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A study on assessment of *Agnibala* and *Koshtha* in *Amavata* and their association with inflammatory markers in R.A.

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ABSTRACT:

Introduction: *Mandagni* has been considered one of the primary indigenous factors for the manifestation of *Amavata***,** so there might be the effect of the causative factors affecting the status of *Agnibala* of an individual. Hence an attempt can be made to observe the status of *Agnibala* and *Koshta* with particular reference to different inflammatory markers present in subjects of *Aamvata***.**
Material and Method: The main goal of the study was to evaluate the *Agnibala* and *Koshtha* of the *Amavata* Patients and to determine the relationship between *Agni* and *Koshtha* with the inflammatory parameters of Rheumatoid Arthritis as the characteristics of *Amavata* are similar to Rheumatoid Arthritis. The aims and Objectives of the study include the Assessment of *Koshtha* using a self-developed Standard Proforma for *Koshtha* Assessment (KAQ). *Agnibala*, using a standard proforma developed by Singh A et al., 2016. *Amavata* patients were encouraged to undertake Haematological examinations along with Investigations of Inflammatory markers of Rheumatoid arthritis and their reports were collected and analysed for additional statistical analysis. BHU's CCI lab and other standard laboratories were used for the research. The data were then statistically analysed.
Results and Conclusion: According to the *Agni Bala* assessment from this study, it can be said that *Mandagni* is the main causative factor for the development of *Amavata*. A good correlation has been found between symptoms of *Amavata* and ACR criteria of Rheumatoid Arthritis from this study. A significant association was found between *Madhyam Koshtha* and *Amavata* as provocative factors. There is also a significant correlation found between *Koshtha* and *Agni.*

Keywords: *Amavata, Koshtha, Ayurveda*, *Ama*, , *Agni*, Rheumatoid Arthritis

INTRODUCTION

Human life is considered a valuable opportunity to achieve the prime goals of life, viz. *Dharma, Artha, Kama and Moksha'*. To achieve all these things, one needs a healthy and calm life. The whole ancient society tried to achieve all four prime life goals so that they had a smooth, sound, safe, assured, steady, and healthy lifestyle. On the other hand,

today, everyone is trying to gain good financial status and fulfil all their physical desires; therefore, today's metaphysical society faces an unsteady, weakened, hard, and everyday changing lifestyle. The gift of this lifestyle and diet is emerging in the form of newer diseases; one of them is *Amavata* (Rheumatoid Arthritis).

Amavata is one of the commonest crippling disorders caused by the impairment of *Agni*. *Amavata* further leads to deterioration in the form of physical deformities as well as mental frustration.

Amavata is the most common disease among various joint disorders. The changing lifestyle and dietetic pattern are also manifested as the daily increment in the number of patients. *Mandagni* and *Vata* play a significant role in the *Stabddhata*, *Sandhigaurav*, etc.[1] So, the *Amavata* results from a combination of *Ama* and *Vata*. Due to *Mandagni*, both *Ama* and *Vata* get vitiated and reach to joints and produce swelling, pain, and Disability, and thus, the disease is made. [2]

The term '*Nidana*' is related to the etiology and diagnosis of a disease. The factors responsible for the weakening of Agni and aggravation of *Vata* are well considered as the causes for the production of *Amavata*. *Mandagni* is the most important among the causative factors of *Ama*.[3]

Ayurveda has some unique entities, and *Koshtha* is one of them. The word *Koshtha* is used for a vacant place from the mouth to the anus having a covering, where things can be kept in a lot. The term *Koshtha* refers to the nature of the digestive tract or Alimentary tract, which usually represents the motility of the intestines and movement of food, faecal matter in the alimentary canal, and elimination of the stool. According to the dominance of *Doshas* or *Deha Prakriti, Koshtha* is generally divided into three types i.e. *Krura, Mridu*, and *Madhyam* where the dominance of *Vata, Pitta*, and *Kapha Dosha* is seen respectively.Assessment of *Koshtha* is important for the diagnosis and treatment of diseases. *Koshtha Pariksha* helps with the choice of *Aushadhi* and *Aushadhimatra*. *Koshtha Pariksha* also plays an important role in advising *Pathya-Apathya* and *Aahara-Vihara*.

Mandagni has been considered as one of the primary indigenous factors for the manifestation of *Aamavata*, so there might be the effect of the causative factors affecting the status of *Agnibala* of an individual. Hence an attempt can be made to observe the status of *Agnibala* and *Koshtha* with particular reference to different inflammatory markers present in the subjects of *Aamvata*.

