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# Ayurvedic Approach in a Long Standing Active Rheumatoid Arthritis associated with Inflammatory Anemia – A Case Study

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**Abstract:** RA (Rheumatoid Arthritis) is a chronic, progressive autoimmune disease, which causes pain, inflammation, stiffness, swelling of the joints and sometimes also showing extra articular symptoms. Prevalence of RA is 1 % worldwide and is increasing with population growth. AI (Anemia of Inflammation) is another challenge in chronic patient of RA. Like any other autoimmune diseases, RA occurs more commonly in females than in males, with a 2–3:1 ratio. Modern medicines advise NSAID's, anti-inflammatory drugs, steroids and disease-modifying anti-rheumatic drugs for the management of RA, which has limitation for long-term uses, and sometimes having severe side effects.

RA is very similar to Aamavata, in Ayurved. A 36-year-old female suffering from multiple joints pain associated with swelling, morning stiffness, body ache, loss of appetite and restricted movements of joints, along with low concentration of Hb with symptoms of anemia for last 5 years was diagnosed as Aamavata/RA (having 08/10 score as per classification criteria for RA, ACR/EULAR, 2010). Diagnosis of RA may confuse with anemia either a separate pathology or as a secondary manifestation of inflammation (AI).

In case of mild to moderate anemia of inflammatory origin treat the root cause as RA can correct the anemia. The treatment includes Singhnaad gugglu, Rasnasaptak kwath, vatavidhwansak rasa, Nagaradi churna, Amritottar kashaya, Amritbhallatak lehya, Mandoor vatak, Panchkol churna, Drakchadi lehya, Arogyvardhini vati. The assessment was made on the basis of sign and symptoms and laboratory investigations.

Assessment done thereafter 4 months shows decreased RA factor, increased hemoglobin, and reduced uric acid, with remarkable relief in pain, morning stiffness and marked reduction in swelling of the joints. Thus the above case report emphasizes that Aamavata/RA can be controlled with minimum medicines when treated with the same guideline of Aamavata Chikitsa as mentioned in Ayurveda.

**Keywords:** Immunity, inflammatory anemia, Pandu, Aamavata, Autoimmune disorder,

## I. INTRODUCTION

Aamavata is a disease in which vitiation of Vata Dosha and accumulation of Aama take place in joint(s)<sup>1</sup>, and it simulates rheumatoid arthritis (RA) at modern parlance<sup>2</sup>. Generally, the disease begins with gradual pain, swelling, and stiffness of the multiple joints in the hands and feet at the metacarpo-phalangeal, proximal interphalangeal, metatarso-phalangeal, wrist and ankle. Anemia is among the most frequently observed extra articular manifestations. A normochromic, normocytic anemia often develops in patients with RA and is the most common hematologic abnormality. The degree of anemia parallels the degree of inflammation, correlating with the levels of serum C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR)<sup>2</sup>. Vata and Kapha Prakriti person is more likely to have decreased digestive-metabolic fire or Agni in the body, resulting in impaired digestion and absorption of food. This leads to formation of an immunogenic and toxic substance called Aama, which is the causative factor for inflammation<sup>4</sup>. Restoration of Agni and balance the doshas is an important component of treatment strategy of Aamavata.

## II. CASE STUDY

A 36-year-old married female having 43kg weight, housewife of Vata and Kaphaj prakriti, residing in an urban area, come for consultation at the outpatient department, of National Institute of Ayurveda on 23/02/2019, having the complaints of pain in multiple interphalangeal, metacarpophalangeal joints of both hands along with swelling, severe morning stiffness and restricted movements, pain in bilateral knee joint and palpitation since 5years back with ACR/EULAR (2010) (table1) classification criteria for RA having 8/10 ratio<sup>5</sup>. History of present illness uncovered that the patient was normal before 5 years. Gradually she had pain in proximal interphalangeal (PIP) joints in multiple fingers associated with morning stiffness.

Later on she also suffered with swelling and pain in both knee joint 1 year back. Other constitutional symptoms include palpitation along with heaviness in chest, breathlessness, hair loss, weakness, indigestion, fever, vague pain in different part of the body. Personal history uncovered that the patient is a vegetarian with reduced appetite. There was no any relevant family history. There was no any history of treatment/surgery and addictions except hysterectomy. Physical examination of patient shows blood pressure 128/90 with pulse rate 78/minute and respiratory rate 18/minute.

