Charaka specified that as many solid structures are present in the body, the same number and types of Srotas are also present [8].

Synonyms of Srotas

Srotases are available in different forms and shapes.

The below mentioned are the different names or synonyms of all the visible and invisible srotasses available in the body -

Sira, Dhamani, Rasaayana, Rasa vaahini, Naadi, Panthaaanaha, Maargaaha, Shareera chidraani, Samvruta-asamvrutaSthaana, Aashaya, Niketaetc [9].

Types of Srotas

Basically the Srotas are of two types, Bahirmukha srotas (Mahanti srotas) - External openings or apertures

Antarmukha srotas (Sukshma srotas or Yogavahi srotas) - Internal channels of the body

Bahirmukha Srotas - External Orifices

Bahihi Mukha srotas -Bahirmukha srotas (Bahi=external, mukha=opening, srotas=channels) - Bahirmukha srotas are those which have their openings on the outside (exterior) of the body. They are essentially large openings [10].

They are 9 in Number

2 each in nose (nostrils), ears (external ear

openings) and eyes (orbital openings) 1 each in the penis, mouth (oral cavity) and anal orifice.

In women there are 3 more orifices – 2 in stana (breasts) and 1 in garbha vartma (cervical opening or opening of the birth canal).

The small pores or minute orifices of the body are the sookshmasrotases which take their origin in the skin [11].

Table 1: Types of srotas according to various Acharyas

Sl. no	Name of srotas	Charaka	Sushruta	Vagbhata
1.	Pranavaha Srotas	✓	✓	✓
2.	Annavaha Srotas	✓	✓	✓
3.	Udakavaha Srotas	✓	✓	✓
4.	Rasavaha srotas	✓	✓	✓
5.	Raktavaha Srotas	✓	✓	✓
6.	Mamsavaha srotas	✓	✓	✓
7.	Medovaha Srotas	✓	✓	✓
8.	Asthivaha Srotas	✓	-	✓
9.	Majjavaha Srotas	✓	-	✓
10.	Shukravaha Srotas	✓	✓	✓
11.	Mutravaha srotas	✓	✓	✓
12.	Purishavaha Srotas	✓	✓	✓
13.	Swedavaha Srotas	✓	✓	✓

Antarmukha Srotas or Yogavahi Srotas – Internal Body Channels

They are also called by the name Yogavahi Srotas. The word Yoga means a dravya (matter or material a srotas carries) as the srotases carry Rasa and other dhatus [12].

Udaka Vaha Srotas: Channels responsible for water transportation or centers controlling water balance in the body.

According to Sushruta

The Udakavaha Srotas or the channels responsible for water regulation and supply in the body are 2 in number. They have their roots of origin in –

Talu – palate

Kloma – is a controversial organ and has been compared to pharynx, pancreas, lungs, gall bladder and or water regulating centers in the brain [13,14].

Chakrapani Defines Kloma as a Pipasa Sthana [15].

All the authors have got their own ideas regarding kloma. Charaka, Vagbhata, Bhela,. Charaka and Sushruta have mentioned kloma as a moola of udakavahasrotas. In shastra we get very less explanation regarding udakavahasrotas.

Site: At the lower side of hridaya in the urah, at the upper side of nabhi and near amashaya in the udara guha, at the right side nearer to yakrat, tila is situated and is moola of jalavahisrota.

Dalhana comments as kloma is a black colored organ situated in the lower and right side. It is also called as tilaka [16].

Function: Makes shamana of trishna. Therefore when it becomes dushti then more pipaasa appears. It is not having any relation with the entrance of water.

We found explanation of kloma in samprapti of trishna roga, in abhyantara vidradhi and in relation with udakavaha sroto dushti.

Charaka believes that puppusa and kloma both are same. But kloma is one so is used in a singular form and puppusa are 2 sodwivachana is used while describing it. Thus kloma is different from puppusa.

We find explanation that kantha naadi is kloma. But while explaining the numbers of sandhi, Sushruta has mentioned kantha naadi and kloma separately. By this it becomes clear that both are different.

Regulation of Water Balance [17]

Hypothalamus regulates water content of the body by two mechanisms:

- i. Thirst mechanism
- ii. Antidiuretic hormone (ADH) mechanism

Thirst center is in the lateral nucleus of hypothalamus. There are some osmoreceptors in the areas adjacent to thirst center. When the ECF volume

decreases, the osmolality of ECF is increased. If the osmolality increases by 1% to 2%, the osmoreceptors are stimulated. Osmoreceptors in turn, activate the thirst center and thirst sensation is initiated. Now, the person feels thirsty and drinks water. Water intake increases the ECF volume and decreases the osmolality.

