

A CRITICAL ANALYSIS ON THE RELATIONSHIP BETWEEN VRIKKA, YAKRITA AND HRIDAYA IN THE PATHOGENESIS OF VRIKKA ROGA AND ITS UPADRAVA W.S.R TO CHRONIC KIDNEY DISEASE

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ABSTRACT

Chronic Kidney Disease is a chronic progressive declination in the function of kidneys with serious and dreadful complications which result in low life expectancy of the sufferer, and it can be correlated to as an amalgamation of the pathology related to *Rasa Pradosaj vikar*, *Kaphaj sotha*, *Pandu*, *Mutrakriccha*, *Mutraghata*, *Prameha* and its complications which are called as *Vrikka roga* (Kidney diseases). The literary data have been collected from *Charak Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, *Ashtanga Sangraha* and *Sharangadhar Samhita*. The collected literature have been analysed to justify that there may be a vast relationship between *Vrikka* (Kidneys), *Yakrita* (Liver) and *Hridaya* (Heart) in the pathogenesis of *Vrikka roga* (Kidney diseases) and its *Upadrava* (complications). The analysis establishes that *Vrikka roga* (Kidney diseases) is one of the *Vataj Nanatmaja Roga* and *Meda Dhatu* (Fat tissue) is the prime *Dhatu* (tissues) that gets vitiated and the aggravated *Abaddha Meda* (free fatty acids) results the pathogenesis of *Vrikka Roga* (Kidney diseases) alongwith *Rakta* (blood). Whereas, *Rakta* (blood) is seen being the *Pradhan Dhatu* involved in the pathogenesis of *Vrikka Roga Upadrava*. Therefore, an inference can be drawn that for slowing the progression of the pathogenesis and evolvement of complications, aggravated *Abaddha Meda Chikitsa*, *Rakta Dhatu Poshak* and ignition of the *Dhatwagni* may be adopted.

Keywords: Chronic Kidney disease, Vrikka roga, Upadrava, Rakta, Abaddha Meda, Vataj Nanatmaja Roga

INTRODUCTION

The *Garbha* (embryo) is formed from the *Sanyoga* (combination) of *Shukra*(sperm) and *Artava* (ovum)^[1]. The *Shukra* (sperm) and *Artava*(ovum)are the *Garbhautpadak Bija*. During the embryological period, the *Anga-Pratyanga* are formed from the *Garbhautpadak Bija* or the *Bijabhaga*. If the *Bija* or *Bijabhaga* is *Dushita*, the *Anga* (body parts) which will be formed also be *Vikrita*. This clearly shows that not only the formation of *Sharira Avayavah* (organs) depends on the characteristics of *Bija* or *Bijabhaga* but also the formation of disease in the later period of life.^[2]

Agni (fire) is said to be *Poshak* (nutrient) of *Pranadi Vayu* and *Dhatu*. If 13 types of *Agni* are in the balanced state, then *Aharapaka* (food metabolism) and *Dhatupaka* (tissue metabolism) will also be at a normal level.^[3] This will result in proper nourishment of the *dhatu*s in actual amount. The nourished *Dhatu* residing in their *Srotas* (channels)will help in the nourishment of the other succeeding *Dhatu*s.^[4]

For the progression of the disease, *Vata* is said to be the prime cause of *Utpatti*. *Dhatu kshay* (tissue loss) and *Avarana* are the main reason for *Vayu Prakopa*.^[5] The *Dhatu* or the *Avayava* (organs) which is being formed from the constitution of *Guru* (heavy), *Snigdha* (unctuous), etc. *guna* (qualities) gets depleted. This depletion of the *Dhatu* or the *Avayavah* results *Sthansamshraya* of the increased *Vata*. The *Sthansamshraya* (stage of pathogenesis) in that particular area leads to *Vridhhi* or *Kopa* of *Vayu*.^[6]

During the *Prasara* stage of every disease, the vitiated or aggravated *Doshas* enter the *Rasayani* (*Dhamani* or *Sira*) of that particular *Rogadhistan Anga* and result in *Vyadhi Nirman* (disease formation).^{[7][8]} *Prakrit karma* of *Vyana Vayu* is *Viksepana* (abnormal movement) of *Dhatu* throughout the body. In *Vyadhi Nirman*, the *Kha Vaigunya* is already present in the respective *Ashaya*. Here, as *Kha Vaigunya* gets obstructed, it gives rise to *Vyadhi*.^{[9][10]}

After the development of the disease, the *Upadrava* of the disease occurs. The *Upadrava* may be the *Ashrita*

of *Pradhan Roga* where it is arising from. The development of another disease based on the pathogenesis of the *Pradhan Roga* is known as *Upadrava*.^[11] Sometimes, *Upadrava* and *Pradhan Roga* occur simultaneously in the body. This is called as *Ubhayarthakari Vyadhi Sankara*.^[12] Even the *Doshic* or *Dhatuj* involvement is common for the *Pradhan Roga* and the *Upadrava*, but the site of development is different from each other.

