



UNIQUE JOURNAL OF AYURVEDIC AND HERBAL MEDICINES

Available online: www.ujconline.net

Review Article

A CRITICAL REVIEW OF *DHAMANI* FOR TRANSPORTATION OF *AMA* IN *AMAVATA*

Yadaw Bhan Pratap^{1*}, Awasthi HH²

¹Senior Resident & Ph.D Scholar, Dept. of Rachana Sharir, Faculty of Ayurveda, IMS, BHU, Varanasi, U.P, India

²Professor & Head, Dept. of Rachana Sharir, Faculty of Ayurveda, IMS, BHU, Varanasi, U.P, India

Received 19-01-2015; Revised 17-02-2015; Accepted 15-03-2015

*Corresponding Author: **Dr. Bhan Pratap Yadaw**,

Senior Resident & Ph.D Scholar, Dept. of Rachana Sharir, Faculty of Ayurveda, IMS, BHU, Varanasi, U.P., Pin-221005, Mobile no. 9451149505

ABSTRACT

Charaka and *Sushruta* believed that diseases were caused by a disturbance in the equilibrium of the three *Ayurvedic* humors, and that this disturbance was often a direct cause of the disease. They also recognized several remote causes, both external and internal, for example, entry of toxic materials from outside to inside through vessels, errors of living, natural decay from old age, and climate or weather that could play a role in the manifestation of disease. *Ama* is also an entity which causes vitiation in *dosha*, *dhatu* and *mala*. *Ama* is a pathological entity and causes abnormality in *srotas*, *dhatu* etc resulting into development of various diseases. *Ama* generates acute diseases and chronic conditions as well. *Amavata* is one of such chronic state of *ama*. Derangement of *kapha dosha* especially *shleshaka kapha* in *amavata* produces joint pain and swelling with tenderness which can be correlated with rheumatoid arthritis. *Ama* is the toxin that builds up in the body usually as a result of improper digestion. These toxins circulate through *dhamanis* in the body and typically deposit in weaker areas such as the joints. This leads to the arthritic symptoms of pain and inflammation.

Keywords: *Ama*, *Agni*, *Dhamani*, *Amavata*, Rheumatoid Arthritis, Free Radicals.

INTRODUCTION

Ayurveda is a comprehensive and integrative health science originating in India. *Ayurveda*, commonly translated as *the knowledge of life*, is part of the *Vedas*, an ancient Hindu text written in the Sanskrit language. **Human** body has three basic physical components *Dosa*, *Dhatu* and *Mala*, which are responsible for the stability of the body in their natural state while disequilibrium state causes diseases. There are two main objectives of *Ayurveda*—first is to maintaining health of individual and second is to alleviating ailments of diseased¹. *Susruta* says that, one who's *Dosas* (humors), *Agni*, *Dhatu* and *Malas* are in balanced state and whose senses, mind and soul are functioning properly is a healthy individual².

Ama- *Ama* is also an entity which causes vitiation in *Dosa*, *Dhatu* and *Mala*. *Ama* is a pathological entity and causes abnormality in *Srotas*, *Dhatu* etc resulting into development of various diseases. *Ama* is responsible for the initiation of many diseases in body hence during the description of synonyms of *Vyadhi*, *Amaya* (disease produced due to *Ama*) synonym is also given³. The term *Ama* is literally means un-ripped, immature or incompletely formed is referred in *Ayurvedic* medicine as the factor, which arise or event, which follows as