### III. DIAGNOSTIC FOCUS AND ASSESSMENT

In this study the assessment was done on the basis of signs and symptoms as well as serological tests for RA factor, hemoglobin, uric acid. Before treatment on 23/02/2019 RA Factor was 203.5IU/ml, haemoglobin was 7.7gm/dl, and Serum uric acid was 7.3mg/dl. After 4 months, on 01/06/2019: - RA reduced to 200.5IU/ml, Hemoglobin becomes 8.7, and Serum uric acid reduced to 4.1mg/dl. On repeating same investigation on 28/09/2019 RA becomes 173.8IU/ml, Haemoglobin is 10.2gm/dl and Serum uric acid is 4.1mg/dl (**table 2**).

### IV. THERAPEUTIC INTERVENTION

AI is a secondary manifestation of inflammatory disorders (RA), and treating the underlying disease can correct the anemia in the case of AI. Patient was treated on the principle of management of Aamavata. For Aamapachan following oral medication were administered- Nagaradi churna 3 gm, Singhnaad gugglu 2 tab, Vatavidhwansak rasa 125mg, with honey and Rasnasaptak kwath 40 ml as Anupan before meal twice a day, along with Amritbhallatak lehya 10ml twice a day after meal for 15 days. After Aamapachan she was treated with Mandoor vatak 2tab, Singhnaad gugglu 2tab, Arogyvardhini vati 4tab Panchkol churna 3gm, with honey and Amritottar kashaya 20ml as Anupan before meal twice a day, along with Drakchadi lehya 10gm twice a day after meal for 15 days (**table 3**). The patient was advised to take Rakta Shali (a red variety of rice), Syamaka (a type of cereal - Panicum Frumentaceum), Yava (barley) and Kulattha (dolichos bean); warm water; Aardraka (ginger), bulb of Rasona (garlic), leaf and fruit of Patola (a variety of small cucumber), root of Punarnava (pigweed), leaves of Shigru (horse-radish) and Vastuka (a variety of chenopodium, white goose-foot) and fruit of Karavellaka (bitter gourd). The patient is advise not to take Guru, Abhişyandi Anna; seed of Masa (black phaseolus bean); milk, curd, Guda (jaggery); fish, excessive eating, suppression of calls of nature and exposure to eastern winds<sup>6</sup>.

### V. FOLLOW UP AND OUTCOMES

The patient was on follow up on every 15 days till 28/09/2019. Gradually stiffness and swelling started decreasing and there was relief in pain and anorexia during treatment. After 4 months of treatment patient got 70% relief on pain, morning stiffness and swelling. The hemoglobin of the patient is also improved. The quality life of the patient is improved as well. (**table 2**)

### VI. DISCUSSION

The pathology of Aamavata/RA comes from digestive system<sup>4</sup>. Due to it's etiological factors<sup>7</sup>, in mandagni subject (person having decreased biofire), produce Aama. Aama is a maldigested product<sup>9,10,11</sup>, which is not homogeneous for the body<sup>12</sup>. This toxic material (Aama) can be viewed as a foreign substance by the body and the immune system can react by forming antibodies to it, giving rise to antigen-antibody complexes and resulting in immune disorders<sup>13</sup>, RA is one of them<sup>4</sup>. In modern medical science the etiology of RA is still unknown<sup>14</sup>. The main pathological changes that occur in RA include synovial inflammation, cellular hyperplasia and hypertrophy, micro vascular injury, neovascularization, thrombosis, edema with infiltration of mononuclear cells, and increased amount of adhesion molecules<sup>4</sup>. The proinflammatory cytokines released from synovial macrophase includes TNF- $\alpha$ , IL-1, IL-6, IL-12, IL-15, IL-18, and IL-23. Synovial fibroblasts, produce the cytokines IL-1 and IL-6 as well as TNF- $\alpha$ <sup>15</sup>. Interleukin 1 (IL-1) directly decreases EPO production in response to anemia<sup>16,17</sup>. IL-1, acting through accessory cell release of interferon  $\gamma$  (IFN- $\gamma$ ), suppresses the response of the erythroid marrow to EPO<sup>18,19</sup>. In addition, tumor necrosis factor (TNF), acting through the release of IFN- $\gamma$  by marrow stromal cells, also suppresses the response to EPO. Hecpidin, made by the liver, is increased in inflammation via an IL-6<sup>20</sup> mediated pathway<sup>21</sup>, and acts to suppress iron absorption and iron release from storage sites. The overall result is a chronic hypoproliferative anemia with classic changes in iron metabolism<sup>21</sup>. Cytokines, including tumor necrosis factor  $\alpha$  (TNF- $\alpha$ ), interleukin-1, interleukin-6, and interferon- $\gamma$ , are produced by inflammatory cells, these cytokines restrict erythropoiesis both directly and indirectly and shorten the erythrocyte lifespan<sup>22</sup>. The inflammatory cytokinin (TNF $\alpha$  and interferon  $\gamma$ ) activates the transcription factor PU.1 to promote myelopoiesis and lymphopoiesis at the expense of erythropoiesis<sup>23,24</sup>. Due to which net hemoglobin of the patient decreases. For the treatment of AI treat the main pathology of chronic inflammation as RA. The main