Keeping all these concepts in mind, this observational study is conducted to find out the *Agni Bala* and *Koshtha* of *Amavata* patients and their correlation with inflammatory markers of Rheumatoid Arthritis.

Review of literature

The term *Aamvata* comprises of two words *Ama* and *Vata* meaning i.e. *Vata Dosha* is associated with *Ama* (an endogenous toxic compound) which causes acute disease mainly in *Kapha Dosha* sites, particularly joints. It was first described in *Madhavnidana*. Its sign and symptoms have a resemblance with Rheumatoid disease /Arthritis. Indulgence in faulty dietary and lifestyle habits like intake of *Viruddha Ahara* (Incompatible food), lack of physical activity or performing physical activity after taking *Guru* and *Snigdha Aahar, Viruddha Chesta* and *Mandagni* leads to the formation of *Aama* which will ultimately lead to the manifestation of *Aamvata*.[4] Due to the poor strength of *Agni* (digestive fire), the *Ahara Rasa* is not properly formed in the stomach and in this state, it is known as *Ama*.[5] In another sense, it can be said that the first *Dhatu* that is *Rasa Dhatu* is not formed properly and (food) is termed as *Ama*. This *Ama* can be considered as metabolites like lactic acid formed due to improper metabolism of carbohydrates, fats, and proteins.

Pathogenesis of *Amavata* :Ama together with *Dushit Vata / Prakopit Vata* circulates all over the body through Sira and *Dhamani* and gets lodged in *Kaphasthana* i.e. *Sandhi* which leads to the manifestation of *Amavata* .[6]

Signs and symptoms of *Amavata*

Samanya lakshana of Amavata: *Angamarda (Body ache), Aruchi (Anorexia), Trishna (Thirst), Aalasya(Lethargy), Gourav (Heaviness in the body), Jwara (Pyrexia), Apakti (Indigestion), Angashunata (Swelling in the body)*[7].

Pravridha lakshana of Amavata: *Hasta Padashiro Gulpha Trika Janu Uru Sandhi Sa Rujam Shotham* (Pain and swelling in hand, feet, ankle, knee, hip and spinal joints), *Rujyate Atyartham* (Excruciating pain), *Vyaviddha iva Vrishcika* (Nature of pain is like that of scorpion sting), *Agnidaurbalya* (Hindered digestive mechanism, *Praseka* (Excessive salivation), *Aruchi* (Anorexia), *Gauravam* (Heaviness), *Utsahahani* (Lack of enthusiasm), *Vairasya* (Altered taste in the mouth), *Daham* (Burning sensation), *Bahumutratam* (Excessive urination). *Kukshau kathinatam*

shulam, (Hardness and pain in abdomen). *Nidraviparyaya* (Disturbed sleep), *Trt* (Thirst), *Chardi* (Nausea), *Bhrama* (Fainting), *Murccha* (Unconsciousness), *Hrd graha* (Stiffness in pericardium), *Vidvibaddhatam* (Constipation), *Jadya* (Stiffness), *Antrakujanam* (intestinal gurgling).*Anaha* (Distension in abdomen) [8]

American College of Rheumatology Criteria (ACR)/ European League Against Rheumatism (EULAR). [9]

In this classical text the word '*Amavata*' is used in the following aspects-

- *Avarana* of *Vata*, *Medasavritta Vata/Adhya Vata*[10]
- Therapeutic use of *Kamsa Haritaki* in *Swayathu Chikitsa*[11]
- Therapeutic use of *Vishaladi Phanta* in *Pandu Roga*. [12]
- *Paripaka Kala* of *Jvara*. [13]

MATERIAL AND METHODS

Assessment of *Agnibala* and *Koshtha* in Patients of *Amavata*

Selection of Patients: It is an Observational study and the patients were selected on a Non-randomized Sampling Technique.

Population and sample

The population for the conduction of the given study was defined as either gender aged between 18-60 years registered during 2020 and 2022. A total of 74 subjects were registered, out of which 54 were female, and 20 were male.

Patients who fulfilled the diagnostic criteria of *Amavata* were selected from the OPDs of *Panchkarma* and Medicine (Rheumatology), Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005.

The patients were provided with detailed information about the purpose and methods used in the study and written consent was obtained before registration. The Ethical Committee of Institute of Medical Science, Banaras Hindu University and PG Medical board, Institute of Medical Science, Banaras Hindu University, Varanasi has approved this study.

