



Review Article

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PHYSIOLOGICAL ASPECTS OF SROTAS AS PER AYURVEDA

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Abstract

The living body is the result of the aggregation of numerous structures known as 'srotas.' The term 'srotamsi' refers to both individual cells, called 'anusrotas,' and different organ systems, known as 'sthula srotas,' as it signifies channels. Its etymology can be traced back to the Sanskrit root 'stru-strabane' dhatu, which carries various meanings, such as exudation, oozing, filtration, permeation, flowing, and movement. According to the Charaka Samhita, srotas is a structure responsible for the process of 'sravanam' or the flow of substances. Srotas plays a fundamental role in Ayurveda, influencing both health and disease. Recent developments in the field of medicine have highlighted its significance. Charaka Acharya emphasized the structural and functional integrity of this system in relation to physiological and pathological states. He noted that no structure in the body can grow or waste away independently of the srotas, which transport vital substances undergoing constant metabolic transformations. Srotas function as transporters of factors that either excite (prakopa) or alleviate (shamana) doshas.

Key-words - Ayurveda, Srotas, Sharir, Dosha, Dhatu, Srotodushti

Introduction

Ayu, or life, is defined as the combination of the body, mind, soul, and senses, with each aspect playing a crucial role in maintaining health and preventing diseases. Among these elements, the body holds the highest significance, serving as the foundation for all other aspects. This is why Acharya Charaka emphasized the importance of prioritizing the body, stating that everything in the world depends on it, and without a healthy body, nothing can be achieved.

Ayurveda, being primarily a medical science, focuses on a comprehensive understanding of the body's Srotas, as described in the Vedas, Upanishads, and the Bhagavad Gita. Originally, there were four main Vedic texts known as Rigveda, Samaveda, Yajurveda, and Atharvaveda, which are the oldest literature in the world. The hymns in the Vedas use various terms to describe the Srotas, such as Srotoayana, Panthana, Dhamanyai, Sira, Nadi, or Khani, which appear to refer to the organs primarily composed of the Akasha Mahabhuta.

For example, the term "Hira" stands for "Sira," while "SaptakhanI" and "Navdvar" refer to the external openings of the body. SaptakhanI includes both ears, eyes, nostrils, mouth, anus, and urinary aperture, which collectively become Navdvar. The Srotas in the body are constantly flowing, akin to the origin of a waterfall.

Origin of the Term Srotas:

The term "Srotas" finds its roots in the Sanskrit language, originating from two primary Sanskrit words, "sru" and "sut gatau." The "sru" root conveys the notion of "movement," while "sut" represents an entity, specifically the vital force known as "prana," which is the foremost entity responsible for motion within a living body. Therefore, the term "Srotas" signifies that it is the bodily channel that accommodates and facilitates the movement of the entities it pertains to.

Definition of Srotas:

Srotas can be defined as follows:

1. Srotas is a structural component responsible for forming, transforming, and transporting nutrients within the body.

2. It serves as a path that provides direction to the substances it carries, guiding them towards their intended destinations.
3. Srotas is a structure with the unique property of exuding, oozing, filtering, and permeating various bodily fluids.

Characteristics of Srotas:

Regarding the inherent characteristics of Srotas:

- Color: It resembles the color of the respective bodily Dhatu it is associated with.
- Shape: It can take on a circular, sketchy, or atomic shape.
- Structure: Srotas exhibits a complex and intricate structure, similar to interlocked tendrils of a creeper, or it can resemble a pore, an aperture, or an opening.

Synonyms of Srotas

Acharya Charaka has provided various terms to describe the different types of hollow structures in the human body, such as:

1. Srotamsi: These structures accommodate the free flow of Prana, Anna, Udaka, and more within the living body.
2. Sira: They enable the smooth movement of Vata, Pitta, Kapha, and others.
3. Dhamani: These structures have the capability to pulsate.
4. Rasavahini and Rasayini: These terms refer to vascular structures that transport rasa within them.
5. Nadi: The term is derived from the root "Nad," which means "flow."
6. Pantha and Panthana: These words signify a passage or pathway.
7. Marga: It has a similar meaning to Pantha, denoting a path or route.
8. Sharira chidra: This term refers to body orifices and openings.
9. Samsritasamsritani: These are ducts with or without constrictions.

10. Adhaya: It implies a resting place, storage for various elements, propensities, accumulations, permeation, traces, or a repository.

