



Review Article

CRITICAL ANALYSIS OF THE CONCEPT OF *ROGAMARGA*

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ABSTRACT

Rogamarga is an important concept in Ayurveda that describes the mode of progression of a disease. Occurrence, progression and recurrence depend on the different *Rogamarga* that it follows. Through the description of three different *Margas* namely *Bahya abhyantara* and *Madhyama*, *Acharyas* have explained the entire pathway through which a *Vyadhi* occurs. Concept of compartmentalization deals with division of the body into different fragments as alimentary compartment, intravascular compartment, interstitial compartment and intracellular compartment. It is through the knowledge of these compartments that we understand the process of digestion and transportation of nutrients all over the body. The same concept can be utilized to understand the pathology behind a disease manifestation. *Rogamarga* as well as compartmentalization, both talk about pathway through which a disease gets manifested. It is important to know the pathway in order to understand the pathogenesis of a particular *Vyadhi*. Basic fundamentals of *Rogamarga* and compartmentalization find similarities. Each of the compartments can be categorized into the three *Rogamargas Bahya Madhyama* and *Abhyantara* at different levels. In our science though there have been studies and articles on the basics of *Rogamarga* much has been not explored regarding compartments and their role in disease manifestation. This article is a humble attempt to decode the concept of *Rogamarga* in terms of compartmentalization thereby trying to analyse the progression of disease pathogenesis.

INTRODUCTION

Rogamarga is made up of two words *Roga*+*Marga* derived from the root 'Ruj' and 'Mruj' *dhatu* respectively. *Roga* is breaking up of strength, distemper or disease^[1]. It is the resultant of disintegration of *Dhatu samyata* and *Marga* describes the channel, way or passage^[2]. Thus the occurrence, progression and recurrence of *Vyadhi* can be described through *Rogamarga*. It has been explained in *Nirdesha chatushka* in *Tisraishaneeya adhyaya* of Charaka Samhita. After explaining *Triniyatanani* and *Trayoroga*, *Trayorogamarga* is explained, this indicates the importance of the topic.

The basis of *Roga marga* is *Gati* of *Doshas*. The healthy relationship of *Doshas* with the *Dhatu*s and organs in a specific way is termed as *Doshagati*. The specific relation in pathological progress is termed as *Rogamarga*. Therefore in disease stage *Doshagati* is the cause and *Rogamarga* is the effect. *Rogamarga* has got its importance not only in the field of prognosis but also in the field of therapeutics.

The topic *Rogamarga* indicates relationship between different *Dhatu*s and *Ashayas* in a unique way. The *Nidanas* or factors that vitiate these *Doshas* make these factors to follow certain specific pathways. The *Vikruta doshas* tend to move through selected tissue and organs i.e., in *Koshta*, *Shakha* and *Marma asthi sandhi gati*. The movement of vitiated *Dosha* towards tissue and organs manifesting a disease or pathological progress is *Rogamarga*.

MATERIALS AND METHODS

Classical *Samhitas* were reviewed to collect the knowledge about *Rogamarga*. Physiology textbooks like Guytons physiology was reviewed for knowledge

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about compartmentalization. Through available texts, published article and authentic websites materials were explored. The collected materials were critically analysed and conclusion was drawn.

Classification

Classification of *Rogamarga* according to our Acharyas:^[3]

- *Bahya rogamarga/Shakhasrita marga*- *Doshas* make *Gamana* in *Raktadi dhatus*.
- *Madhyama Rogamarga/Marmasthi sandhi marga*- *Doshas* make *Gamana* in *Marma asthi* and *Sandhi*.
- *Abhyantara Rogamarga/kosthasrita marga*- *Doshas* make *Gamana* in *Kostangas*.
- *Shakha* or *Bahya roga marga*- Acharya Hemadri quotes *Bahya rogamarga* as *Bahirmargaroganam*^[4] and Arunadatta quotes *Bahyanaamroganamayanam sthanam*.^[5] This gives the meaning of *Bahya rogamarga* as the pathways of external disease.
- The term *Shakha* illustrates *Raktadidhatu* and *Tvak*.^[6] Chakrapani defines that by the term *Tvak*, the factor residing in it, *Rasadhatu* is also implied. *Shakha* includes *Tvak* and other six *Dhatus*, like this all the seven *Dhatus* are included in one path *Bahya roga marga*.^[7]

