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A RANDOMIZED CLINICAL STUDY TO EVALUATE THE EFFECT OF SAMEERA PANNAGA RASA IN SANDHIGATA VATA W.S.R. TO OSTEOARTHRITIS

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ABSTRACT

Background: Osteoarthritis is a chronic degenerative disorder and a leading cause of chronic disability. According to WHO, OA is the second commonest musculoskeletal problem in world population after back pain. In Ayurveda there is very close relation in the symptoms of Sandhigata vata and Osteoarthritis. Ayurveda with its holistic approach can help in improving this condition with unique drug therapy and formulations. A Kupipaka Rasayana which is a sublimate material formed in glass bottle under graded heat was selected for the study because of its high efficacy with low dosage. **Aims and Objectives:** To evaluate the effect of an Ayurveda formulation named as Sammer Pannaga Rasa in restricting and minimizing the symptoms of Osteoarthritis in affected patients of age group ranges from 40 to 70 years. **Materials and Methods:** Total 15 patients were randomly selected for the clinical trial and administered with Sameer Pannaga Rasa 60 mg twice a day with Piper betel (Nagavallidala) or warm water. The efficacy of drug is evaluated on subjective parameters like visual analogue scale for pain, tenderness, edema etc. **Results:** Therapy shows maximum effect on edema with relief percentage of 66.66% followed by morning stiffness 57.14%, restriction of flexion 56.25% and Visual Analogue Scale of pain improvement of 51.28% with statistically significant p value of < 0.001. **Conclusion:** The

therapeutic intervention improves the quality of life with reduction in intensity of pain and stiffness of joints.

KEYWORDS: Osteoarthritis, Osteophytes, Kupipakwa, Visual analogue scale, Edema.

INTRODUCTION

Osteoarthritis (OA), which is also known as osteoarthrosis or degenerative joint disease(DJD) is a progressive disorderof the joints caused by gradual loss of cartilage and resulting in the d evelopment of bony spurs and cysts at the marginsof the joints. The name osteoarthritis come s from three Greek words meaning bone, joint, and inflammation.[1] Osteoarthritis is the most common form of arthritis and a leading cause of chronic disability, in large part due to knee and/or hip involvement. According to World Health Organization (WHO) 9.6% of men and 18.0% of women ages over 60 years have symptomatic osteoarthritis worldwide. 80% of those with osteoarthritis have limitations in movement, and 25% cannot perform their major daily activities of life. Osteoarthritis is the second most common rheumatologic problem and it is the most frequent joint disease with a prevalence of 22% to 39% in India. OA is more common in women than men. Nearly, 45% of women over the age of 65 years have symptoms while 70% of those over 65 years show radiological evidence of OA.[2] The number of persons in the U.S. with arthritis is anticipated to rise from 15% of the population (40 million) in 1995 to 18% of the population (59 million) by 2020. Under the age of 55years the joint distribution of OA in men and women is similar; in older individuals, hip OA is more common in men, while OA of interphalangeal joints and thumb base is more common in women. Similarly radiographic evidence of knee OA and especially symptomatic knee OA is more common in women than in men. Osteoarthritis is a joint disorder and main presenting symptom is pain in the affected joint after repetitive use. Signs and symptoms of OA vary considerably among the patients. Main presenting symptoms are pain, stiffness, restriction of joint movements, deformity limping and oedema. Disease Sandhivata is described first by Charaka in the name of “Sandhigata Anila” with symptoms of edema (Shotha) which on palpation feels as bag filled with air and pain (Shula) on extension (Prasarana) and flexion (Akunchana) of the joints).[3] Sushruta also mentioned pain (Shula) and edema (Shotha) in this disease leading to the diminution (Hanti) of the movement at joint involved.[54] Another disease Vatakantaka is mentioned by Sushruta which occurs due to the vitiated Vata by involving ankle joint (Khuda Sandhi). According to Dalhana and Gayadasa, Khudu means ankle (Padjangha Sandhi).[5] The other view has been quoted according to which Khudu may

be taken as calcaneum (Parshani). Madhavakara has not explained edema (Shotha) but mentioned distension (Atopa) as a symptom of Sandhigata Vata[6], which may also be taken equivalent to air filled bag. He has added one more symptom i.e. restricted flexion and extension (Hanti Sandhi). Thus, the disease Sandhgata vata can be defined as a joint disease with symptom of pain (Shula), which aggravates by movement, edema (Shotha) with complete restricted movements at later stages. This disease is comparable with Osteoarthritis, a degenerative joint disease, the symptoms of which are same as Sandhigata vata and usually occurs after the age of 40 years.