11. Niketa: This word signifies a residing place.

Classification of Srotas

The number of Srotas, or channels, is a subject of debate, with some suggesting that they are limitless, while others believe they have a finite count. Acharya Sushruta identifies 11 divisions of Srotas because surgeons primarily deal with these specific ones. Notably, Sushruta does not mention the Asthivaha, Majjavaha, and Svedavaha Srotas. The mentioned Srotas are:

- Pranavaha Srotas
- Annavaha Srotas
- Udakavaha Srotas
- Rasavaha Srotas
- Raktavaha Srotas
- Mamsavaha Srotas
- Medovaha Srotas
- Sukravaha Srotas
- Mutravaha Srotas
- Purisavaha Srotas
- Artavavaha Srotas

The physiological significance of Srotas

Srotas exhibit as much diversity as the elements comprising the body's structure. Each component within the body has its own set of Srotas for replenishment. This quotation indicates that, during the time of Charaka Samhita, there was a high level of knowledge regarding the body's internal transport system.

The living body is essentially an amalgamation of numerous Srotas, which act as carriers of substances that either excite or alleviate the imbalances of the body's doshas. Srotas are intricately linked with the metabolic status of their corresponding tissues through various communication mechanisms. In fact, all Srotas function as conduits for the transportation of body constituents undergoing bioconversion.

Charaka Acharya suggests that 'srotas' serve as pathways for both the elimination of waste (mala) and the nourishment of sthayidhatu. The term "ayana" originates from the root "en-gatou," signifying movement, highlighting that Srotas facilitate the movement of materials. "Mukha" is derived from the root "much mokshane," meaning to leave or be free, and it is used to describe a structure through which substances enter or exit. Srotas play a pivotal role in nourishing sthayidhatu

- **Sravanam (oozing)** - In the context of Ayurveda, this refers to the concept that the essential nutrients required to nourish a specific bodily tissue (dhatu) can only effectively reach and nourish that tissue through its dedicated channels (srotas). For example, if the nutrients needed to nourish bone tissue (asthidhatu) happen to enter the muscle tissue (mamsadhatu) while circulating with the ingested food (ahararasa), they may not be permitted to flow through the channels (ayanamukhas) of the muscle tissue's srotas. Ayurvedic theory suggests that the type of earth element (parthivatva) responsible for nourishing muscle tissue differs from that of bone tissue. The respective srotas seem to determine which specific type of earthy substance should be allowed to pass through their respective entry points. Each bodily component receives its replenishment through its own designated channels. This principle can also be illustrated with the example of the digestive system, where the release of bile from the gallbladder, produced in the liver, is vital for the digestion of fats.
- **Vahanam (transportation)** - In Ayurveda, ahararasa is a fluid that circulates throughout the body via various channels. This fluid reaches every srotas and delivers the necessary materials for the breakdown (catabolism) of the corresponding tissue (dhatu). Both the refined portion of the tissue (prasada) and the waste products (mala dhatu) are transported through these channels. For a tissue to remain healthy, it needs to be mobile, meaning the materials required for its nourishment must be transported from one place to another. The channels that serve as transport vehicles for both the refined and waste components also facilitate their entry and exit. For instance, nutrients from the initial tissue (Rasa dhatu) are transported to the blood vessels (Raktavaha srotas) to replenish the blood tissue (Rakta dhatu).

- Site of Biotransformation - Srotas serve as the locations for the metabolic transformation of one tissue (dhatu) into the next. This means that during the metabolic process, one tissue is converted into another within these channels. For example, the transformation of the Rasa tissue into the blood (Rakta) can only occur within the blood vessels (Raktavaha srotas); if the Rasa tissue were to go elsewhere and attempt to transform into blood, it would not succeed. The muscle tissue (Mamsa dhatu) is generated within the muscle channels (Mamsavaha srotas) using nutrients derived from the blood tissue (Rakta dhatu), and so on.
- Excretion - The term "malakhya dhatu" refers to the waste products or degraded elements of tissues, which are not meant to be entirely discarded. A portion of malakhya dhatu is used to synthesize certain structural elements of the body and serve some vital functions, while the rest is utilized to create excretory substances that are periodically expelled from the body. Most stable tissues (sthayidhatus) are rarely without waste products. For example, hair and beard are structural elements derived from the bone tissue (Asthidhatu), and sweat is a waste product of the fat tissue (Medo dhatu) that is expelled from the body.
- Absorption - Srotas also possess the ability to selectively absorb specific nutrients. When various nutrients from different tissues are present in ahararasa while passing through it, only the nutrients intended for a particular srotas are selectively absorbed at that site. For example, in the process of urine formation, only the nutrients essential for urine (mootraposhaka) are absorbed at the site of the large intestine (pakvashaya) and are then released into the urinary bladder (basti), where urine is stored.
- Typical functions - One of the primary functions of srotas is to provide nourishment (poshana) to the stable tissues (sthayidhatus). Nutrient substances that nourish these tissues undergo digestion through the metabolic heat (agni) of the tissues. They are then made available to the tissues through their respective srotas.