Ethical Clearance Number (Ref. No:- EC/2166).
CTRI Registration No.- CTRI/2021/02/031020

Inclusion Criteria

1. The patient full filled the ACR diagnostic criteria of R.A. and had features of *Samanya* and *Praviddha Lakshana* of *Amavata.*
2. Subjects of either sex belonging to age between 18-60 years.
3. Volunteers who were willing to be a part of the study by giving written consent in a prescribed format.

Exclusion Criteria

1. The patients with ages below 18 years and above 60 years.
2. Volunteers have any recurrent or chronic illnesses.
3. History of any known disease/illness, tuberculosis, malignancy, etc.
4. Various other joint disorders Osteoarthritis, Osteoporosis, Ankylosing Spondylosis, Systemic lupus erythematosus (SLE), etc.
5.

The following parameters will be evaluated for the response: After the selection of the subjects, they will be subjected to the assessment of the following :

Clinical Assessment Criteria:

- Patients were registered as per *Samanya* and *Pravridha Lakshan* of *Amavata* given in *Ayurvedic Samhitas* and as per American College of Rheumatology Criteria 2010(ACR).
- **Demographic Details:** Including Age, Sex, Marital Status, Habitat, Diet, Education, Occupation, Socio-Economical Status, duration of Illness, Onset and Symmetry of Disease, Tenderness, and Swelling of Joints, *Aharaj, Viharaj*, and *Mansik Nidan*, *Aatura Deha bala Pariksha*, Systemic Examination of the *Amavata* Patients were recorded.
- ***Koshtha*** by the use of Self-developed Standard Proforma for *Koshtha* Assessment (KAQ)
- ***Agnibala*,** with the help of standard proforma developed by Singh A et al., 2016

  Haematological parameters - Complete blood count (CBC) including, Erythrocyte sedimentation rate (ESR) and Hemoglobin percentage(Hb%)
- **Inflammatory markers**- Including Rheumatoid Factor CRP (C-reactive protein), R.A. factor (Rheumatoid Factor), Anti ccp (Anti-cyclic citrullinated peptide), ANA, HLAB27.
- Lab investigations were carried out in the CCI lab in BHU and other standard laboratories.

RESULTS

Rheumatoid Arthritis affects all age groups; the maximum number of patients registered were between 41-50 years of age group (27.02%). This observation confirms the reported incidence of this disease in India. Out of 74

patients taken for the study, 20(27%) were male and 54 (73%)were female. Incidence of the disease is found notably higher in females than in males (3:1). Most of the patients were rural inhabitants 48 (64.9%), and the remaining 26 (35.1%) belonged to urban areas. 68 (91.9%) residents were from *Sadharana Desha*, and 6 (8.1%) were from *Jangala Desha*. No *Anupa Desha* inhabitants were identified. [Table 7] Out of the total patients who had undergone this study, 50 (67.6%) patients are married, 23 (31.1%) patients are unmarried, and 1 (1.4%) patient is a widow.

Out of 74 Patients, 70(94.6%) were Hindus, and 4(5.4%) were Muslims. The majority of patients in the present series were Intermediate 27 (36.48%) followed by Graduate 17 (22.97%), High School 15 (20.27%), Post Graduate 11(14.86%), Primary Education 4(5.40%), no illiterate patients were registered. The majority of patients in the present series were housewives 39(52.70%) followed by Student 18 (24.32%), Service class 5.40%, Farmer 4 (5.40%), Bussiness class and Other 9 (12.16%), through this pattern of occupational incidence can not be a realistically generalized but notably high incidence of housewives supports the *Ayurvedic* viewpoint of "*Nischaltva*" a sedentary mode of lifestyle as one of the factors leading to *Amavata*

Duration of Illness of Patients: Out of 74 Patients, 1.35% of patients had symptoms less than six weeks, 31.08% had symptoms more than six weeks, and 67.56 % of patients had symptoms more than a year. Categorization of the data based on socio-economic status showed that Out of 74 patients of this series, 20(27.02%) of them belonged to poor socio-economical status, 32(43.24%) of patients belonged to Lower Middle socio-economical status, 15(20.27%) of patients belonged to Middle socio-economical status and 7(9.45%) to upper socio-economical status. Mode of onset of the disease. 54(72.97 %) patients reported Insidious onset, while 20(27.02%) patients suffered from Gradual onset. A maximum of 52(70.3 %) of patients in this series had the Symmetrical type of Rheumatoid Arthritis, and 22(29.7%) patients had Asymmetrical arthritis

Diet Pattern of patients: 24 (32.4%) had a Veg diet, and 50(67.6%) had a mixed diet.