consequence of hypo functioning of *Agni*. The substance, which is not properly digested, disintegrated, foul smelling excessive in quantity, slimy in nature and produces stiffness of the whole body is known as *Ama*^{4,5}. *Ama* is produced also due to accumulation of by-products of metabolism as well as metabolic waste not properly eliminated or utilized in the body. Here it is noteworthy that whenever there will be improper metabolism due to impaired functioning of *Agni* then only *Ama* will be formed. This process is an outcome of the deviation of main metabolic pathway in the direction to form defective metabolic end products. *Ama* is a condition that occurs when the immune system mistakenly attacks its own constituent parts as self and destroys its own cells and tissues. The *Ama* and antibodies then interact with each other to form an immune complex's and damages the joints and other body parts leading to acute pain and swelling. According to new researches, it has been stated one of the most attractive explanations for the autoimmune phenomenon has centered on the exposure to various environmental factors such as infections that are capable of initiating disease in genetically predisposed individuals. Synovial fluid of patients with rheumatoid arthritis shows the presence of bacterial DNA and their products arising from naturally occurring commensalism

in the gut and other mucosal surfaces. One explanation for the presence of gut commensalism in the joints of rheumatoid arthritis patients could be a leaky gut or loss of intestinal integrity that facilitates the migration of gut commensalism or their products to the peripheral organs. The bacterial products released in the joints may result in local and systemic immune stimulation⁶.

Dhamani- To understand the concepts of *Dhamani*, we should first understand the relation of *Srotas*, *Sira*, *Dhamani* and *Nadi*. We generally relate all these as the channels of the body which are assigned a job of carrying substances within the body. It is well admired fact that *Acharya Susruta* managed to trace even minute channels present in the body even when they were very difficult to be traced with naked eyes. He was able to recognize the ever pore in the skin that had its own nerve, blood and lymphatic supply. *Acharya Charaka* said that, there were about 700 *Siras*, 200 *Dhamanis*, which could be easily enumerated but when the minute *Siras* and *Dhamanis* were counted with their tributaries and branches, their number was estimated to be the same as the number of hair follicles which was distributed throughout the body. Approximately their number was calculated at 2 9956⁷. *Acharya Charak* has described about the circulation enumerated *Dhamani* (artery) as the first of transporting channel in which due to the each beat of heart pulsation occurs because of *Dhmanat* (pulsation) arteries called as *Dhamanis*. In the order *Srotansi* come second for which *Charak* has mentioned that because of *Sravanam* (oozing, filtering or permeation). This is called *Srotas* (*Sravanat Srotamsi*). In the perspective of modern anatomy and physiology it can be well understood that in the circulatory cycle arteries are the first structure through which blood goes to the different parts of the body further these arteries are branches and re-branch as finer arterioles. The arterioles are further branched into finer capillaries through which the nutrient materials to the tissues are supplied by oozing and permeation. The structure as, *Siras* (veins) taking part in circulation are stated as third in the order. After *Srotamsi* come *Siras* for which *Charak* has mentioned that because of *Sarana*⁸.

Free radical- There is some views suggesting those free radicals are pathologically correlated with *Ama*. In this regard it is said that property and manifestation of free radical are similar to those of *Ama*⁹. Free radicals are an unpaired electron. When a molecule loses or gains a single electron in its outer orbit, it becomes free radical. Thus a free radical is defined as, a molecule that can exist independently for a period of time with one or more unpaired electrons. Free radicals are unstable chemicals formed in the body during normal metabolism and exposure to environmental toxins such as environmental pollutions. These free radicals and other reactive oxygen species such as super oxides, H₂O₂ and OH⁻ radicals are molecular species capable of independent existence that. They are unstable chemical formed in the body and can cause degenerative changes and other diseases¹⁰.

Transportation of Ama- The digestion of food is carried out from oral cavity up to the small intestines and absorption of digested food starts from small intestine to large intestines into the venous system. The main factor concerned in the production of *Ama* is *Mandagni* and impairment of the

