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Conceptual study of Amaavsta Pachyman Avstha Pakwaavsta and CRP level in Amavata w.s.r to Rheumatoid Arthritis

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Abstract

This study looks at the *Ayurvedic* ideas of Amavavstha, Pachyamam Avastha, and *Pakwavastha* in the context of *Amavata* (rheumatoid arthritis) and how they relate to C-Reactive Protein (CRP) levels, which are a modern biomarker for inflammation. *Amavata*, a condition marked by inflammation and pain in the joints, is thought to be caused by poisons called ama that build up as a result of *dosha* imbalances. *Ama-avstha* is the stage in which *ama* builds up, resulting in localised symptoms and very high CRP levels, which are indicative of inflammation. *Pachyaman-avstha* is the stage in which the sign and symptoms of Amavata stagnants. *Pakwa-avastha* in which the body digests ama, perhaps resulting in a normalisation in inflammation and CRP levels. In order to properly manage *Amavata*, this conceptual framework emphasises the significance of an integrative strategy that combines dietary adjustments, herbal therapy, and detoxification procedures. The correlation between these *Ayurvedic* stages and CRP levels provides information on how to best treat rheumatoid arthritis, contributing to a comprehensive understanding of inflammatory diseases. To confirm these connections and improve treatment outcomes, more investigation is necessary.

Keywords: *Amavata*, Rheumatoid arthritis, C-Reactive protein, *Amaavstha*, *Pachymanavastha*, *Pakvavstha*

Introduction

Ayurveda nomenclature of diseases is based on vitiated *dosha*, *dushya*, *marga*, *nidan*, *lakshan*, *samprapti*, and other factors. *Amavata*, a disease entity, is characterised by two predominant pathological factors: *Ama* and *Vata* [1]. It has been described in *Ayurvedic* texts since ancient times. The *Amavata* as a special disease entity was mentioned first by *Madhavakar*. With its pathogenesis and clinical manifestations closely resembling rheumatoid arthritis, a chronic, progressive autoimmune arthropathy. *Ayurveda* texts like *charak samhita*, *sushruta samhita*, *Ashtang hridaya* and *Ashtang samgrah* had widely mentioned about *Ama* and *Amavrita Vata*. First time, *Madhav nidana* mentioned *Amavata* as separate disease. After that *vangsena*, *chakaradutta*, *bhaishhya ratnavali* has elaborated the treatment modalities of *Amavata*. *Ayurveda* focus on *Nidaan* i.e cause of disease and symptoms of disease. *Ayurveda* has described detailed list of causative factors of *Amavata*. So study of this causative factor will help scientific society to eradicate this disease.

Conceptual Study**Etymology of Amavata**

आमेना सहिता वात आमवात

‘The virulent *Ama* circulates in the whole body propelled by the vitiated *vata doshas* producing block in the body channels that stations itself in the sandhi giving rise to *Amavata* [2].

1. The combinations of ‘*Ama*’ and *vata* form *Amavata*. It shows the predominance of *Ama* & *vata* in the *samprapti* of *Amavata* [3].
2. *Ajeerna* produce ‘*Ama*’ & along with *vata* it produce *Amavata* [4].

Definition of Ama

1. The first *Rasa dhatu*, which has been inadequately digested due to the weakness of digestive fire and accumulating in the stomach in the abnormal state, is known as *Ama* [5, 6].
2. The undigested *Adya Ahara dhatu* is *Ama* [7].