Chronic Kidney Disease

CKD (Chronic Kidney Disease) encompass a spectrum of different pathophysiological process associated with abnormal kidney function and progressive decline in glomerular filtration rate (GFR) along with hyper infiltration and hypertrophy of the viable nephrons. It leads to long term reduction of renal mass irrespective of the underlying aetiology. In progressive stages, the building up of innumerable toxins in the renal blood flow is characterised by Uremic syndrome which leads to Vasculopathy.^[13] When the kidneys get affected and start progressing to other stages with declination in eGFR, the other mechanism of the body also gets affected. CKD is a complex disease. The circulatory system of the body-systemic, portal, pulmonary, renal all gets messed up. This led to the pathogenesis of several complications like anaemia, metabolic disorders, bone disease, heart disease, electrolyte imbalance, etc. As CKD progresses, the vascular involvement of systemic, portal and renal circulation occurs at a greater pace, which eventually leads to the development of several severe complications.

Vrikka roga According to *Ayurveda*, *Vrikka Roga* can be defined as an amalgamation of *Lakshan* of several diseases like *Rasa pradosaj vikar*, *Kaphaj Sotha*, *Pandu*, *Mutrakriccha*, *Mutraghata*, *Prameha* and its *upadrava*. The *Dosha Prakopak Hetu* like *Nidanarthakara Roga*, *Santarpanjanya*, *Apatarpanjanya* and *Ajeerna Avastha* leads to *Agni Dushti* and therefore vitiation of *Samana Vayu*, *Pachak Pitta* and *Ranjak Pitta* occurs with the aggravation of *Kledak Kapha*. The *Prakupita Dosha* gets *Sthansamshraya* in *Vrikka* and

Mutrasaya through Vyan Vayu leading to Srotadushti of Dhatus, Mala and Oja which results in Apana Vayu

vitiation.^[14] This directs to the pathogenesis of Vrikka Roga.