mechanism responsible for the secretion of the digestive juices¹¹. The absorption of *Ama* starts from intestine to enter into the venous system. The absorption at small intestines is the most important, which drains mainly by superior mesenteric vein and inferior mesenteric veins. The superior mesenteric vein and splenic vein combines to form portal vein and inferior mesenteric vein will be attached to the splenic vein. The portal vein now enters into the liver where maximum metabolic process are completed and from there the absorbed food materials along with blood will enter into inferior vena cava which ultimately reaches to the right atrium which is mixed along with the deoxygenated blood drain from the whole body. From right atrium it reaches to the right ventricle and from there through pulmonary trunk it reaches to lungs, where it is converted into oxygenated fluid and reaches to left atrium through pulmonary vein. Then it enters into the left ventricle from here the heart first receives the blood with *Ama* and then it gives to rest of the body through aorta for nourishment of the tissues¹². Now *Ama* enters into small and big joints through articular arteries. In *Ayurveda* these *Dhamanis* are called as *Rasavaha Dhamanis*.

Amavata- *Amavata* is most common chronic joint disease which is spreading very fast now-a-days and correlated with rheumatoid arthritis. In *Amavata* as *Ama* gets accumulated in the joints leads to restriction in movement of joint, pain, tenderness, swelling in affected site or joint. *Ama* is major factor for production of *Amavata*. Due to ingestion of the etiological factors like disagreement dietetics and drinks, hindered activities or behavior, slowness or inactivity in the digestive mechanism *Amavata* is generated. Unchangeable or sedentary habits, consumption of sticky food followed by exercise etc. disturbs the normal function of *Agni*. As a result, food not properly digested, yields *Amarasa* in the *Amashaya* and this undergoes fermentation and putrefaction because of its retention for longer duration, manifests *Ama*. Then it absorbed in the system and is taken up by the aggravated and vitiated *Vayu* especially to the *Kaphasthanas* mainly *Amashaya*, *Sandhi*, *Uras*, *Kantha* etc. and the same undergoes in the above mentioned sites and enters the *Dhamani* by circulation with the help of *Vata*. Here it amalgamates with the existing *Dosas* and vitiated further in excess and produces distress in the body channels due to its excessive unctuous nature and some other different qualities of *Amarasa*. This leads to general weakness and heaviness in the pre-cordial region and this *Amarasa* is responsible for the genesis of symptom complex, that's why this disease is considered challenging and difficult to treat. So, both *Ama* and *Vata* aggravates simultaneously and enters *Kostha*, *Trika* and *Sandhi* and ultimately leads to *Stabdhatata* (stiffness) in the body, this is called '*Amavata*'¹³.

Etiological Factors- *Charaka* has very elaborated view regarding etiology and pathogenesis of *Ama*. He says that not only food taken in excess quantity cause production of *Ama* but heavy, cold, dry, impure etc. diets may also cause *Ama*. He also indicates mental factors causing *Ama* like anger, greed, jealousy, grief, fear etc. Intake of wholesome food in proper quantity do not get properly digested when individual is afflicted with these mental conditions¹⁴. Again the impairment of *Agni* may be brought

about by abstinence from food, indigestion, never-eating, irregular diet habits, indulgence in incompatible food items, the consumption of cold substances, mal-effects of *Virechana*, *Vamana*, *Snehana*, wasting of tissue due to diseases, unfavorable changes in place, climate, season and suppression of natural urges cause impairment of *Agni* which fails to digest even the most easily digestible light food. Thus, the undigested food attains fermentation leading to the onset of toxic state¹⁵. Thus produced *Ama* when get amalgamated with *tridoshas* and *dhatus* as well as *mala*, a condition called *sama* is produced¹⁶. Wherever *Ama* situated and vitiated by *Dosas* it produces respective symptoms and disease¹⁷. *Chakrapanidutta* says that, manifestation of certain reaction inside the body due to under processed *Annarasa* is called *Ama-Pradosha*. *Acharya Gangadhara* says that resulting action of *Ama* inside the body is called *Amadosha*.