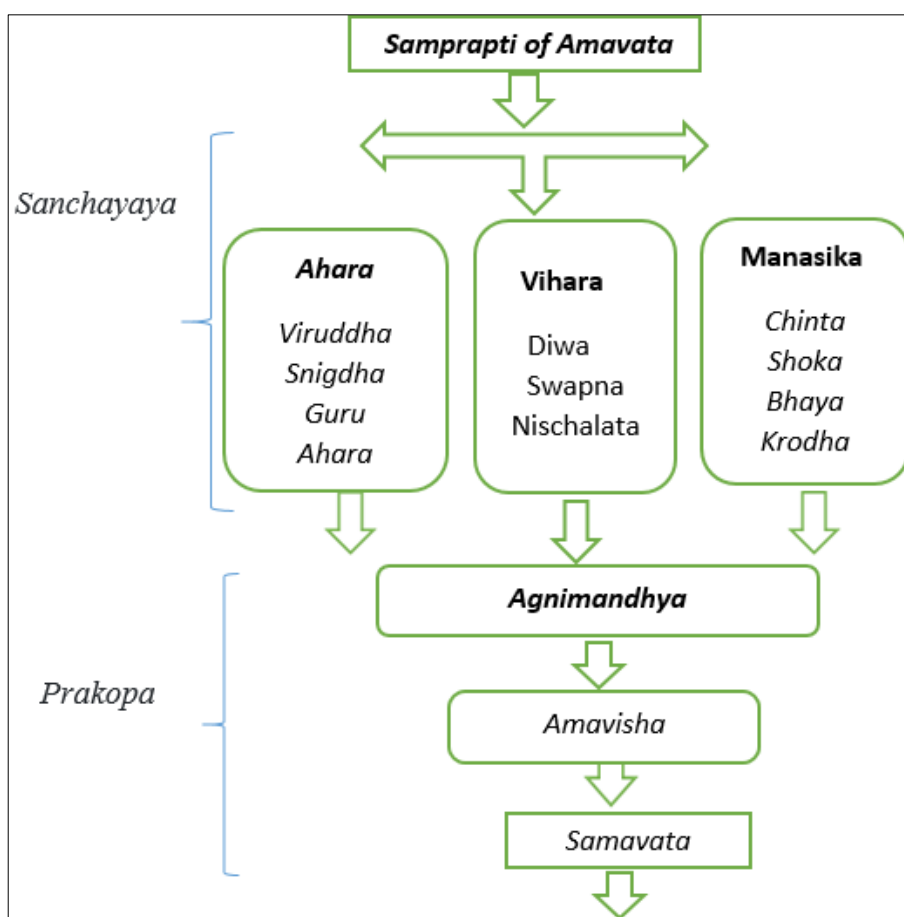
Causes of Amavata

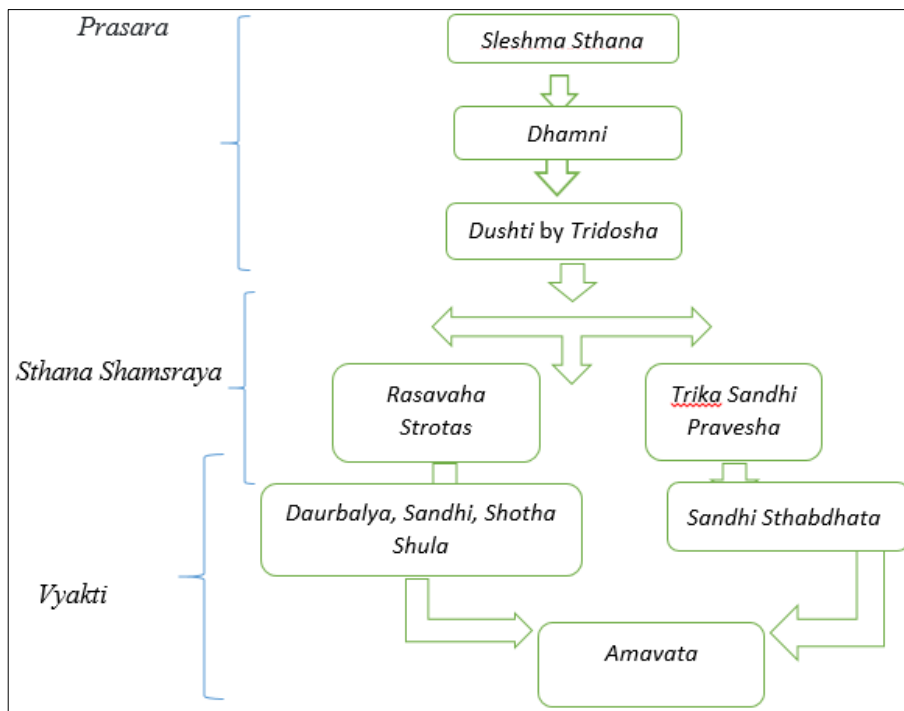
Agnimandhya is the one who administers *ama*. Without *agnimandya*, even a modest amount of light food is

indigestible. Ungrown food becomes *suktatwa* (fermented), leading to the development of fatal illnesses like *ama*.(8) the following causes of *agnimandhya* exist:

<i>Ama</i>	Properties of Ama: <i>Snigdhatvam</i> <i>Pichilatwam</i> <i>Nana varnam</i> <i>Dravatvam</i> <i>Gurutwam</i>	Pathological Symptoms <i>Anila moodata</i> <i>Srotorodha</i> <i>Balabramsha</i> <i>Gourava</i> <i>Manda</i>
	Causes of Ama:	Causes of Vataprakopa
<i>Aharaja</i>	<i>Athi bhojanam</i> <i>Vishamasanam</i> <i>Asatmyaharam</i> <i>Gurubhojanam</i> <i>Abhojanam</i> <i>Bhojanam Ajeerna</i>	<i>Atisheegrha Abhojanam.</i> Intake of mainly <i>tikta</i> , <i>katu</i> and <i>kashaya rasas</i> food. Inadequate consumption of food in <i>alpa bhojanam</i> . <i>Roksha</i> , <i>ushna sheeta</i> and <i>laghu</i> food products are frequently eaten.
<i>Viharaja</i>	<i>Vega vidaranam</i> <i>Swapna viparyayam</i> <i>Desa kala ritu vaishamyam</i>	<i>Vegadharana</i> <i>Vegodheerana</i> <i>Jagaranam</i> <i>Ativyavaya</i>
<i>Manasika</i>	<i>Chinta</i> <i>Dukha sayya</i> <i>Shokam</i> <i>Krodham</i>	<i>Vata prakopa</i> , influenced by emotional factors like <i>bhaya</i> , <i>krodha</i> , and <i>chinta</i> , can lead to various diseases, diminished strength, appearance, happiness, lifespan, and obstruct vital operations ^[9] .

Samprapti of Amavata





Samprapti Ghataka (Factors for Pathogenesis) of Amavata

- *Dosha:* Vata-Kapha-pradhana Tridosha (Samana and Vyana Vayu, Kledaka and
- *Shleshmaka Kapha* and *Pachaka Pitta*)
- *Dushya:* Rasa.
- *Srota:* Rasavaha
- *Srotodushti:* Sanga.
- *Agni:* Jatharagni, Dhatvagni.
- *Rogamarga:* Madhyama.
- *Udbhava Sthana:* Amashaya, Pakvashaya.
- *Adhithana:* Sleshma Sthana (Specially Sandhi)
- *Vyadhi Swabhava:* Chirakari.

2. *Haridaya gourava* (heaviness in chest)
3. *Gatra stabdam* (Stiffness of the body)
1. 4. *Apaka* (indigestion)
4. *Anga marda* (Aching all over body)
5. *Gourava* (Heaviness)
6. *Aruchi* (Loss of taste)
7. *Alasya* (Lack of enthusiasm)
8. *Jwara* (Fever)
9. *Sandhi vedana* (Joint pain)

Roopa of amavata

Based on her indications and symptoms, *Roopa* can be categorized into the following:

- *Pratyatma* is the first of the four yogas
- *Samanya* comes in second
- *Vishishta* is the third member of the *Vishishta* family
- *Amavata Pravridha*

Prodromal symptoms/purva roopa of amavata(10)

Avyakta lakshana prior to the manifestation of disease is considered as the *purva poorpa*.

1. *Dourbalyam* (Weakness)

Pratyatma Lakshanas:	Dosha	Severity	Classification according to the clinical appearance:
Shoonatanga Angamarda Aruchi Trishna Gaurava Alasya Jwara Sandhi shotha Sandhi shoola Gatrasthabdhata Samanya lakshanas	Anubandha of one dosha: Vatanuga Pittanuga Kaphanuga	Anubandha of two dosha: Vata-pittanuga Vata-Kaphanuga Pitta-kaphanuga Involvement of all the three doshas: Tridoshaja	1. Samanya amavata 2. Pravridha Amavata.
			Snehi Pakvama Sarvanga. Vistambi Gulme

Signs of Amavata

Amavata is a joint disorder causing discomfort, stiffness, and soreness. It's caused by *ama* development, linked to *dosha* and triggered by *vata* dosha. *Ayurvedic acharyas* categorize stages into three based on symptoms, state, and complications [13]. *Rheumatoid arthritis (RA)* is a chronic auto immune disease affecting joints, causing inflammation and damage to

cartilage. It affects small arthrodial joints in hands and feet. Approximately 0.8% of the world's population is affected, with prevalence ranging from 0.5% to 0.75% in India. Women are 2 to 4 times more affected than men.

Similarity between Amavata and Rheumatoid Arthritis

Rheumatoid Arthritis	Amavata
Morning stiffness	<i>Gatra sthabdata or sandhi sthabdata</i>
Arthritis of 3 or more joints	<i>Bahu sandhi shotha</i>
Arthritis of hand joints	<i>Hasta, sandhi shotha</i>
Symmetrical arthritis	<i>Bahu sandhi shotha (ubhaya)</i>
Rheumatoid nodule	Angavaikalya
Rheumatoid factor	----
Radiological changes	----

Clinical features of amavata in comparison with rheumatoid arthritis

- Hasta sandhi shotha & shoola* – Inflammation & severe pain in metacarpo-phalangeal joints & proximal inter phalangeal joints are affected most severely in Rheumatoid Arthritis.
- Paad sandhi shotha & shoola* – The feet are often involved especially the metatarso phalangeal joints & subtalar joints are affected.
- Jaanu gulfa sandhi shotha* – R.A. involves first smaller joints of hands & feet and then symmetrically affects the joints of wrist, elbow, ankle & knee.
- Angagourav* – Feeling of heaviness in the body.