Aharaj Nidaan: maximum of 77.02% of patients had the habit of *Samashana*, 48.64% of patients had the habit of *Adhyashana*, 36.48% of patients had the habit of *Anashana* on and off, and 14.86% of patients had the habit of *Vishamashana*.

***Viharaja Nidana*:** 71.62% each had the habit of *Divasvapna*, and 43.24% had the habit of exercise after the *Snigdha Ahara*, 63.51 % of patients used to work hard or do *Ativyayam*.

***Manasika Nidana*:** 36.48 % of patients did not have any of *Manasika Nidana*. Of the rest patients, 56.75% patients had *Chinta*, 24.32% had *Krodha*, 16.21% had *Shoka*, and only 10.81% had *Bhaya* as *Manasika Nidana* factors.

Visualizing the sample related to the occurrence of *Amavata* with family history, it was found that 55 (74.3%)had negative (absent) and 19(25.7%) had a positive (present) family history.

Status of *Agni*. The presence of *Mandagni* in 34 (45.94%) followed by *Vishamagni* in 21 (28.37%), *Tikshnagni* in 14 (18.91 %), and a minimal proportion, i.e., 5 (6.75%) had *Samagni*.

Status of *Koshtha*. *Madhyam Koshtha* was found in 39 (52.70%), *Krur* were 20 (27.02%) *Mridu* were 15 (20.3

Rheumatoid factor in *Amavata* patients:63(85.1%) of the patients were seropositive whereas 11(14.9%) were Seronegative for **Rheumatoid factor**.

Out of 74 registered cases, 18.9% had a C-reactive protein value within the normal range, while 81.1% had a C-reactive protein value of more than 0.6 mg/dl, which shows a positive result showing the process of inflammation.

Anti-CCP: Out of the total registered cases 37.83% cases had the Anti-CCP value within the normal range while 62.16% of cases had the Anti-CCP value of more than 25U/ml which shows a positive result and helped in making a diagnosis.

13.51% Patients of *Amavata* are having Hb% 12-13 g % and 17.56% were 11-13 g %,50% were having 8-10.9 g% and 18.91% were found severely anemic having Hb % less than 8 g %.

ESR in 63.51% of *Amavata* patients is found to be abnormal and increased above 20 mm. 36.48 % of patients were having normal ESR values. Out of 74 registered cases of *Amavata*, only 9 patients underwent Anti Nuclear Antibody assay test, So among 9 patients, 55.55% of cases had the anti-nuclear antibody test showing positive results, while 44.44% of cases had the anti-nuclear antibody test showing a negative result.

HLA B 27: 63(85.1%) were Seronegative, and 11(14.9%) were Seropositive for HLA B27.

Mean and Standard Deviation of Clinical Parameters for Different Types of *Koshtha*. The difference between *Koshtha* was not Statistically Significant in all these

Parameters. [Table 1]

Mean and standard deviation of clinical parameters for Different types of *Agni*. The difference between Agni was not statistically significant in all these Parameters except Anti CCP. Anti-CCP was higher in *Mandagni* and lower in the *Tikshnagni* group. [Table 2]

During correlating *Agni* and *Koshtha*, among 34 *Mandagni* participants, *Madhyam Koshtha* were found 33.8%, *Krura Koshtha* were 8.1 % and *Mrudu Koshtha* were 4.1% found. In 14 *Tikshanagni* participants, *Mrudu Koshtha* were found 9.5%, *Madhyam Koshtha* were 6.8% and *Krura Koshtha* were 2.7% found. Among 21 *Vishamagni* participants, *Krura Koshtha* were found 16.2%, *Madhyam Koshtha* were 8.1% and *Mrudu Koshtha* were 4.1% found.

