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The Concept of Vatavaha Sira w.s.r.to Modern Anatomy

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ABSTRACT

The term *Sira* stands for channels through which substances or physical forces flow. In general, this term stands for blood vessels, even though *Sushruta* has also used it in the sense of nerves i.e. *Vatavaha Sira*. In such a condition, it is very difficult to know doubtlessly about it like modern anatomy. Though *Sushruta* and other founders of *Ayurveda* have not described the structural aspect of the nervous system, they were in the know of its functional aspect. According to them, all the activities of the body are done by *Vata*, the chief among the *Tridoshas*. Many of the physical and mental phenomena described by modern physiologists are primarily the activities of the central, autonomic and peripheral nervous systems. They can be identified by the functions ascribed to *Vata* in the classical *Ayurvedic* literature. *Vata* reaches the different parts of the body through *Vatavaha Siras* for performing all the physical and mental functions. The aim of this study is to correlate the *Vatavaha Siras* with possible modern anatomical structures i.e artery and nerve.

KEYWORDS

Sira, Vata, Buddhi, Nerve, Artery



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INTRODUCTION

Acharya Caraka starts from the root meaning of *Sira*. The word *Sira* is derived from the root 'Sru'-to go or move slowly. "Saranat Sira", *Sira*, therefore, means channels in which there is a slow movement of some fluid. *Sira* has been defined those structures in which there is a passive flow of the blood or *Siras* are tubular structures it carries vital fluid. *Cakrapani*, the commentator of *Caraka Samhita* has also explained *Caraka's* view very clearly. He said that – *Sarana* means passing from one organ to another organ. *Siras* are structures simple carry substances from one place to another, they do not pulsate¹. According to *Sushruta Sira* and *Dhamini* are the channels other than *Srotas*².

The principal *Siras* are 40. These *Siras* are dividing into 700 branches. These are classified into 4 types on the basis of carrying *Vata*, *Pitta*, *Kapha* and *Rakta*. These *Siras* have specific colour, character and functions. The particular *Sira* is to circulate particular *Dosha* in its specific area. The other *Dosha* also circulate in lesser quantity along with a predominant *Dosha*³.

REVIEW OF LITERATURE

Vatavaha Siras are 10, when they reach the organs of the body where *Vata*

predominant, they divide into 175 branches. By this *Sushruta* meant that *Vatavaha Siras* are those which are found in *Vata* predominating areas, such as *Pakvasaya*, *Kati*, *Shroni*, *Sakthi*, *Asthi*, and *Sparshanendriya*⁴.

In *Ashtanga Sangraha*, *Vagbhatta* has described that blood flows in all the 700 *Siras* in that -a quarter of the total number (175) flows blood polluted with *Vata*⁵.

❖ Distribution of *Vatavaha Sira* in *Shadanga*

- A. In limbs-100 (25X4=100)
- B. Trunk - *Vatavaha Siras* are 34 in the trunk.
 - *Guda* (Anus), *Medhra* (Penis) and *Shroni* (Pelvis) - 08
 - *Parshva* (Flanks) - 04
 - *Prustha* (Back) - 06
 - *Udara* (Abdomen) - 06
 - *Vaksha* (Thorax) -10
- C. Head and neck -*Vatavaha Siras* are 41 in trunk.
 - *Griva* (neck) -14
 - *Karna* (ear) - 04
 - *Jivha* (Tongue) - 09
 - *Nasa* (nose) - 06
 - *Netra* (eye)-08

❖ Colour, characters and functions

Vatavaha Sira is *Aruna Varna* (crimson red) and filled with *Vayu*. These *Siras* perform physical functions without



hindering the specific of *Buddhi* and sense organs.

Acharya Dalhana has explained the term *Kriyanam* in this he includes both voluntary action and involuntary action. The word *Buddhi Karma* is related to the five sense organs and *Manas*. The intellect plays its role in taking the decision in the normal state. When there is a hindrance in the normal functioning of sense organs; it is supposed that there is something wrong with the *Buddhi* or it has gone under *Moha*⁶. In *Ashtanga Hrudaya Vagbhatta* has described only characters of *Siras* but not mention any functions of these *Siras*. He stated that those *Siras* which are bluish-red (*syav-aruna*) in colour, small, full and empty momentary and having throbbing are carrying blood mixed with *Vata*. It seems that *Vatavaha Siras* perform the same function of those carrying *Dosha*. It means *Vatavaha Siras* perform the functions of *Vata*⁷.

DISCUSSION

Sira is a tubular structure (*Nadi*) attached to *Hrudaya / Nabhi*, having *Sarana Karma* and transports *Rasa / Rakta* to the nourishment (*Poshna*) of *Dhatu*s of the body. In this definition, it seems *Sira* is a blood vessel (*Rakta* carrying channel) and lymphatics (*Rasa* carrying channel).

