



International Journal of Ayurveda and Pharmaceutical Chemistry

Volume 7 Issue 2 2017

www.ijapc.com



Anatomical study of *Raktavaha Srotas* w.s.r. to Liver

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ABSTRACT

Srotas are the channels of circulation or dynamic inner transport system of the body which provide platform for activities of other important bio-factors like three *Dosh*, *Dhatu*, *Oja*, *Agni* etc. The word *Srotas* is originated from the main Sanskrit root “*Sru Srawane*” meaning the structure to flow, to exudates, to filter, to ooze and permeate. Each *Srotas* is attached to a specific anatomical structure called *Moola*. The normal functioning of *Srotas* depends on *Moolsthana*. *Rakta* is considered as *Jeevan* in *Ayurveda* texts. *Raktavaha Srotas* are channels of circulation concerned with the blood formation, storage and circulation of blood and lymph in body. *Yakrita*, *Pliha* and *Raktavahi dhamnis* are considered as *moolsthana* of *Raktavaha srotas* by *Acharyas*. *Yakrita* can be correlated with Liver. Most of the blood related concepts like haemopoiesis, storage and decomposition of red blood cells are rooted in liver. Microscopically, liver is made up of minute channels of circulation or vessels which help in normal functioning of Liver.

KEYWORDS

Srotas, *Raktavaha Srotas*, *Yakrit*, *Liver*



Greentree Group

Received 23/06/17 Accepted 08/08/17 Published 10/09/17



INTRODUCTION

Srotas represents inner transport system of the body. *Srotas* are important concept of *Ayurveda* because innumerable *Srotas* are present in *Sharir* or *Purush*. According to *Charaka* the channels of circulation, carrying the *Dhatu* (tissue elements or their constituents), undergoing transformation, to their destination are called as *Srotas*¹. *Acharya Sushruta* has defined *Srotas* as the hollow channels except large *Siras* and *Dhamanis* which originating from root space, spreads in the body and circulates and exudes of the specific entities². There are thirteen main *srotas* described by *Acharya Charaka* and eleven pairs of *srotas* are described by *Acharya Sushruta*^{3,4}. *Rakta dhatu* is the primary fire of the body. *Raktavah srotas* are channels involved in blood formation, circulation, functioning or destruction of blood or lymph. *Yakrita*, *Pliha* and *Raktavahi dhamnis* are considered as *moolsthan* of *Raktvah srotas*. Liver is body's largest gland. Liver is associated with the formation and circulation of blood from embryonic life. Blood from GIT comes here, detoxifies and then provides nutrition to whole body.

Raktvaha Srotas and its Moolsthana:

Raktvaha srotas are the channels associated with the formation, transportation and transformation of *rakta dhatu* directly or indirectly. *Chakrapani* has described *Moola*⁵ as *Prabhav Sthana* of *Srotas*, means the anatomical seat of respective *srotas*, function regulatory site of that *srotas* or main seat of pathology of that *srotas* or principle seat of manifestation of the diseases of that *srotas*. *Moolsthana* of *Srotas* can be determined by *Utpatti Sthana*, *Sangrah Sthana*, *Vahan Sthana* of that *Dhatu*, or by *Niadanik* or *Chikitsatmak drishtikon*. The site of origin or the site which regulates functioning of these *srotas* is considered as *Srotomool*. Any abnormality in the *srotas* ultimately affects the *moola*. After management of the *moolsthan* of the *srotas*, basic management of the disease pertaining to that specific *srotas* gets completed⁶.

Acharya Charka has mentioned *Yakrita* and *Pliha* as *moolsthana* of *Raktavaha srotas*⁷ whereas *Acharya Sushruta* has mentioned *Yakrita*, *Pliha* and *Raktavahi dhamnis* as *Raktvahasrotomool*⁸. During embryonic development origin of *Yakrit* and *Pliha* takes place from *Shonit (Rakta)*⁹ and after birth for a particular time period production of *Rakta* takes place in *Yakrit* and *Pliha*. Hence on the basis of



gunsamanya ashraya- ashrayi relation between *Yakrit* and *Shonit dhatu* gets proven successfully.