Among 5 *Samagni* participants, *Madhyam Koshtha* was found at 4.1%, *Mridu Koshtha* was 2.7%, and no *Krur Koshtha* was found. [Table 3]. Incidence of symptoms (*Roopa*) shows that 37.8% of patients were having *Angamarda* (Bodyache), 47.3% *Aruchi* (Anorexia), 20.3% *Trishna* (Thirst), 47.3% *Alasya*(Lethargy), 47.3% *Gauravam* (Heaviness), 20.3% Jvara(Fever), 32.4% *Apaka* (Indigestion), 47.3% *Shunata Anganam* (Swelling) respectively. [Table 4] Incidence of *Pravriddha Lakshana* shows that 85.1% of patients were having *Hasta Padashiro Gulpha Trika Janu Uru Sandhi Sa Rujam Shotham* (Pain and swelling in hand, feet, ankle, knee, hip, and spinal joints), *Rujyate Atyartham* (Excruciating pain) 97.3%, *Vyaviddha iva Vrishcika* (Nature of pain is like that of scorpion sting) 97.3%, *Agnidaurbalya* (A hindered digestive mechanism) 82.4 %, *Praseka* (Excessive salivation) 83.8%, *Aruchi* (Anorexia) 82.4 %, Gauravam *100% Utsahahani* (Lack of enthusiasm)50%, *Vairasya* (Altered taste in the mouth) 51.4%, *Daham* (Burning sensation)14.9%, *Bahumutratam* (Excessive urination) 64.9%, *Kukshau Kathinatam shulam*(Hardness and pain in the abdomen) 33.8%, *Nidraviparyaya* (Disturbed sleep) 37.8%, *Trt* (Thirst) 35.1%, *Chardi* (Nausea) 35.1%, *Bhrama* 51.4%, *Murcha* 16.2%, *Hrd Graha* (Stiffness in pericordium) 85.1%, *Vid Vibadhata* (Constipation)33.8%, *Jadya* (Stiffness)98.6%, *Antrakujanam* (intestinal gurgling) 33.8%, *Anaha* (Distension in the abdomen) 33.8% [Table 5]

Tenderness

Incidence of Tenderness of joints shows 50% of patients had Metacarpophalangeal joint involvement, 43.2% proximal interphalangeal,74.3% thumb interphalangeal joint,86.5% distal interphalangeal joint, 45.9% wrist joint, 63.5% elbow joint, 62.2% Shoulder joint,82.4% Hip joint, 56.8% ankle joint, 41.9% knee joint involvement, 83.8% Metatarsophalangeal,78.4% Back,83.8% Neck joint and 97.3% patients have had the temporomandibular joint involvement respectively.

Swelling

Incidence of Swelling of joints shows 54.1% of patients were had Metacarpophalangeal joint involvement, 48.6% proximal interphalangeal,77% thumb interphalangeal joint ,86.5% distal interphalangeal joint, 47.3% wrist joint, 71.6% elbow joint, 68.9% Shoulder joint,83.8% Hip joint, 67.6% ankle joint, 48.6% knee joint involvement, 87.8% Metatarsophalangeal,89.2% Back,93.2% Neck joint and 98.6% patients have had the temporomandibular joint involvement respectively. The involvement of the wrist and smaller joints is seen in the classical type of clinical manifestation of RA. [Table 6]

DISCUSSION

Correction of Agni has been depicted as one of the essential aspects of *Sharir Kriya*, while the derangement of the same will result in the formation of *Ama*. This fact establishes the role of *Ama* in the initiation of the majority of diseases in general. It is not uncommon to attribute *'Dushatwa*' to *Ama*, as *Ama* is mentioned as one of the primary events in the disease process, and also as *Ama* fits into one of the defined criteria of *Dosha* by "independently inflicting the *Dhatus*." An attempt has been made to identify *Agni* and *Koshtha* in association with inflammatory markers of Rheumatoid arthritis during the present work. Rheumatoid arthritis is a disease in which immunological reactions are supposed to be initiated by a triggering agent. The triggering agent will be either an Exogenous or Endogenous antigen by nature. The study of the etiopathological aspect of *Amavata* reveals the potential role of specific diets and specific weather conditions as influential factors in rheumatoid disease. However, *Viruddhahara* has been attributed as the first and foremost etiological factor. *Vagbhata* has attributed three particular diets characteristic of the *Vairodhic Ahara*[14] .These are: Characters opposite to *Dhatu, Dosha* vitiating property, It is retention in the body even after *Doshik* vitiation. All the above properties have a good resemblance with antigenic substances, otherwise designated as having an ant self nature, leading to the production of immunological derangements.