- *Marmasthi sandhi roga marga (Madhyama rogamarga)*- According to Acharya Hemadri, *Marmanimarmanibdhashiradyayaschya, Asthisandhayahate cha madhyama rogamarga*.^[8]
- The *Gati* of vitiated *Doshas* through *Marmasthi sandhi* will produce *Madhyama rogamarga*. This includes the *Mahamarma*^[9] *Basti, Hrudaya, Shira, Asthi, Sandhi* which includes associated *Sira, Snayu, Kandara, Dhamani, Kurcha*.
- *Koshtagata rogamarga*- Acharya Hemadri quotes *Anthahaanthamargo roganam*.^[10] By this definition, it is interpreted as internal pathway of diseases. Vagbhata considered it as *Anthakoshta*, i.e., *Amashaya, Pakwashaya, and Mahasrotas*. It is defined as *Shariramadhya* or *Mahanimna*, the hollow portion of the body extending from the buccal cavity to the anus. Its synonyms are *Mahasrotas, Shareeramadhya, Mahanimnam, Amapakvashaya ashrayam, Anthakoshta* and *Antharadhi*.^[11]
- Acharya Sushruta uses the term *Koshta* in a way in which it includes *Amashaya, Pakvashaya, Agnyashaya, Mutrashaya, Rudhirashaya, Hridaya, Unduke* and *Phuphusa*.

Table 1: Showing structures and diseases of each Rogamarga^[12]

Rogamarga	Structures	Diseases
Bahya	Rakta, Mamsa, Meda, Majja, Shukra, Twak	Ganda, Pidaka, Alaji, Apachi, Visarpa, Arsha, Gulma, Charmakeela, Shvayathu, Vidradhi
Madhyama	Marma, Asthi, Sandhi, Snayu, Kandara, Pakshavadha, Paksha Graha, Shosha	Pakshavadha, Paksha Graha, Shosha, Ardita, Apatanaka, Rajayakshma
Abhyantara	All Kostangas	Jvara, Murcha, Alasaka, Kasa, Gulma, Hikka, Arsha, Visuchika, Anaha, Pleeha, Visarpa, Shvayathu, Vidradhi, Atisara

Significance of Rogamarga

- The knowledge of *Rogamarga* helps to understand the *Doshagati*, thereby in understanding the disease process and its diagnosis.
- The knowledge about prognosis of disease in the respective *Rogamargas* can be gained.
- Disease caused by single *Dosha* afflicting one of the *Rogmargas* with *Chatushpaad* is a sign of good prognosis (*Sukhasadhya*).
- Diseases occurring in *Marmaasthisandhi* are a sign of bad prognosis (*Kruchrasadhya*).
- When *Doshas* are deep seated in *Dhatus* like *Meda* involving the *Dhatus* and *Marmaasthisandhi* it is an indication and (*Yaapya*) *Vyadhis*.
- If disease is manifested by involving all the *Margas* it clearly indicates the incurability (*Prathyakhyeya*). Example: If *Vata* is accumulated *Aamashya* the *Swedana* is done initially with *Rookshadravyas*, if

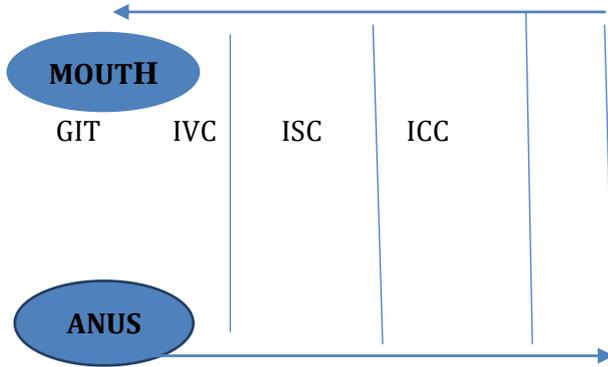
Kapha is accumulated in *Pakwashaya* the *Snigdhasweda* is done initially followed by *Rookshasweda*. This is an example for the use of *Vyadhimarga* in *Chikitsa*.