Ayurveda with its holistic approach can help in improving this condition by unique drug therapy and formulations. A Kupipaka Rasayana which is a sublimate material formed in glass bottle under graded heat was selected for the study because of its high efficacy with low dosage. Sameer Pannaga Rasa is an arsenal mercurial formulation. Sameera Pannaga Rasa is first time mentioned in Rasa Chandanshu with the name of Vata Pannaga and is devoid of manahshila which was later on added by Aushadi Guna Dharma Shashtra. The constituents of Sameer Pannaga Rasa are purified Mercury (Shuddha Parada), purified Sulphur (Shuddha Gandhaka), purified Arsenic Trisulphide (Shuddha Haritala), purified Arsenic Disulphide (Shuddha Manahshila) and Arsenic Trioxide (Shuddha Somala) in equal quantity.[7] In clinical practice generally, it is prescribed in diseases like OA (Sandhigataroga), Asthma (Shwasa), Psychosis (Kaphaj Unmada) and other Vata Kaphaja disorders. Sameera Pannaga Rasa is classified as drug heated (Sa–Agni) with suphur (Sa–Gandha) inside a glass bottle (Antradhuma Rasa Murchhana) and sublimate is collected at the neck (Kupipakwa) of the bottle. There is controversy regarding the use of sublimate (Ubhayastha) and residual (Talastha) part of the drug. In this study only the sublimate material is used for drug administration.

AIMS AND OBJECTIVES

The main aim of the study is to evaluate the effect of an Ayurveda formulation named as Sammer Pannaga Rasa in restricting and minimizing the symptoms of Osteoarthritis in affected patients of age group ranges from 40 to 70 years. Osteoarthritis hampers the quality of life style by reducing the day today capacity of person to perform his or her work. The therapy or drug is administered to improve the quality of life in affected persons.

MATERIAL METHODS

Selection of Patients

For this study 15 patients were randomly selected and registered from the out-patient department and inpatient department of Rasashastra and Bhaishajya Kalpana of Rajiv Gandhi Government Post Graduation College and Hospita Paprola Distt. Kangra (H.P.). Out of 15 patients 5 patients were dropped out and 10 patients completed the prescribe course of treatment. No direct or indirect drug related reason for discontinue of patient was noticed. All patients registered in study were informed about the nature of treatment.

Inclusion Criteria

1. Patients willing for trial.
2. Age group 40-70 years, irrespective of sex.
3. Patient with classical symptoms of Sandhigata vata were selected for the trial.
4. No associated chronic ailment.

Exclusion Criteria

1. Patients not willing for trial.
2. Patients below 40 years and above 70 years.
3. Patients of Rheumatoid arthritis and Gouty arthritis.
4. Patients of Diabetes mellitus.
5. Patient of IHD, Myocardial infarction and any other life threatening disease, Tuberculosis patient allergy to the trial drug and pregnant women.

Laboratory Investigations

1. Detailed history was taken and physical examination was done, on the basis of a special Performa incorporating all the signs and symptoms of the disease.
2. The routine haematological investigations of the patients were carried out to assess the present condition of the patient as well as to rule out any coexisting pathology. R.A. factor and Serum uric acid of the patient were also done for differential diagnosis with Rheumatoid arthritis and Gouty arthritis.
3. The diagnosis was confirmed by X-ray examination of the involved joint wherever possible.
4. Serum cholesterol and Blood Sugar of the patients were carried out before and after the trial.

Method of Study

IEC & Consent: - Approval from the Institutional Ethical Committee (IEC) was taken prior to begin with this study vide IEC/125/2011 dated 11.04.2011. Written & informed consent was taken before their registration for the study.

The patients were administered with Sameera Pannaga Rasa capsules of 60 mg twice daily Piper betel (Nagavallidala) or warm water for 30 days and 2 follow up was done in the interval of 30 days.