DISCUSSION

According to *Susruta*, a disease is produced in six steps viz. *Sanchaya*, *Prakopa*, *Prasara*, *Sthanasamsraya*, *Vyakti* and *Bhedadvstha*. In case of diseases produced by *Ama*, *Sanchaya* of *Ama* is first step. It happens due to impairment of *Agni* at that place. Similar is the case with free radicals. At certain site due to impairment in action of free radical scavengers, increased production of free radicals takes place. When this accumulation of *Ama* is in small amount it does not cause any major problem, but if treatment is not given, this *Sanchaya* exceeds the threshold. Then it starts producing minimal symptoms, this is the state of *Prakopa*. After this state, *Ama* goes into circulation. Now this *Ama* requires a site for creating disease in form of *Kha-vaigunya*¹⁸, which should be considered as weakness in any body tissue. Therefore depending upon this site of *Kha-vaigunya* different diseases are produced in different manner from same root cause, i. e. *Ama* or free radicals. This is the *Sthana-Samsryawastha*. Now symptoms of diseases become very clear. After this stage, pathology at gross level becomes visible. If even at this stage the disease is not treated is not treated it leads to complications, which are described in *Ayurvedic* classics as *Updravas*. From above discussion, it becomes clear that the method of production of disease at its basic level is described in similar manner in modern as well as in *Ayurvedic* literature. The *Madhava Nidana* states that when the digestive fire is weak and *Ama* is allowed to accumulate, it moves to the different locations of *Kapha* in the body. *Kapha* is derived from the Sanskrit root word 'Shlesh,' which means 'to embrace.' Thus, *Kapha* binds the joints together, nourishing and protecting the articular surfaces. Like *Ama*, *Kapha* is *Guru*, *Snigdha* and *Shita* in nature. For this reason, *Ama* typically associates with *Kapha* before the other two *Dosas*. When *Ama* is allowed to accumulate in the joints they become congested. Soon the *Dhamanis* (circulatory channels) that supply these regions become congested as well. Eventually this blockage affects the *Hridaya* (heart). Once *Kapha* has become vitiated the other *Doshas* eventually become involved. To restore homeostasis the body will initiate local inflammatory processes (i.e. *Pitta*) in the joint in order to cook the accumulated *Ama*. Despite the inflammatory component of

this condition however, the hallmark of *Amavata* is the progressive pathological influence of *Vata* in the synovial joints, and the resultant joint degeneration. Although *Amavata* is primarily a disease of *Vata*, it is differentiated into three basic subtypes, namely, *Vata*, *Pitta*, and *Kapha*. This differentiation allows the practitioner to identify a greater range of subtlety within the diagnosis and treatment of *Amavata*. There may also be a combination of any two or three of the *Dosas*. If one *Dosa* is involved the condition is said to be easy to cure. With two *Dosas* the situation is more difficult, and with all three *Dosas* in a state of vitiation the condition is said to be incurable. Similarly, when there is migrating pain and severe inflammation in the joints of the hands, feet, head, heels, waist, knees and thighs, *Amavata* is said to be incurable.

CONCLUSION

Ama is the root cause of nearly all the diseases. Though all the *Dosas* take part in the causation of the disease, yet as clear from the term 'Amavata', *Ama* and vitiated *Vata* play the dominant role in the pathogenesis of disease. It is produced mainly because of *Mandagni* (decreased digestive and tissue fire) i.e. impairment of the mechanism for the secretion of digestive juices and thereby digestion. Food which is not properly digested, remains in the stomach whether half digested or not full digested and stays there for some time after that it starts moving in the channels of body and creates obstruction (*Strotorodh*), after that it leads to production of diseases and produces symptoms like pain and stiffness in the body. According to above description, it appears that *Amavata* of *Ayurveda* is very much similar to rheumatism of modern medicine. Rheumatism is a general term to indicate any painful disorder in which the peripheral symptoms are related to joints or their supporting structures. Due to the similarity of its biophysical properties, *Amarasa* goes to *Slesmasthan* through *Dhamanis* and stays there. Here it is a contaminated further and comes through *Siras* in general circulation in the body where it is vitiated by various *Dosas* and is converted into an extremely virulent substance, which has got the tendency to localize itself into various joints. This extremely virulent state of *Ama* may be compared with the antigen in the complex etiology of rheumatoid arthritis.