- Some diseases like *Arshas* occurs on both *Margas* like *Bahya* and *Abhyantara* depending on *Doshagati* and *Vyadhi Marga* further *Chikitsa* is planned. For instance, *Arshas* in *Bahya Marga* is *Shashtrakrata*, *Arshas* in *Abhyantaramarga* is *Ashashtrakrta Chikitsa*.
- When treating the *Sthanika Doshas* care is taken not to disturb the *Agantu Dosha*.
- It is useful on the diagnosis and treatment of disease conditions like *Vishamamargas* since it is consider as a *Dhatujanya Vikara*.
- The concept of *Rogamarga* and *Doshagati* helps not only in diagnosing a disease but also guides in

planning treatment of diseases. For example, *Koshtagatha Doshas* are better taken out through *Vamana* and *Virechana*. For *Shakhagata Doshas* *Raktamokshana* will be the better modality of treatment.

Concept of Compartmentalisation

Figure-1 Compartmentalisation



Human body can be divided into four different compartments as follows

1. Alimentary tract or gastro intestinal tract
2. Intra vascular compartment
3. Interstitial compartment
4. Intra cellular compartment^[13]

Process of digestion in the alimentary canal and the assimilation of nutrients across mucosa of alimentary canal can be understood in the following manner.

Initially the food enters the alimentary tract starting from mouth to anus. This tract is further fragmented into several compartments by sphincters at various places for easy facilitation of the digestion of the ingested food. The ingested food moves from pharynx to stomach within seconds and will be stored in stomach for 2 hours. The chyme takes approximately 6 hours to enter the caecum. Thus through these mechanisms non absorbable macromolecules are converted to absorbable micromolecules. From the intestine these enter the intravascular compartment either by capillaries or by the lymphatics which are attached to the alimentary canal.

Intravascular compartment is where the transport of nutrients takes place from the alimentary canal into the interstitial spaces. Through capillaries these micromolecules enter into liver then inferior vena cava and from there heart and then through aorta the nutrients enter arteries and later into the capillaries. When the micromolecules are large enough like proteins and chylomicrons it will enter the lymphatics and then through thoracic duct it will enter the blood stream at the junction of left internal jugular vein and left subclavian vein, then through superior vena cava into heart and then capillaries.

Interstitial compartment comprises of the fluid in between the group of the cells. This compartment receives the nutrients from the intravascular compartment and sends the nutrients and other essential materials to interior of the cells which is termed as intracellular compartment and sends back the metabolites from the cells to the interstitial fluid.

Intracellular compartment is where the fluid portion present inside every cell is considered. It contains various micronutrients, electrolytes and cell organelles.

DISCUSSION

The specific path where the diseases occur is *Rogamarga*. According to Acharya Charaka, the term *Shakha* illustrates *Raktadi Dhatus* and *Twak*. In this *Shakha Marga*, the word *Rasa* is not mentioned because *Rasadhatu* is *Moola*^[14] and from *Rasadhatu* the other *Dhatus* are formed.^[15]

Twacha gets formed after the *Paka* of *Shukra* and *Shonita Ahara Rasa* taken by the mother determines the *Paka* of *Shukra* and *Shonitha*. Hence the *Shukra Shonita Paka Kriya* is based on *Rasa*.

The *Ankura (Beeja)* is considered as *Moola* for the formation of the *Shakha* (branches) of tree. Similarly, the *Rasa* is considered as *Moola* which helps in development of succeeding *Dhatus*.

So, *Shakha* includes 6 *Dhatus* and *Twak*. So, all the seven *Dhatus* are included in one path way as *Bahyarogamarga*.

As *Rasa* resides in *Twak*, it is not used in the *Shakha*. The *Twak* has been named so because any changes in the *Rasa* is expressed in the skin.^[16] Though *Rasa* is not directly mentioned in *Shakhagata Rogamarga* site, as the *Rasa* residing in the *Twak* it is understood the involvement of *Rasa Dhatu* in *Shakhagata rogamarga*.

Rakta (Rudhira) is considered under *Bahya rogamarga*, *Shakha Raktadaya Twak* by Acharya Charaka and *Vagbhata*.

But according to Sushruta while narrating term *Koshta*, he includes *Rudhira*^[17] (*Rakta*) which is present in *Yakrut* and *Pleehadi Ashayas*, hence *Rudhira (Rakta)* and *Rudhiraashaya* are considered under *Koshta*.