Criteria of Assessment

The clinical results were assessed by observing the change in subjective Criteria like Visual analogue scale**.** Patient were asked about intensity and duration of pain & response was evaluated, with 0 for no pain and 10 for worst pain in same manner other criteria were divide in four groups with the grading ranging from 0 to 4; Degree of severity, Joint pain, Tenderness, Restriction of flexion, edema, Pain during movements, Difficulty in walking, Local crepitations, and Morning Stiffness.

OBSERVATION AND RESULTS

Total 15 patients were registered in the clinical trial. Out of 15, 5 patients dropped out without any direct or indirect drug related reason for discontinue of patient was noticed and remaining 10 patients had undergone treatment in R.G.G.P.G.A.C. and Hospital. So, further clinical study was conducted only on remaining 10 patients.

Maximum number of patients in the present study belongs to the age group of 40-49 years i.e. 33.33%, followed by 50-59 years (46.66%), 60-69years (20%) and 70-80 years (00%) respectively Table no. 1. All patients included in the study i.e. 100% reside in rural area Table no. 2. Maximum patients were of i.e. obese 46.66%, followed by 40% normal weight patients and 13.33% underweight patients Table no 3. Maximum number of patients were 1 – 2 years chronic (46.66%), 13.33% were 1-2 years chronic, 13.33% were 6months-1 year chronic, 20% were >5 years chronic while 6.66% were minimum i.e. 2-4 years chronic Table no. 4. Cardinal symptoms were evaluated as; Joint pain: 100% of patients included in this study complained of joint pain. The mean score for joint pain was 2.133 and percentage of mean score was found to be 53.325%. Tenderness: All the patients presented with the complaint of tenderness. The mean score for tenderness was 2.1 and percentage of mean score is 70%. Restriction of Flexion: This symptom was present in 100% of the cases

registered in the study. The mean score for this symptom was 1.4 and percentage of mean score was 36.65%. Edema: Swelling of the joint or edema was present in all the patients. The mean score was 2.23 and percentage of mean score was 74.43%. Pain during movements: The mean score for this symptom was 2.43 and percentage of mean score was 60.825%. Difficulty in walking: Mean score was 2.266 and percentage of mean score was 56.65%. Local Crepitations: This symptom had the mean score of 1.4 while percentage of mean score was 70%. Stiffness: Stiffness being one of the presenting symptoms of the disease has mean score of 2.33 and percentage of mean score was 58.25% Table no. 5. Efficacy of therapy was statistically evaluated and calculated as Visual Analogue Scale: Before treatment mean score was 7.8 which reduced to 3.8 after treatment and relief percentage was 51.28%. Degree of Severity: Before treatment mean score was 2.1 which reduced to 1.2 after treatment and relief percentage was 45%. Joint pain: Before treatment mean score was 2 which reduced to 0.9 after treatment and relief percentage was 55%. Tenderness: Before treatment mean score was 1.9 which reduced to 1 after treatment and relief percentage was 47.36%. Restriction of flexion: Before treatment mean score was 1.6 which reduced to 0.7 after treatment and relief percentage was 56.25%. Edema: The mean score before treatment was 2.1 which reduced to 0.7 after treatment showing a relief of 66.66%. Pain during movements: The mean score before treatment was 2.4 which reduced to 1.3 after treatment showing a relief of 45.83%. Walking distance: The mean score before treatment was 2.1 which reduced to 1.2 after treatment showing a relief of 42.85%. Morning Stiffness: The mean score before treatment was 2.1 which reduced to 0.9 after treatment showing a relief of 57.14%. All these subjective parameters show statistically significant p value of < 0.001. Local Crepitations: The mean score before treatment was 1.4 which reduced to 1.2 after treatment showing a relief of 14.28% with statistically insignificant p value of >0.05. All 10 patients were moderately improved Table no. 6 and Figure no. 1.