etiological factor of Aamavata is the formation of Aama<sup>4</sup>. Whenever this Aama is transported through Dhamanias to Kaph sthaan<sup>7</sup>. It vitiates Vata, Pitta and Kapha and simultaneously obstructs the path. Such morbidity needs therapeutic intervention such as Langhan (fasting) and promotion of Agni in order to exhaust the Aama along with symptomatic treatment. In this case we used Nagaradi churna<sup>28</sup> for Deepan Pachan, Kaphhar, and Aamajshoolhar properties, it improves the digestive fire and pacifies the Vaatik shool. Amritottar kashaya<sup>30</sup> is used to balancing the Tridosh and for eliminating Kosthgata Aama. Due to the Vatahara and agnivaradhak property of Amritballatak lehya<sup>31</sup> it improves the Agni and pacifies Vataj shool. Singhnaad gugglu<sup>26</sup> used due to its Agnivaradhak and Vatahar property and Rasnasaptak kwath<sup>29</sup> is used to treat Vataj shool. Vatavidhwansak rasa<sup>27</sup> is Vatakapphar Agnivaradhak and Rasayan. After 4 months, the swelling, pain and morning stiffness of joints along with other constitutional symptoms such as palpitation, heaviness in chest, weakness, indigestion, fever, anemia, vague pain in different part of the body get markedly improved. The hemoglobin gets improved without giving any such medication for its improvement. So the next treatment was focused to improve hemoglobin as well. That's why Mandoor vatak<sup>32</sup> is used for its Kapha shamak, and Rakta wardhak property, it is also used to treat Ajeerna. Panchkol churna<sup>33</sup> is used as deepan paachan, Drakchadi lehya<sup>34</sup> is Tridosh har, and Rakt prasadan. Arogyvardhini vati<sup>35</sup>, balance Vata, Pitta and Kapha and also used as Malshodhak. By above treatment the hemoglobin is markedly improved along with it pacifies the symptom of Aamavata/RA. In this case, although RA factor is still high (173.8 IU/ml), yet there is no clinical feature of RA, which suggests that only increased level of RA factor may not be sufficient to cause features of RA unless some aggravating factors in the form of food/drug/session/allergen (toxins) associate to initiate the process.

## VII. CONCLUSION

Ayurveda follows a defense strategy and it focuses on the etiological process of disease. In this case *Aama* along with *Vitiated Vata* are responsible for disease pathology and it can be cured only by Ayurvedic medicines.

*Aamavata* is a disease complex of which RA is a part. The main systemic manifestation of Aamvata is AI. The simultaneous improvement of hemoglobin is the indicator of the systemic effect of *Aama*.

Only increased level of RA factor may not be sufficient to cause features of RA/*Aamavata*.

In this case, although RA factor is still high (173.8 IU/ml), yet there is no clinical feature of RA/*Aamavata*.

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Table No.1 showing ACR/EULAR (2010) classification criteria for RA

	Points
Symptoms duration ( as reported by patient) >6 week	01
4-10 small joints (with or without involvement of large joint)	03
High RF	03
Abnormal ESR	01
Total	08

Table No.2 showing Assesment before and after treatment

	Before treatment	After treatment
Rheumatoid arthritis (Quantitative)	203.5IU	173.8IU
Haemoglobin	7.7gm/dl	10.2gm/dl
Uric Acid	7.3mg/dl	4.1mg/dl
Pain	Severe	Markedly reduced
Morning stiffness	up to 1 to 2 hr	up to 5-15 min
Swelling	Present	Absent
Anorexia	Present	Absent

Table No.3 showing ingredients, properties and action of the drugs given.