CONCLUSION

A good correlation has been found between symptoms of *Amavata* and ACR criteria of Rheumatoid Arthritis from this study. According to the *Agni Bala* assessment, it can be said that *Mandagni* is the main causative factor for the development of *Amavata*. A significant association was found between *Madhyam Koshtha* and *Amavata* as provocative factors. The association between Agni and inflammatory markers and biochemical parameters like R.A., CRP, ANA, HLA B27, ESR, and Hb was insignificant. All these Parameters have no significance with Agni except Anti-CCP, which was higher in *Mandagni* and lowered in the *Tikshnagni* group.The association between *Koshtha* and inflammatory markers and haematological parameters was not Statistically Significant. So no correlation can be drawn between *Koshtha* and inflammatory markers. There is a significant correlation found between *Koshtha* and *Agni*.

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Table 1. Table Showing Comparison between inflammatory markers and *Koshtha* in 74 Patients of *Amavata* (MEAN± S.D)

Variables	Mean+SD *KOSHTHA*			Between *Koshtha* Comparison
	Krur	***Mridu***	***Madhyam***	
RA	108.13 ± 171.32	91.80 ± 163.36	102.40 ± 122.35	x^2 =5.03 P=.08
CRP	14.61 ± 29.11	16.21 ± 23.56	18.24 ± 27.48	x^2 =4.59 P=.10
Anti-CCP	194.88± 268.12	133.33 ± 192.45	295.38 ± 288.61	x^2 =8.43 P=.01
Hb	10.81 ± 1.26	11.31 ± 1.59	10.881.79	F=.489 P=.61
ESR	37.14 ± 30.29	31.80 ± 25.22	26.49 ± 12.84	x^2 =1.493 P=.47
ANA	59.10 ± 114.40	0	7.83 ± 15.35	x^2 =.540 P=.46
HLA B 27	7334.34 ± 3732.25	9258.00 ± 2530.86	8148.95 ± 3466.18	x^2 =3.414 P=.18

Table 2. Table Showing Comparison between inflammatory markers and *Agni* in 74 Patients of *Amavata*

Variables	Mean+SD AGNI				Between AGNI Comparison
	Mandagni	***Vishamagni***	***Samagni***	***Tikshnagni***	
RA	106.14 ± 124.69	108.13 ± 171.32	66.83 ± 76.94	95.454545 ± 186.38	x^2 =6.33 P=.096
CRP	18.27± 27.96	14.61 ± 29.11	14.13± 14.71	17.63 ± 26.90	x^2 =4.54 P=.209
Anti-CCP	311.15± 288.87	194.88 ± 268.12	156.46 ± 258.15	99.99 ± 140.09	x^2 =12.57 P=.006
Hb	10.85 ± 1.83	10.81 ± 1.26	11.18 ± .98	11.42 ± 1.75	F=.45 P=.71
ESR	26.43 ± 12.509	37.14 ± 30.296	23.67 ± 14.038	35.45 ± 28.328	x^2 =1.95 P=.583
ANA	7.83 ± 15.35	59.10 ± 114.40	0	0	x^2 =.54 P=.46
HLA B27	8185.45± 3529.52	7334.34 ± 3732.25	8436.50 ± 2635.26	9394.44 ± 2524.68	x^2 =3.33 P=.34

Table 3. *Agni and Koshtha* Crosstabulation

AGNI		***KOSHTHA***			**Total**
		KRUR	***MADHYAM***	***MRIDU***	
MANDAGNI	Count	6	25	3	34
	% of Total	8.1%	33.8%	4.1%	45.9%
TIKSHNAGNI	Count	2	5	7	14
	% of Total	2.7%	6.8%	9.5%	18.9%
VISHAMAGNI	Count	12	6	3	21
	% of Total	16.2%	8.1%	4.1%	28.4%
SAMAGNI	Count	0	3	2	5
	% of Total	0.0%	4.1%	2.7%	6.8%
Total	Count	20	39	15	74
	% of Total	27.0%	52.7%	20.3%	100.0%

Table 4. Distribution of 74 patients of *amavata* according to general symptoms *(Samanya Lakshan)*

Symptoms	**No. and Percentage of cases** ***Samanya Lakshan***				**Z test for Proportion**
	Present		**Absent**		
	Frequency	**Percentage**	**Frequency**	**Percentage**	
Angamarda (Bodyache)	28	37.8	46	62.2	x^2 =4.378 P =.047
Aruchi (Anorexia)	35	47.3	39	52.7	x^2 =.216 P =.728
Trishna (Thirst)	15	20.3	59	79.7	x^2 =26.162 P =.00
Alasya (Lethargy)	35	47.3	39	52.7	x^2 =.216 P =.728
Gauravam (Heaviness)	35	47.3	39	52.7	x^2 = .216 P =.728
Jvara (Fever)	15	20.3	59	79.7	x^2 =26.162 P =.00
Apaka (Indigestion)	24	32.4	50	67.6	x^2 =9.135 P =.003
Shunata anganam (Swelling)	35	47.3	39	52.7	x^2 =.216 P =.728