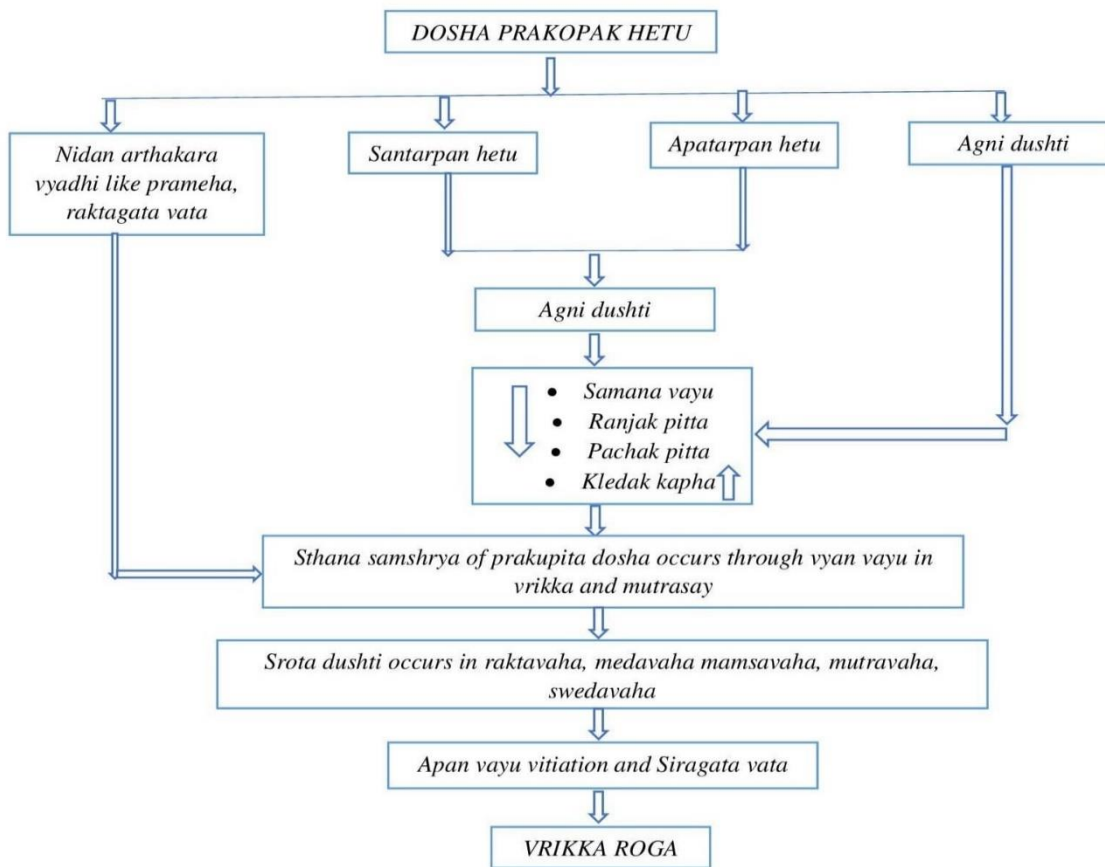


Fig. Samprapti of Vrikka Roga

Samprapti Ghatak

Dosha: Tridosha, Vata Pradhan

Dushya: Rasa (plasma), Rakta (blood), Abaddha Meda (free fatty acids)

Srotas Involved: Rasa (plasma), Rakta (blood), Mamsa (muscle), Meda (fat tissue), Asthi (bone tissue), Majja (bone marrow), Shukra (reproductive tissue), Sweda (sweat), Mutra (urine), Prana, Anna, Udaka, Oja

Adhistan: Vrikka (kidneys), Vasti (urinary bladder), Sarva sharir (whole body)

Srota dushti: Sanga

Agni: Dhatwagni

Swabhava: Chirakari (chronic)

Sadhya-asadhya: Yasya/Asadhya

VRIKKA (KIDNEYS)

Garbha Sharira

According to Sushruta, Vrikka is developed from the Prasad Bhag or Sara of Rakta and Meda.^[15] Vrikka is one of the Matrija Bhava.^[16]

Rachna Sharira

Vrikka is two in numbers and looks like Mamsa Pinda. One is situated in the Bamaparshwa (left flanks) and the other is in Dakshinaparshwa (right flanks).^[17] Dalhan has also mentioned that it has a round nodular shape. It is said to be one of the Mulasthan of Medavaha srotas.^[18] Basti Marma is one of the Tri-marma mentioned in Ayurveda.^[19] It resides in the Katipradesh, and it is Mamsa and Shonita Yukta. It is the Sthan of Mutra. It not only structurally signifies Basti

(urinary bladder) but also considers the whole Vrikka (renal function).

Kriya Sharira

Vrikka gives nutrition to the *Jatharasta Meda*.^[21]

Mutra and Mutravaha Srota

Mutra is the *Dravarupi Kitta* produced as a result of *Aharapak* and is stored in the *Mutrasay*.^[22] According to *Adhyamala* in *Sharangadhar Tika*, *Ahara Jalavahi sira* resides in the *Vrikka* which then passes out through *Dhamani* from the *Mutrasay*(urinary bladder). The *Adhogami Dhamani* transports *Apan Vayu*, *Mutra* (urine), *Purisha*(faeces), *Shukra*(sperm) and *Artava*(ovum)in a downward direction. The *Mutravaha Dhamani* extends from the level of *Nabhi* (umbilicus) and goes towards the *Basti* and thereby transportation of *Mutra* occurs.^[23]

YAKRITA (LIVER)

Garbha Sharira

Yakrita (Liver) is formed from the *Rakta Sara*.^[24] It is one of the *Matrija Bhava*.^[25]

Rachna Sharira

Yakrita is situated below *Hridaya* but on the right side of the body.^[26] Along with *Pleeha* (Spleen), *Yakrita* can be considered as *Shonitashay* for the formation of *Rakta*.^[27] It is one of the *Mulasthan* for *Raktavaha Srotas*^[18]. It is one of the *Koshthanga*^[28] and is the main site of *Ranjak Pitta*.^[29] The *Raktadhara Kala* resides over the *Sira*, *Yakrita* and *Pleeha* and the circulation of *Rakta* occurs.^[30]

Kriya Sharira

The *Prasadabhuta Rasa* and the *Kittamsa* which has been formed after the *Ahar Pachan* goes to the *Yakrita* and gets *Ragakrita*. The *Prasadbhuta Rasa* transforms to *Rakta* and *Kittamsa* after being *Ranjita* gets transformed to *Mala* and *Mutra*.^[29]