Mulasthanas of Different Srotas

In classical Ayurvedic texts, great emphasis is placed on the concept of "srotomula." While there may be differing views on the specific location of the "mulasthana" within the srotas, it is universally considered the "prabhavsthanam," meaning the primary site from which most of the activities of that particular srotas take place and the area most affected during pathological conditions. Though the direct purpose of identifying the mulasthana of srotas is not explicitly stated, Chakrapanidatta, a commentator of the Charaka Samhita, suggests that just as damaging the root of a tree harms the entire tree, harming the srotomula can lead to damage to the entire srotas.

The clinical significance of srotas

It lies in their general role as carriers of body elements and their potential to be vitiated. In a general sense, any food or activity that promotes the morbid tendencies of the doshas and is harmful to the body elements can disturb the functioning of srotas. The characteristics of srotodushti, or morbidity of the body channels, involve variations in the flow of their contents, the formation of knots in the passages, or the abnormal redirection of their contents. These characteristics can manifest in different ways:

- ❖ Atiprvrutti: This term refers to excessive flow within the srotas. When dosha vitiation affects the srotas, it may lead to functional abnormalities, resulting in atipravrutti. For example, in the case of medovaha srotodushti in prameha, there can be excessive passage of urine (bahumutrata).
- ❖ Sanga: Sanga indicates obstruction or retention of flow. When dosha vitiation affects the srotas, it impairs their normal functioning, leading to obstructions and the development of diseases. For instance, in mutrakruchha, there may be an obstruction in the passage of voiding urine, resulting in retention or dribbling micturition.
- ❖ Sira-Granthi: This term signifies the dilation of veins, causing an obstruction to the normal flow within the srotas. An example of this is atherosclerosis, a condition in which plaque buildup inside arteries obstructs the flow of blood.
- ❖ Vimarga Gamana: In cases of srotodushti due to some pathology, there may be a redirection of fluid flow within the affected area through channels other than the

usual ones. For instance, in the context of jwaravyadhi, when Udakavaha and Sweadavaha srotas are obstructed, vitiated doshas can cause srotodushti, leading agni to move from its original location to reside in the twaka (skin), causing jwara.

Concept of Srotovaigunya

Srotas are responsible for the transportation of materials from one part of the body to another. The nutrients that nourish the body tissues undergo a process of transformation called "paka" due to the heat (agni) generated by the body tissues (dhatus). This transformation and heating process occurs within the dhatuvaha srotas. When there is a disturbance or impairment of this agni, it can result in a malfunction of the srotas, leading to their inability to perform their normal functions. This dysfunction can cause the doshas (biological humors) to become imbalanced and interact with the affected body tissues, leading to the initiation of a disease process, known as dosha-dushya sammurchana. According to the Sushruta Samhita, this process is detailed in the concept of Shatkriyakala, which includes stages like accumulation, excitation, spread, and the initiation of disease symptoms. This fourth stage of Shatkriyakala is attributed to khavaigunya or srotovaigunya, which signifies srotas dysfunction. Therefore, it is understood that all pathological conditions, whether acute or chronic, originate at the level of the srotas.

Conclusion

Srotas serve as a crucial unit for the transformation of one body tissue (dhatu) into the next. The occurrence of a disease in the body is a result of faulty srotas that favor the interaction between doshas and body tissues. The significance of srotas in disease manifestation is emphasized in various Ayurvedic texts, highlighting its role in maintaining normal physiological functions for overall health. To prevent srotas-related issues, the best approach is to avoid factors that can lead to srotas dysfunction. Therefore, "prevention is better than cure," and the practice of nidana parivarjana, or avoiding the causative factors, is essential for maintaining good health and homeostasis.

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