Table 5. Distribution of 74 patients of *amavata* according to general symptoms *(pravriddha lakshana)*

Symptoms	No. and Percentage of cases *(Pravriddha lakshana)*				Z test for Proportion
	Present		Absent		
	Frequency	Percentage	Frequency	Percentage	
Hasta padashiro gulpha trika janu Uru sandhi sa rujam shotham (Pain and swelling in hand, feet, ankle, knee, hip and spinal joints)	63	85.1	11	14.9	x^2 =36.54 P=.00
Rujyate atyartham (Excruciating pain)	72	97.3	2	2.7	x^2 =66.21 P=.00
Vyaviddha iva vrishcika (Nature of pain is like that of scorpion sting)	72	97.3	2	2.7	x^2 =66.21 P =.00
Agnidaurbalya (Hindered digestive mechanism)	61	82.4	13	17.6	x^2 =31.135 P =.00
Praseka (Excessive salivation)	62	83.8	12	16.2	x^2 =33.784 P =.00
Aruchi (Anorexia)	61	82.4	13	17.6	x^2 =31.135 P =.00
Gauravam (Heaviness)	74	100	0	0	x^2 = P =.00
Utsahahani (Lack of enthusiasm)	37	50	37	50	x^2 =.000 P =1.00
Vairasya (Altered taste in the mouth)	38	51.4	36	48.6	x^2 =.054 P =.908
Daham (Burning sensation)	11	14.9	63	85.1	x^2 =36.541 P =.00

Bahumutratam (Excessive urination)	48	64.9	26	35.1	x^2 =6.541 P =.014
Kukshau kathinatam shulam (Hardness and pain in abdomen)	25	33.8	49	66.2	x^2 =7.784 P =.007
Nidraviparyaya (Disturbed sleep)	28	37.8	46	62.2	x^2 =4.378 P =.047
Trt (Thirst)	26	35.1	48	64.9	x^2 =6.541 P =.014
Chardi (Nausea)	26	35.1	48	64.9	x^2 =6.541 P =.014
Bhrama	38	51.4	36	48.6	x^2 =0.54 P =.908
Murcha	12	16.2	62	83.8	x^2 =26.162 P =.00
Hrd graha (Stiffness in pericordium)	63	85.1	11	14.9	x^2 =36.541 P =.00
Vid Vibadhata (Constipation)	25	33.8	49	66.2	x^2 =7.784 P =.007
Jadya (Stiffness)	73	98.6	1	1.4	x^2 =70.054 P =.00
Antrakujanam (intestinal gurgling)	25	33.8	49	66.2	x^2 =7.784 P =.007
Anaha (Distension in abdomen)	25	33.8	49	66.2	x^2 =7.784 P =.007

Table 6. Distribution of 74 patients of *amavata* according to Symptoms (Tenderness and Swelling)

Symptoms		No. and Percentage of cases				Z test for Proportion
		Present		Absent		
		Frequency	Percentage	Frequency	Percentage	
Metacarpo phalangeal	Tenderness	37	50	37	50	P =1.00
	Swelling	40	54.1	34	45.9	P =0.56
Proximal Interphalangeal	Tenderness	32	43.2	42	56.8	P =0.295
	Swelling	36	48.6	38	51.4	P =0.908
Thumb Interphalangeal	Tenderness	55	74.3	19	25.7	P =.00
	Swelling	57	77	17	23	P =.00
Distal Interphalangeal	Tenderness	64	86.5	10	13.5	P =0.00
	Swelling	64	86.5	10	13.5	P =0.00
Wrist Joint	Tenderness	34	45.9	40	54.1	P =.561
	Swelling	35	47.3	39	52.7	P =.728
Elbow Joint	Tenderness	47	63.5	27	36.5	P =.27
	Swelling	53	71.6	21	28.4	P =.00
Shoulder	Tenderness	46	62.2	28	37.8	P =.47
	Swelling	51	68.9	23	31.1	P =.002
Hip Joint	Tenderness	61	82.4	13	17.6	P =.00
	Swelling	62	83.8	12	16.2	P =.00
Ankle Joint	Tenderness	42	56.8	32	43.2	P =.295
	Swelling	50	67.6	24	32.4	P =.003
Knee Joint	Tenderness	31	41.9	43	58.1	P =.201
	Swelling	36	48.6	38	51.4	P =.908
Metatarsophalangeal Joint	Tenderness	62	83.8	12	16.2	P =.00
	Swelling	65	87.8	9	12.2	P =.00
Back	Tenderness	58	78.4	16	21.6	.00
	Swelling	66	89.2	8	10.8	P =.00
Neck Joint	Tenderness	62	83.8	12	16.2	P =.00
	Swelling	69	93.2	5	6.8	P =.00
Tempero mandibular Joint	Tenderness	72	97.3	2	2.7	P =.00
	Swelling	73	98.6	1	1.4	P =.00