- Stabdhatta* – In R.A. stiffness of joints, particularly observed in morning hours.
- Jaadhya* – Due to deformity limited movements in the joints, weakness in grip or triggering of fingers occurs in R.A.
- Angavaikalya* – Deformity in joints.
- Sankocha* – Contractures.
- Vikunchana* – This can be compared to volar subluxation, ulnar deviation which occurs at metatarsophalangeal joints and bilateral flexion contractures of the elbow are observed in R.A.
- Angamarda* – Body ache, myalgia occurs in R.A.
- Other joints are involved in Chronic Rheumatoid Arthritis

Table 2: Lakshans According to different Ayurvedic classics ^[12-16]

No.	Lakshana	MN	B.P.	B.R.	Y.R.	G.N.	A.N
1	<i>Agnidourbalya</i>	+	+	-	+	+	-
2	<i>Alasya</i>	+	+	-	+	+	-
3	<i>Anaha</i>	+	+	-	+	+	-
4	<i>Angamarda</i>	+	+	-	+	+	-
5	<i>Anga sonata</i>	+	+	-	+	+	-
6	<i>Antra kujan</i>	+	+	-	+	+	-
7	<i>Apaka</i>	+	+	-	+	+	-
8	<i>Aruchi</i>	+	+	-	+	+	-
9	<i>Bahu mutrata</i>	+	+	-	+	+	-
10	<i>Bhrama</i>	+	+	-	+	+	-
11	<i>Chardi</i>	+	+	+	+	+	-
12	<i>Daha</i>	+	+	-	+	+	-
13	<i>Gourava</i>	+	+	-	+	+	-
14	<i>Hritgraha</i>	+	+	-	+	+	-
15	<i>Janghadi Pradesha Vyadha</i>	-	-	+	-	-	-
16	<i>Jwara</i>		+	+	-	+	-
17	<i>Kukshi Kathinyata</i>		+	+	-	+	-
18	<i>Kukshi sula</i>		+	+	-	+	-
19	<i>Murcha</i>		+	+	-	+	-
20	<i>Nidra Viparayaya</i>		+	+	-	+	-
21	<i>Pandu Varna</i>		-	-	+	-	-
22	<i>Prasekam</i>	+	+	-	+	+	-
23	<i>Sandhi gourava</i>	+	-	-	-	+	+
24	<i>Sandhi Rujha</i>	+	+	-	+	+	+
25	<i>Sandhi shotha</i>	+	+	-	+	+	+
26	<i>Sandhi Graha</i>	-	-	-	-	-	-
27	<i>Sosha</i>	-	-	+	-	-	-
28	<i>Trishna</i>	+	+	+	+	+	-
29	<i>Ushnata</i>	-	-	+	-	-	-
30	<i>Utsaha Hani</i>	+	+	-	+	+	-
31	<i>Vairasyam</i>	+	+	-	+	+	-
32	<i>Vishuchi</i>	-	-	+	-	-	-
33	<i>Vitvibandha</i>	+	+	-	+	+	-
34	<i>Vruschika damsavata peeda</i>	+	-	-	-	+	-

Sr. No	Nava Amavata	Pravrudha Amavata	Jeerna Amavata
1.	<i>Aruchi</i>	Involvement of <i>hasta, pada siro, gulpha, trika</i> etc	Destruction of Articular cartilage
2.	<i>Alasya</i>	<i>Shotha</i>	<i>Stabdhatta</i> Osteoporosis
3.	<i>Gourava</i>	Extreme pain	Deformities
4.	<i>Jwara</i>	<i>Praseka, aruchi</i>	Poly arthritis
5.	<i>Hrillasa</i>	<i>Hridaya gourava and hritgraha</i>	-
6.	<i>Apakthi</i>	<i>Chardi, bhrama, moorcha anaham</i>	-

Arthralgia is a common symptom in conditions like osteoarthritis, rheumatoid arthritis, and gout. Rheumatoid arthritis is an autoimmune disorder causing joint pain and inflammation. *Amavata*, a disease causing joint pain and inflammation, increases C-reactive protein levels due to inflammatory stimuli, infection, inflammation, and neoplasia. A study found a close and positive association between *Amavata* type and C-reactive protein concentration. The CRP test is positive in 90% of *Amavata* patients, suggesting an inflammatory nature of the disease^[17]. *Amavata* is defined by inflammation and pain in the joints that are thought to be

caused by *Ama* building up as a result of compromised digestive functions^[18]. Comprehending the discrete phases of *amavata* is imperative for efficacious *Ayurvedic* therapy approaches and their association with modern medical diagnostics such as CRP. One accurate indicator of systemic inflammation is CRP. Monitoring CRP levels in the context of rheumatoid arthritis and *amavata* offers insights regarding the degree of inflammation. Based on their *Amaavastha* by laboratory study, i.e., CRP test, we can divide *Amavata* into three groups.