Pathophysiology of Compartmentalisation

Pathophysiological events occurring in the different compartments can be deciphered as follows: First there is affliction at the level of alimentary canal compartment. When a person consumes the substances which are heavier to digest or due to any other reasons impairing the digestive fire, this is responsible either for the proliferation of micro organisms in the alimentary canal or for the initiation of inflammatory reaction leading to the formation of

antigens. When a person is having loss of appetite, digestive enzymes are not in the active form and denaturing of the antigens will be restricted. This will lead to the damage to the alimentary mucosa and thus there is transfer of partially digested antigens into the interstitial space of the gastrointestinal lumen.

From the interstitial compartment these antigens travel through lymphatic system further these enter the blood stream at the junction of both right or left internal jugular vein and subclavian vein. From here it enters the blood stream and circulates all over the body till the capillaries at various parts of the body from where it moves to interstitial compartment and then intracellular compartment. This is the mechanism of manifestation of disease.

The alimentary tract compartment can be considered as *Mahasrotas* i.e., the *Koshta* or *Abhyantara rogamarga* extending from mouth to anus. The capillaries of GIT extending till the capillaries of cardiovascular system i.e., intravascular interstitial and intracellular compartments outside the bones and joints can be considered as the *Marga* containing *Raktadi dhatus* and *Twak* i.e., the *Bahya rogamarga* and finally the intravascular interstitial and intracellular compartments inside the bones and joints can be taken as *Marma asthi sandhi gata* or the *Madhyama roga marga*.

Understanding *Rogamarga* in terms of compartmentalization opens newer horizons in understanding how the different processes involved in *Shodhana chikitsa* might be affecting the different compartments in order for the elimination of vitiated *Doshas* from the body.

According to Acharya Charaka, in order to eliminate *Doshas* from the body first there ought to be temporary increase of *Doshas* in tissues followed by their dissolution, digestion and then opening up of the blocked channels of the body along with control of *Vayu*. Then these vitiated *Doshas* need to be brought from *Shakha* to the *Koshta*^[18]. This action is carried out by the *Poorvakarma* of *Shodhana chikitsa* like the *Deepana pachana snehana* and *Swedana*.

Deepana pachana has an effect of *Amapachana* in the *Koshta* which can be understood as the digestion of undigested particles in the mucous coated layer in the alimentary compartment. *Snehana* and *Swedana* for 3 to 5 days have its own specific effects on the compartments. While *Snehapana* softens the mucous layer of GIT for easy movement of the particles, *Bahya snehana* with procedure like *Abhyanga* softens the intracellular layer and creates an easy media for transportation of substances across interstitial, intravascular and into GIT. Action of *Swedana* can be understood as liquefaction of the adhered substances

in the intracellular compartment and facilitating their movement into interstitial compartment and then into intravascular compartment from where it enters into the alimentary tract and then gets eliminated out of the body.

Knowledge of prognosis is highly essential for treatment. The *Sadhyasadhyata* of *Rogamarga* is well understood and supported by Acharyas^[19]. The diseases of *Bahya rogamarga* are said to be *Sadhya*. Easy penetration of prophylactic drugs through intravascular interstitial and intracellular compartments explains the easy curability of diseases affecting these compartments. Diseases of *Madhyama rogamarga* are *Kruchra sadhya*, penetration of drugs through these compartments of bone and other hard tissues are comparatively difficult thus leading to a bad prognosis. Diseases of *Abhyantara rogamarga* are said to be *Sukha sadhya*, *Kruchra sadhya*, *Yapya* or *Asadhya* according to *Roga lakshanas*, explaining the prognosis of diseases affecting alimentary tract depends on the severity of the disease.

We can understand this based on the example of two cases. Case 1- A 45 year old man who is a known case of *Amavata* suffering from *Atisara* since 3 days and case 2- A 45 year old man otherwise healthy, suffering from similar complaint of *Atisara* since 3 days, in both the cases there is acute involvement of alimentary compartment (*Abhyantara rogamarga*) but it can also be seen that in first case there is chronic involvement of intravascular interstitial as well as intracellular compartments of the joints (*Madhyama rogamarga*). Involvement of multiple *Rogamargas* in this case makes it *Kruchra sadhya* compared to that of case 2. Hence appropriate treatment has to be planned to bring *Doshas* from *Shakha* to *Koshta* considering the involvement of different *Rogamargas*.

CONCLUSION

While the concept of *Rogamarga* showcases the wide array of disease pathologies, different compartments makes the picture even clearer. Understanding the mechanism of manifestation of diseases as mentioned in our classics and in contemporary science, analysis of both makes decoding the pathophysiology much easier allowing for ideal planning of treatment.

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