Figure 1. *Agni* of 74 patients of *Amavata* (Rheumatoid Arthritis) according to *Agnibala* assessment proforma by Aparna et al.

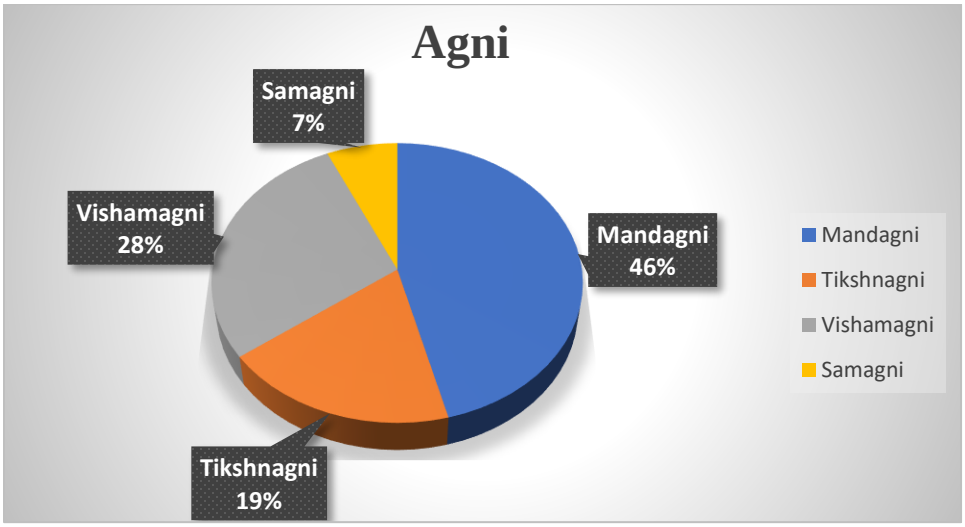

Figure 2. *Koshtha* of 74 patients of *Amavata* (Rheumatoid Arthritis) by Self-assessment questionnaire for Koshtha.

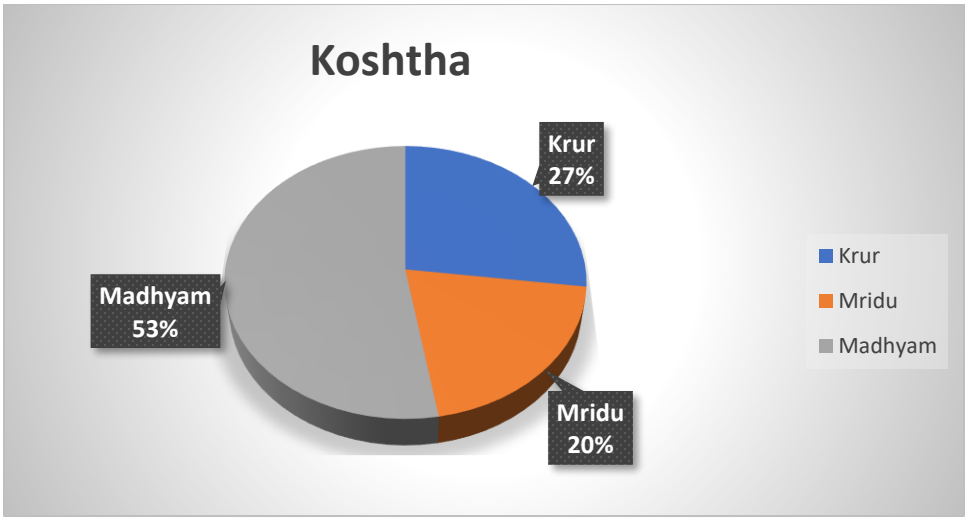

Figure 3.R.A. Factor of 74 patients of *Amavata* (Rheumatoid Arthritis)