	<i>Aamavastha</i> (Stage of Ama Formation)	<i>Pachyaman Avastha</i> (Stage of Digestion)	<i>Pakvavastha</i> (Stage of Maturation)
Definition:	The phase where <i>Ama</i> is produced due to impaired digestion and metabolism and exacerbates the all the Symptoms condition.	The stage where <i>Ama</i> decreases.	The stage where all symptoms vanishes
Symptoms:	Patients experience severe joint pain, stiffness, swelling, and systemic symptoms such as fever	Fatigue, malaise, mild joint pain, and digestive disturbances are common	Relief in pain and inflammation occurs as treatments are applied
According to <i>Ayurvedic</i> point of view (<i>Madhav nidan amavata 6to9 Shlok</i>)	Hasta, pada, shiro, Gulfa, Trik, Janu, Uru sandhi Shool, Shotha Ama Sarva Sharir Sanchar Sandhigat Shool, Shotha, Araktavarnata, Ushnaparsha, Sprash-asahava	Angmarda, Aruchi, Trushna, Alasya, Jwara, Apaka, Shotha	All the symptoms vanishes
Pathophysiology	Mature <i>Ama</i> aggravates <i>Vata dosha</i> , causing significant inflammation and potential joint erosion, reflecting a heightened inflammatory response.	Accumulation of undigested food leads to toxic metabolic products circulating in the body, setting the stage for inflammation	<i>Ayurvedic</i> therapies promote the digestion of <i>Ama</i> , facilitating recovery and restoration of joint health
C-Reactive Protein (CRP) Levels	High CRP levels are often noted in <i>Pakvavastha</i> , reflecting the exacerbation of the inflammatory process and the immune response	Elevated CRP levels can be observed in the initial stages of <i>Amavata</i> , indicating systemic inflammation as <i>Ama</i> begins to form	As treatments progress and <i>Ama</i> is digested, a decrease in CRP levels is expected, signalling an improvement in the inflammatory state

Joint Deformity in R.A.

1. Swan neck deformity in interphalangeal joint.
2. Boutonniere (Deformity in R.A. with flexion at proximal interphalangeal joint & hyperextension at distal interphalangeal joint).
3. Z deformity in the thumb.
4. Volar subluxation and ulnar deviation occurs at metacarpophalangeal joint.
5. Bilateral flexion contractures of the elbow.
6. Synovitis at the wrist may cause carpal tunnel syndrome.

Diagnosis of R. A.

The diagnosis of R.A. is essentially clinical since there is no specific laboratory test to diagnose it. The occurrence of symmetrical peripheral inflammatory polyarthritis along with early morning stiffness should suggest the possibility of R.A. American Rheumatism Association (A.R.A.) Criteria for Diagnosis:

1. Morning stiffness (>one hour).
2. Arthritis three or more joints area.
3. Arthritis of hand joints.
4. Symmetrical arthritis.
5. Rheumatoid nodules.
6. Presence of Rheumatoid factor.
7. Radiological changes (Hand & Wrist).

Discussion

Interrelationship of States and CRP Levels

The relationship between the *Ayurvedic* stages of *Amavata* and CRP levels can be significant:

- **In *Ama-avstha*:** As the condition progresses, CRP levels are peak due to chronic inflammation. Management strategies might include anti-inflammatory herbs and therapies to bring these levels down.

- **In *Pachymanavstha*:** CRP levels may start to rise as *ama* accumulates, indicating inflammation. Dietary changes and detoxification is crucial.
- **In *Pakvavstha*:** With effective treatment, CRP levels normalise indicating that *ama* is being processed and eliminated. Continued monitoring can help guide treatment adjustments.

Conclusion

The three different phases of *Amavata-Aamavastha*, *Pakvavastha*, and *Pachyaman avastha*-provide an in-depth understanding of how the illness develops. The relationship between these phases and CRP values improves our capacity to track and treat patients' inflammatory processes. The potential for improving patient outcomes by fusing contemporary medical diagnostics with *Ayurvedic* principles is supported by this integrated approach.

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