Drug	Ingredients	Properties and action
Singhnad Guggulu <sup>26</sup>	Haritaki (Terminalia Chebula), Aamlaki (Emblica Officinalis), Bibhitaki (Terminalia Bellirica), Suddh Gandhak (Sulphar), Suddh Gugglu(Commiphora mukul), Erand tail(Ricinus communis).	Agnivardhak, useful in Aamvata, Sandhirog, Vatarakta and in Shool.
Vata vidhwansak rasa <sup>27</sup>	Parad (Mercury), Suddh Gandhak (sulphur), Nag bhasm (Lead), Loh bhasm (Iron), Abhrak (purified mica), Tamr bhasm (copper), Pippli (pipper longnum), Suhaga (Borex), Marich (Piper nigrum), Sunthi (Zingiber officinalis),	Vatakaphhar, Agnivardhak, Rasayan, useful in Aamvata, Sandhivata, and in Vataj shool
Nagaradi Churna <sup>28</sup>	Manikkunthirikka (Indian Olibanum), Vacha (Acorus Calamus), Nagar (Zingiber officinale), Meera, Arakkodu, Cheninayaka, Chenchalyam.	Ushna veerya, having effective sophhar, Deepan Pachan, kaphvatahar and shool prashman property.
Rasna saptak kwath <sup>29</sup>	Rasna (Pluchea lanceolata), Gokchur(Triblus terrestris), Erand mool (Ricinus communis), Guduchi (Tinospora cordifolia), Devdaru(Cedrus dodara), Punarnarva(Boerhavia diffusa), Sunthi, Aragvaddha (cassia fistula).	Balance vata and Kapha dosha. Used in Aamvata and vataj shool.
Amritotter kashaya <sup>30</sup>	Nagar(Zingiber officinale), Amrita(Tinospora cordifolia), Haritki (Terminalia Chebula), Nag bhasm (Lead), Anghri bhga.	Tridosh har, Sophhar, Kosthgata aamhar, So it is useful in amaj sophha and aamaj shool.
Amrit bhallatak lehya <sup>31</sup>	Bhallatak (Semicarpus Anacardium),	Vathar, Agnivardhak, and used in all vaat vyadi and Aamaj roga.
Mandoor vatak <sup>32</sup>	Swarnamakshika bhasm (purified incinerated copper pyrite), Marich (Piper nigrum), Pippli (pipper longnum), Vidanga (Embelia ribes), Devdaru (Cedrus deodara), Chitrak (Plumbago zeylanica), Daruhaldi (Berberis aristata), Haritaki (Terminalia Chebula), Aamlaki (Emblica Officinalis), Bibhitaki (Terminalia Bellirica), chavya (Piper chaba), Pippli mool (pipper longnum), Nagarmusta (Cyperus rotundus), Mandoor (Purified ferric oxide).	Kapha shamak, Ajeerna nashak raktvardhak effect, so can be used in Pandu Kamla and in soth.
Panchkol churna <sup>33</sup>	Pippli (pipper longnum), Pippli mool (pipper longnum), chavya (Piper chaba), Chitrak (Plumbago zeylanica), Sunthi(Zingiber officinale),	Deepan, Paachan, Ruchikarak evum kaphaj rog nashak, Shoolhar.
Drakchadi lehya <sup>34</sup>	Drakcha (vitis vinifera), Pippli (pipper longnum),	Tridosh har, pitta prasadan, Rakt prasadan, so used as auto immune disease.
Aarogyvardhini Vati <sup>35</sup>	Suddha Parad (Herbal purified mercury), Suddha gandha (Herbal purified Sulphur), Loha bhasm (Iron), Abhrak bhasm (mica), Tamra bhasm (Copper), Haritaki (Terminalia Chebula), Aamlaki (Emblica Officinalis), Bibhitaki (Terminalia Bellirica), Shilajatu (Asphaltum), Gugglu (Commiphora mukul), Erund (Ricinus communis), Katuki (Picrorhiza kurroa), Nimba (Azadirachta Indica).	It balance vata, pitta and kapha, deepan, pachan, mala shodhak, sothahar, Ajeerna nashak,





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