REFERENCES

1. Agnivesha. Charaka Samhita. Sutrasthana 30/26. Rajeshwar Dutt Shastri et al, Editors. Varanasi: Choukhambha Bharati Academy; Reprinted; 2005; 587.
2. Sushruta. Sushruta Samhita. Sutrasthana 15/48. Shastri Ambikadutta, Editor. Varanasi: Choukhambha Sanskrit Sansthan; Reprinted; 2007. p.56.
3. Byadgi PS, Srotas: Parameswarappa's Ayurvediya Vikriti Vigyan & Roga Vigyan. (1st edn), Choukhambha Sanskrit Sansthan, Varanasi, India, 2007.
4. Acharya Vagbhatta, Editor Atrideva Gupta, Astangahridaya sutrashan, Re edition, chap 8/13-14,

- Varanasi;chauhambha Sanskrit Sansthan; 2005 P. 75.
5. Madhavakara, Editor Yaduanadana Upadhaya, Madhava Nidan, Reprint, Vol. 1 Chap. 25/4 Varanasi;chauhambha Sanskrit Sansthan;2006 P. 509
 6. Luckey D, Gomez A, Murray J, White B, Taneja V, Bugs & us: The role of the gut in autoimmunity, Indian J Med Res, 2013; 138: 732-743.
 7. Agnivesha,Sharirshankhya shariram 7th chapter, sharir sthan in Sharma RK and Dash B. Charak samhita (with English translation and critical exposition based on Chakrapani dutt's Ayurveda dipika) vol II, Chowkhambha Sanskrita Series, Varanasi, sixth Edition; 2009. p.457.
 8. Agnivesha, Arthedasamahamuliya 30th chapter, sutra sthan in Sharma RK and Dash B.Charaksamhita (with English translation and critical exposition based on Chakrapani dutt's Ayurveda dipika) vol I, Chowkhambha Sanskrita Series, Varanasi, sixth Edition; 2009. p.596.
 9. Kumar Baldev, Dave Hetal, Kumari Madhuri. Pathological correlation between ama and free radicals with special reference to madhumeha. The Journal of Research and Education in Indian medicine 2008; xiv-2:61-64
 10. Wikipedia. Radical (Internet) 2013 (Modified on 2013 july12; cited on 2013 August 8). Available from: en.wikipedia.org/wiki/Radical (chemistry)
 11. Dwarkanatha C, Introduction to kayachikitsa, 3rd edition 1996, Varanasi: Choukhambha Orientalia; p.66
 12. Dwarkanatha C, Introduction to kayachikitsa, 3rd edition 1996, Varanasi: Choukhambha Orientalia; p.69
 13. Ayurvediya Vikriti Vijnana and Roga Vijnana Vol. II by P.S. Byadgi edition 2009, Chaukhambha Publications, New Delhi p 204-05
 14. Agnivesha.Charaka Samhita. Sharma PV, Editor. Vimanasthana 2/8-9.Varanasi: Choukhambha Orientalia; Reprinted; 2008. p.311.
 15. Agnivesha.Charaka Samhita. Sharma PV, Editor. Chikitsasthana 15/42-44.Varanasi: Choukhambha Orientalia; Reprinted; 2008. p.252.
 16. Vagbhata. Astanga Hridaya. Gupta Atridev, Editor. Sutrasthana 13/26.Varanasi: Choukhambha Sanskrit Series; 1970. p.99.
 17. Sushruta. Sushruta Samhita. Shastri Ambikadutta, Editor. Uttartantra 56/10.Varanasi: Choukhambha Sanskrit Sansthan; Reprinted; 2009.p.528.
 18. Kaya Chikitsa, Editor Prof. Ajay Kumar Sharma Chap. 9/1Delhi; Chaukhambha Orientalia; 2009 P. 231.

Source of support: Nil, Conflict of interest: None Declared