Rakta Dhatu and Raktavaha Srota

Rakta is one of the *Saptadhatu* and according to *Sushruta*, it is the fourth *Dosha*. *Rakta Dhatu* is formed by a process in which *Ushna Guna* of *Pitta* acts as on *Rasa Dhatu* and it converts *Rasa Dhatu* into *Rakta Dhatu* by *Ranjan Karma*.^[29] *Rakta Dhatu* is *Anushnasheeta*(neither so hot nor so cold), *Snigdha*(unctuous),*Madhura*(sweet),*Guru*(heavy) and *Visra*(foul smell).^[31]

In *Hemadri* commentary of *Ashtanga Hridaya*, it has been said that *Pitta* has *Ashrayashrayi Bhava* with *Rakta Dhatu*. So, if there are *Pitta Dushti*, then the *Shuddha Rakta* will be affected and vice versa. According to *Charaka Samhita*, if there is a loss of *Rakta Dhatu*, there will also be a loss of other succeeding and *Agni* and as a result, *Vata Prakopa* occurs. It is explained that if a person is having *Prasanna Atma*, *Indriya* and *Varna* with proper *Jatharagni* and proper excretion of *Mala* and *Mutra*, it indicates that *Rakta Dhatu* is functioning normally. Such individuals are known as *Vishuddha Rakta Purusha*. It is the unique characteristic of *Rakta Dhatu* over other *Saptadhatu*s.^{[32][33]}

Raktavaha Srotas are the channels involved in blood formation, circulation and functioning of *Rakta*. *Yakrita*, *Pleeha* and *Raktavaha Dhamani* are the *Mulasthan* of *Raktavaha Srota*.^[34]

HRIDAYA (HEART)

Garbha Sharira

Hridaya (Heart) is originated from *Rakta* and *Kapha Sara* and thereby develops into a muscular organ.^[15] During *Anga-Pratyanga* formation, *Hridaya* is *Matrija Bhava*.^{[16][35]}

Rachana Sharira

Hridaya is located above *Pleeha* and below *Phuphusa* on the left and to the right above *Yakrita* and *Kloma*.^[15] *Hridaya* is the site of *Chetana* and the seat of *Oja*.^[36] Along with *Vrikka*, it is one of the *Dasha Visheshha Pranayatana*.^[37] It is one of the *Trimarma*,^[19] type of *Sira Marma*^[38] and *Sadyapranahara Marma*.^[39] The shape of *Hridaya* is like a lotus facing *Adhomukha*. During *Jagritavastha*, *Hridaya* gets excited and *Vikasita* but in *Nidravastha*, it gets *Sankochita*.^[40]

Kriya Sharira

Hridaya is the *Ashraya* of *Pranavaha Dhamani*.^[15] It provides *Rasa*, *Rakta* and *Oja* to the entire *Srota* of the body through its *Dhamani*.^[41] The *Prasadbhuta Ahara* is converted to *Rasa* after digestion and absorption under the action of *Pachakagni* and *Rasagni*.^[42] *Hridaya* which is the *Sthan* of *Rasa* circulates the *Rasa* with the help of *Vyan Vayu* through its *Dhamani* to the entire body and nourishes the other *Dhatu*s.^{[43][44]}

Hridaya is said to be the seat of Rakta.^[42] Hridaya itself being a muscular organ derives its nutrition from Rasa and Rakta and vital energy from Oja.^[45] According to Nadigyanam, Hriday Gati is based upon the proper circulation of Rasa and Rakta. There are two types of Hridaya Gati- Sankochatmaka and Vikasatmaka. During the Sankocha and Vikasa, the Vega which comes from the Rakta under the action of Vayu results Sphurana or Spandana (palpitations) in the Dhamani.

Meda and Medovaha Srotas

The normal Dhatupaka occur due to the sufficient ignition of their respective Dhatwagni. Rasa when gets converted to Mamsa which again under the action of Mamsagni turns to Meda Dhatu which is Snigdha and having characteristics similar to Kapha. Kapha and Meda are having Ashraya-Ashrayee Bhava, where Kapha is Ashraya and Meda is Ashrayee. Meda is divided into Poshya and Poshaka Meda Dhatu. Poshaka Medadhatu is Asthaya (Abaddha Meda) and is circulating in the whole body with other Dhatus to nourish the Sthayi (Baddha Meda) or Poshya Meda Dhatu. It is formed in the Medodhara Kala and with the action of Medagni, it transforms to Asthi Dhatu. when Dhatwagni function is reduced, the Asthaya or Abaddha Meda Dhatu increases resulting Roga.^[46]