In modern anatomy blood vessels also defined the same as the *Ayurveda*. Blood vessels (*Rakta* carrying channel) are intricate networks of hollow tubes (*nadi*) that transport blood (*Rakta*) throughout the entire body. Blood vessels are three types - arteries, veins, and capillaries. Arteries, veins, and capillaries are not structurally the same. Blood vessels carry blood from the heart (*Hrudaya*) to all areas of the body⁸.

According to *Sushruta Siras* are classified into 4 types **1. Vatavaha Siras** **2. Pittavaha Siras**

3. Kaphavaha Siras **4. Raktavaha Siras**

While commenting on this context, *Ghanekar* said that the above description regarding classification of *Siras*, on the basis of *Doshas*, does not mean that the forty *Siras* originate from *Nabhi* or *Hrudaya*. *Vatadhi Doshas* circulate in blood vessels for maintenance of the body. At *Vatadhi Sthanas* in the *Siras* *Vatadhi Doshas* will be increased. That means in *Vata Sthanas Siras* contain more *Vata* and same happened in other *Doshas* viz. *Pitta*, *Kapha*. In *Rakta Sthanas* *Yakrut* and *Pliha* the *Siras* contain more *Rakta*. Because of this *Siras* are classified into *Vatavaha*, *Pittavaha*, *Kaphavaha* and *Raktavaha*.

While modern correlation *Dr. Ghanekar* stated that *Siras* are transporting channels of *Rasa / Rakta*. Along with *Rasa / Rakta*; *Siras* also transports *Doshas* to all over the



body for carrying different functions of these *Doshas*. He also said that according to meaning only the structures are correlated but not anatomical approach. But some authors like *Pandit Gangadhar shastri* correlated the *Sira* with nerve. According to him, *Aruna Sira (Vatavaha Sira)* is sympathetic nerve because these nerve fibers which carry on all the involuntary vital functions. But according to meaning *Sira* is not a nerve because it not transports any *Rasa / Rakta*. *Dr.Ghanekar* has also accepted the structure of *Sira* in *Ayurveda*, implies the four anatomical structures namely artery, vein, capillary and lymphatic in modern science⁹.

Sushruta stated that the *Siras* carrying *Vayu* have *Aruna Varna* (crimson red) and look filled with *Vata*. The *Vayu* circulating in their *Siras* performs physical functions without hindering the specific functions of *Buddhi* (intellect) and sense organs. When vitiated *Vata* reaches in its own *Siras*, serious diseases manifest as a result of vitiation of *Vata*.

The normal functions of the *Vatavaha Siras* stated by *Sushruta* also point out that the *Siras* are nerves. But they are not nerves, they are blood vessels. In *Ayurvedic* classics, the anatomy of the brain or the nervous system has not been described but the functions of the nervous system have been described through the blood vessels.

The *Vayu* which circulates in blood vessels has been held responsible for performing the functions of nervous system¹⁰.

In Ancient Hindu Medicine, an interpretation by *Candra Cakravarty* has explained that it seems that *Sushruta* includes the nervous network in the vascular system which is divided into four types, nervous (*Vata*), venous (*Pitta*), lymphatic (*Kapha*) and arterial (*Rakta*). The identification of *Vata, Pitta, Kapha* and *Raktavaha Sira* with the nervous, venous, lymphatic and arterial system is not farfetched and fanciful.

The various terms for the blood and lymphatic vessels and ducts arising from the heart were used indiscriminately, although some of the authorities feel that terms *Vatavaha, Pittavaha, Kaphavaha* and *Raktavaha Srotas (Siras)* should be identified with the nerve cords, venous, lymphatic and arterial channels respectively¹¹.

The above all statements of different *samhita* commentators as concluded and *Vatavaha Siras* are correlated with modern science in two ways –

A. The anatomical aspect of *Vatavaha Siras*- If considered the colour *Aruna* (crimson red) and characters *Vatavaha Siras* are may be correlated with arteries. In *Ayurveda*, *Dhamanis* are also considered as



arteries because it's having the character of pulsation.

The characters of arteries are more similar to *Vatavaha Siras*.

Table 1 Showing correlation in between *Vatavaha Sira* and Artery

Character	<i>Vatavaha Sira</i>	Artery ¹²
1. Carrying material	<i>Rasa / Rakta</i> along with <i>Vata</i>	Pureblood (except pulmonary and umbilical arteries)
2. Colour	<i>Aruna (crimson red)</i>	Red
3. Character	a. Praspandana (throbbing) b. Full and empty momentary	Pulsate During dilatation, arteries to be full and during contraction these are empty
4. Place	<i>Sukshma (Deep)</i>	Deep seated

B. Physiological aspect of *Vatavaha Siras*

-Nowadays, nervous system is described in two aspects i.e. anatomical or structural and physiological or functional; the former describes the brain, spinal cord and nerves, while the latter describes the nerve impulse, its transmission through the nerves, stimulation of all the parts of the body (inclusive of the mind), for performing their functions.