ADH Mechanism

Simultaneously, when the volume of ECF decreases with increased osmolality, the supraoptic nucleus is stimulated and ADH is released. ADH causes

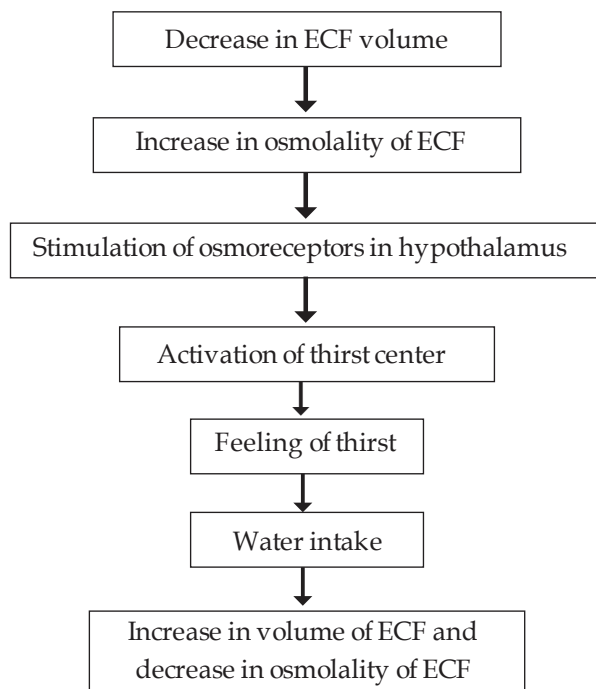


Fig. 2: Regulation of water balance

retention of water by facultative reabsorption in the renal tubules. It increases the ECF volume and brings the osmolality back to the normal level. On the contrary, when ECF volume is increased, the supraoptic nucleus is not stimulated and ADH is not secreted. In the absence of ADH, more amount of water is excreted through urine and the volume of ECF is brought back to normal.

Symptoms of Damage or Injury to the Udakavaha Srotas [18]:

Pipasa – severe thirst

Maranam – death (when there is water deficit or imbalance for a longer duration and has not been compensated)

According to Charaka –

The roots of Udakavaha srotas are located in Talu

and Kloma (same as Sushrutas explanation)

Symptoms of vitiation of Udakavaha Srotas [19]:

Jihwa shosha – dryness of the tongue

Taalu shosha – dryness of the palate

Oshta shosha – dryness of lips

Kantha shosha – dryness of the throat

Kloma shosha – dryness in kloma

Ati pravridampipaasaa – severe thirst

Causes for vitiation of Udakavaha srotas:

Ushna aahaaravihara – Hot foods and comforts

Aama – due to presence of products of undigested food or metabolic toxins in the body or in circulation

Bhayaat – fear

Paanaat – excessive consumption of alcohol

Shushka anna sevana – consumption of dry foods

Trushnaapeedana – habit of withholding the urge for drinking water or holding on to the urge of thirst frequently [20].

Shock [21]

Shock is a general term that refers to the depression or suppression of body functions produced by any disorder.

Circulatory shock refers to the shock developed by inadequate blood flow throughout the body. It is a life threatening condition and it may result in death if the affected person is not treated immediately.

ADH Mechanism

Antidiuretic hormone (ADH) released from posterior pituitary increases retention of water by kidneys. ADH also enhances vasoconstriction. Because of severe vasoconstriction caused by the regulatory mechanisms, normal blood pressure is re-established. Retention of water by kidneys and the consequent fluid shift mechanism that moves water from interstitial space and intestinal lumen restores the blood volume. And the person recovers if shock is not severe enough to progress further. With proper treatment, the progression can be arrested completely.

Management of vitiation of Udakavaha srotas [22]

The treatment of vitiation of udakavaha srotas should be done on the lines of treatment of Trishna (thirst) chikitsa (line of treatment of thirst disorder).

Conclusions

1. Understanding of srotas plays a major role in following a disease and treatment .
2. Udakavaha Srotas are the Channels responsible for water transportation or centers controlling water balance in the body
3. Udakavaha srotas can be correlated with ADH mechanism because both of their vitiation will lead to shock or marana.
4. Talu is the palate and Kloma can be interpreted as thirst center in the hypothalamus region of the brain which is responsible for the manifestation of thirst.

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