According to *Ayurveda*, when food is ingested by individual, it is converted into *Rasa* and waste matter is excreted as *mala*. This *Rasa* is converted to *Rasa dhatu* by *dhatvagni* which is used by body. In *Yakrita*, *Ranjak Pitt* is present, which gives colour to the *Rasa dhatu* and with the help of *dhatwagni*, *Rakta dhatu* is formed which is transported to the entire body and is used for its various functions. Main role of *Rakta dhatu* is *Jeevan-* giving life; because it is the vehicle for *prana-* carries it through the body. Channel of circulation (*srotas*) are seriously affected when their *srotomool* is affected. So *Srotomool chikitsa* is also helpful in treatment of *dhatupradoshaj vikaras*.

Symptoms and Management of *Raktavah Srotodushti*:

The diseases or symptoms caused by vitiation or contamination of *Raktavah Srotas* are^{10,11}:

Pandutaa (Pallor), *Paleeha* (spleen enlargement), *Kamlaa* (Jaundice), *Jwara* (Fever), *Dahaa* (burning sensation), *Shonit aagmana* (bleeding), *Rakt netrata* (reddish discolouration of eyes), *Kushta- visrpa* (Skin

diseases), *Gudmedhra paka* (inflammation of perineal region) etc.

Injury to blood vessels or liver or spleen cause bleeding and pain which cause these symptoms. The chief symptoms are shock, pain and tenderness and evidences of blood loss. Well marked pyrexia may follow the initial shock. There may be diseases of Liver and spleen as these are *moolsthana* of *Raktavah Srotas*.

Management of *Raktavahi srotodushti*¹² includes *Raktapittahari kriya* (management in bleeding disorders), *Virechana* (therapeutic purgation), *Upavasa* (starvation), *Raktamokshan* (blood letting treatment). Due to *Virechana* and *Raktamokshan*, vitiated blood comes out from body. *Upavasa* cause *pachana* of *dusht* blood.

DISCUSSION

Srotas are pathway of *Rasadi Dhatus*. *Srotas* represents the internal transport system and includes a series of the channels through which *Ras- Raktadi dhatu* is propelled to all parts of the body. *Srotas* indicate all macro, micro level descriptions pertaining to exchange, transportation and excretion. *Raktavah Srotas* are the circulatory channels in which plasma and lymph flows in the body. *Moola* of *Raktavaha Srotas* is *Yakrit*



and *Pleeha*. In the foetal hematopoiesis, principle organ of blood formation is Liver, from the fifth week of gestation⁹. From the *moola*, transformation takes place. Various products required for hematopoeisis (viz, Fe, Vitamin –B12, Foliata etc) are transported from liver and spleen, to the hematopoetic organs for hematopoesis. So liver is the regulatory site of blood formation and its functioning. Vessels which enter or leave the liver or spleen and transport blood and lymph or where the transformation or functioning of *Rakta* or lymph takes place are *Raktavaha Srotas*. Liver and Spleen are associated with formation of blood, destruction of RBC's, detoxifies the blood from the gut and transfers it in the whole body. Bile pigments formed in the Liver are formed by decomposition of Red blood cells. Bile helps in the digestion of food and formation of *poshak* rasa. *Ranjak Pitta* in Liver helps in *Ranjan karm* of *Rasa dhatu*. With the help of *Dhatwagni Rasa* is converted into *Rakta* in Liver. Liver can be considered as *Raktavaha Srotomool* since it regulates the formation, transportation and decomposition of blood.

CONCLUSION

Srotansi indicate all macro, micro level descriptions pertaining to exchange,

transportation and excretion. *Srotas* are specific to carrier substance which they transport. So, from the above study and discussion, it can be concluded that the vessels or channels of circulation entering or leaving the Liver and circulate the blood and lymph to whole body can be considered as *Raktavaha Srotas*. Vessels of circulatory system which transport blood and lymph to body can be considered as *Raktavaha Srotas*. These *Srotas* are associated with formation, circulation, transformation and decomposition of blood or lymph. Blood formation takes place in Liver in foetal life. Liver is associated with the formation, transportation and decomposition of blood. *Raktavaha srotodushti* can cause diseases of *Yakrita*. *Raktavaha srotodushti vyadhis* can be treated by treating the *moolsthana* of *Srotas* (*Yakrit* and *Pleeha*). So liver can be considered as *moolsthana* of *Raktavaha Srotas* according to *Utpatti Sthana*, *Sangrah Sthana*, *Vahan Sthana* of *Rakta dhatu* and by *Niadanik* or *Chikitsatmak drishtikon*.



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