Thus *Vata* in terms of modern physiology closely resembles to the neural impulse (motor, sensory and integrative), which is also an invisible, self-originated and propagated as metabolic reaction sequence bringing about all activities of the nervous system, namely motor, sensory, integrative (higher intellectual functions)¹³.

Sharira-Vata, as stated in our ancient texts, stands in always similar if taken in contrast to the nerve impulses that are nothing but a self-propagating biological chemical reaction occurring in the nerve fibers. Thus we can presume the *Sharira-Vata* as a

biological force or in other words a chemical reaction sequence that occurs during the course of life processes¹⁴.

Regarding *Vata* and nervous system, *Srikantha Murty* stated that - all these properties and functions of *Sharira Vata* exactly correspond with the nature and functions of the nerve impulse. Though the nature of the nerve impulse is not fully understood, what has been established now are-“that it is a process of physicochemical change in the nerve fiber, is self generated, self propagating, its rate of travel ranges from 6 meters to 120 meters per second, it is not visible and it is of one kind only-impulse ending in the skin creates sensations of cold, heat, pain etc, ending in a gland it makes for secretions etc. All the functions of all the parts of the body and mind are made possible by the nerve impulse only acting as the stimulator”. Comparing this ancient and modern knowledge we can without hesitation assert that *Sushruta* and others like him had a



good knowledge of the functional aspect of the nervous system¹⁵.

In understanding of neuro-physio-anatomy of *Vata Dosha* in modern terms, the nervous system and its important constituents i.e. the neurons dendrites axons, brain and spinal cord, cranial & spinal nerves, autonomic nervous system, in the neuroendocrine system, chemical mediators (the substances that allow various cells and organs to communicate with each other), the neurotransmitters and neuropeptides must be understood¹⁶.

Consider the definition of *Vata* also indicates the two main functions of nervous system viz. motor and sensory.

A. The first word *Gati* indicates “to move” or to cause movement or motor activities of the body.

B. The second word is *Gandhan*, term *Gandhan*¹⁷ indicates *Suchna* or information or *Jnana* (knowledge) through *Ghranendriya* (organ of smell) which is sensory in nature, it is the function of olfactory nerve, which is the first cranial nerve and sensory in action. So, the term *Gandhanyoh* represents all other sensory organs and nerves which are also described under the heading of *indriya pancha panchaka*.

Regarding functions of *Vatavaha Sira*, *Sushruta* has stated *Buddhi Karma*. The

word "*Buddhi Karma*" has related to five senses organs and *Manas*. The intellect plays its role in taking the decision in the normal state. When there is a hindrance in the normal functioning of sense organs, something goes wrong with *Buddhi* or it is trapped in *Moha*. The *Vatavaha Sira* performs other actions along with functions. It seems functions of *Vatavaha Siras* are psychological and *Vata* controls the *Manas* and *Manas* controls the *Buddhi*. These three are interrelated and perform psychological functions of the body¹⁸.

While there are four anatomical channels through which property of three *Dosha* are being ruled while *Vatavaha Sira* all those functional properties are present through which *Vahana* of *Vatika* (neural impulses) activities are being performed. *Vatavaha Siras* are exclusively channels for carrying neural impulses in either way i.e. center to periphery or periphery to center. All *Vatavaha Siras* has been recognized along with their anatomical situation in specific regions of *Vata Dosha*. *Sushruta* also adds that *Vatavaha Siras* ramified in one hundred and seventy five branches. *Dr. Ghanekar* had a vision of his own and said that these ramifying *Vatavaha Sira* can be traced in *Vata* predominating area like *Pakvasaya*, *Kati*, *Sroni*, *Sakthini*, *Asthi* & *Sparshanendriya* (skin) etc. The *Sushruta's* statement regarding clarification of



Vatavaha Sira initially appears to be scientific because any structure which carries *Vata* in a cable like morphology carries neural impulses and provides energy for movement. *Vayu* or nerve impulse circulates in these. *Vatavaha Sira* performs all neural activities, without hindering the specific functions of *Buddhi* (intellect) and sense organs¹⁹.

CONCLUSION

1. The term *Sira* stands for channels through which substances or physical forces flow. In general, this term stands for blood vessels, even though *Sushruta* has also used it in the sense of nerves (*Vatavaha Sira*).
2. If considered the Anatomical aspects of *Vatavaha Siras* i.e colour (*Aruna* -crimson red) and characters it may be correlated with arteries.
3. If considered the functions (*Buddhi Karma etc.*), *Vatavaha Siras* are looked like nerves. Because these *Siras* are performing motor as well as sensory functions. These functions are carried by *Vata*. So many scholars have correlated the different functions of *Vata* with nervous phenomena. It is no doubt here *Vatavaha Siras* are anatomically arteries but because of carrying *Vata* it performs functions of nerves.



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