Medavaha Srotas carry the Asthaya Meda Dhatu to transform to form the Sthayi Meda Dhatu.^[47] The Mula of Medavaha Srotas are Vrikka and Vapavahana,^[48] Vrikka and Kati;^[49] Vrikka and Mamsa.^[50]

DISCUSSION

Relationship between Vrikka, Yakrita and Hridaya in the pathogenesis of Vrikka roga

The Mula of Rasavaha Srota is Hridaya.^[18] The Prasadbhuta Ahara Rasa circulates through the Dhamanis to the other Avayava, Dhatu and Upadhatu from Hridaya and gives nourishment. But, when Hridaya gets diseased, according to the Dhatu Poshan Nyaya, this function gets hindered leading to improper functioning of other Dhatus. The succeeding Dhatus like Rakta, Mamsa, Meda, etc. gets vitiated and start developing disease. The excess formation of Abaddha Meda occurs during this phase which pollutes the Meda Sara

resulting various diseases and one of them is Vrikka Roga. According to modern pathology, this type of Vrikka Roga can be correlated with Cardio-renal syndrome.

Due to the formation of Abaddha Meda in Hridaya and Kha Vaigunya, the process of nourishment of the Dhatus and Srotas get obstructed leading to Dhatu Kshay and Oja Kshay. The Rakta which is formed in the Yakrita do not form adequately leading to Karma-hani of Yakrita. Following this, the vitiation of Raktavaha Srotas and Medavaha Srotas occur resulting in improper nourishment of the Vrikka resulting Vrikka Roga and modern pathology terms, it can be correlated as Hepato-renal syndrome.

Relationship between Vrikka, Yakrita and Hridaya in the pathogenesis of Vrikka roga upadrava

Vrikka is developed from Rakta and Meda Sara. The Yakrita is the Mula Sthan for Raktavaha Srotas. Yakrita produces Rakta with the help of Ranjak pitta and thereby circulates it through Raktavaha srotas. When Vrikka gets affected, Yakrita due to the vitiation of Raktasara also gets affected.

Following the vitiation of Yakrita and its constituents, the formation of Shuddha Rakta gets obstructed. Therefore, Ashuddha Rakta gets circulated through Raktavaha Srotas and Vyan Vayu vitiation occurs in Hridaya. It causes failure in the Sankocha and Vikasa of Hridaya resulting Hridroga. Hridaya is known to be the sthana of Oja. Any disequilibrium in Hridaya can lead to Oja Kshay and even death. On the other hand, both Vrikka and Hridaya develop from Rakta Sara. So, when Vrikka gets deranged due to several Hetu, Hridaya also gets affected because of the vitiation of Rakta Sara.

The Pradhan Doshic involvement is Vata and can be enumerated under Vataj Nanatmaja Vyadhi. The Dhatu which is specifically involved in the pathogenesis of Vrikka Roga Upadrava is the Rakta. The vitiation of Rakta Dhatu due to improper formation of Rasa and Rasagni leads to the vitiation of other Dhatus, Upadhatus and mala.

Due to the Ashray-Ashrayi Sambandha of Dosha-Dhatu-Mala, Tridosha vitiation lead to the manifestation of several Upadrava related to vrikka Roga.

Embryologically, *Rakta* being one of the main components in the formation of *Vrikka*, *Yakrita* and *Hridaya*. Therefore, with the other *Dhatu*s getting involved, *Rakta* can be said to be the prime *Dhatu* for the exposure of serious *Lakshan* in *Vrikka Roga*. *Vrikka*, *Yakrita* and *Hridaya* are interrelated to each other in the pathogenesis of *Vrikka Roga Upadrava* due to the vitiation of *Rasa*, *Rakta* and *Raktavaha Dhamani*.

Vrikka Roga and its *Upadrava* remain simultaneously in the body, though the former is the cause of another disease and is still not being cured. This can be called *Ubhayarthakary Vyadhi Sankara*.

CONCLUSION

With this study, an inference can be drawn that there is a vast relationship between *Vrikka*, *Yakrita* and *Hridaya* in the pathogenesis of *Vrikka Roga Upadrava*, where *Vata* is the *Pradhan Dosha* and *Rakta Dhatu* is seen to be the prime *Dhatu* involved. *Vrikka Roga* is not only limited to *Vrikka* but it attacks the whole body progressively.

Therefore, for the management of *Vrikka Roga* and to slow the progression to further *Upadrava*, *Rakta Dhatu Poshan* and *Chikitsa* should be adopted. It can be done either by proper nutritional diet which will increase the *Rasa Poshan* or by igniting the *Dhatwagni* which may result in slowing the progression of renal failure.

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