TABLES AND FIGURES

Table 1: Age wise distribution of 15 patients of *Sandhigata Vata*

Age gropus	Number of patients	Percentage
40-49 years	5	33.33%
50-59 years	7	46.66%
60-69 years	3	20%
70-80 years	0	00%

Table 2: Habitat wise distribution of 15 patients of *Sandhigata Vata*

Habitat	Number of patients	Percentage
Urban	00	00%
Rural	15	100%

Table 3: BMI wise distribution of 15 patients of *Sandhigata Vata*

Weight	Number of patients	Percentage
Obese	7	46.66%
Normal	6	40%
Underweight	2	13.33%

Table 4: Chronicity wise distribution of 15 patients of *Sandhigata Vata*

Duration of Symptoms	Number of patients	Percentage
< 6 months	02	13.33%
6 months-1 yr	02	13.33%
1-2 years	07	46.66%
2-4 years	01	6.66%
>5 years	03	20%

Table 5: Cardinal symptoms wise distribution of 15 patients of *Sandhigata Vata*

Symptom	Number of patients	Percentage	Mean Score	% of Mean Score
Joint Pain	15	100%	2.133	53.325%
Tenderness	15	100%	2.1	70%
Restriction of Flexion	15	100%	1.466	36.65%
Oedema	15	100%	2.233	74.43%
Pain during movements	15	100%	2.433	60.825%
Difficulty in walking	15	100%	2.266	56.65%
Local Crepitations	15	100%	1.4	70%
Morning stiffness	15	100%	2.33	58.25%

Table 6: Effect of therapy on the symptoms of 15 patients

Symptom	Mean Score		% of relief	S.D. (±)	S.E. (±)	"t"	P
	B.T.	A.T.					
Visual analogue scale(VAS)	7.8	3.8	51.28%	0.471	0.149	26.83	p<0.001
Degree of Severity	2.1	1.2	45%	0.316	0.1.	9	p<0.001
Joint pain	2	0.9	55%	0.568	0.180	6.128	p<0.001
Tenderness	1.9	1	47.36%	0.568	0.180	5.014	p<0.001
Restriction of flexion	1.6	0.7	56.25%	0.568	0.180	5.014	p<0.001
Oedema	2.1	0.7	66.66%	0.516	0.163	8.573	p<0.001
Pain during movements	2.4	1.3	45.83%	0.568	0.180	6.128	p<0.001
Walking distance	2.1	1.2	42.85%	0.568	0.180	5.014	p<0.001
Local crepitations	1.4	1.2	14.28%	0.422	0.133	1.50	P=0.168
Morning Stiffness	2.1	0.9	57.14%	0.422	0.133	9	p<0.001

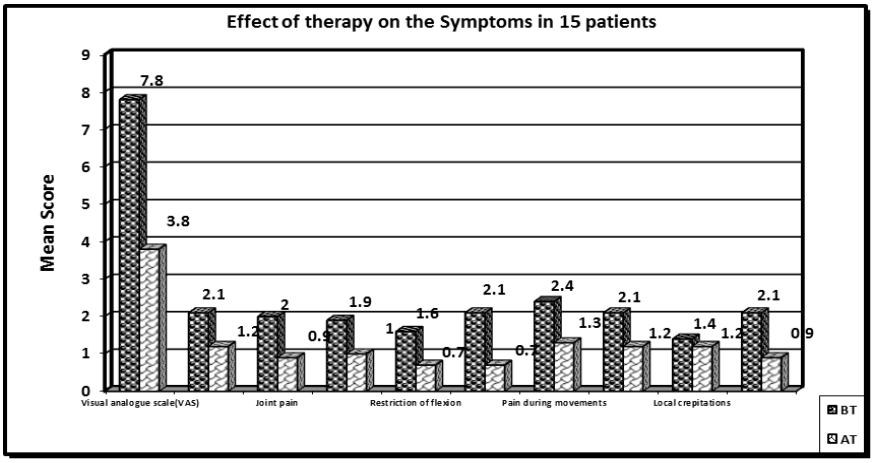

Figure no. 1

DISCUSSION

Detailing of classical text points out that vitiation of Vata, depletion of Kapha Dosha along with Mamsavaha, Medovaha, Asthivaha, Majjavaha Vaha Srotas and Asthi, Sandhi, Peshi, Snayu, Majja Dooshya are the responsible factors in the manifestation of Sandhigata vata.

The disease Sandhigata vata has its root in the Sandhi Sthana endorsed by Amashayodbhavaja Vikara.

Considering the aggravated Vata and depleted Kapha, Acharyas have advised the use of Vata Ghana, Ushna, Vatanulomaka drugs as first line of treatment in Sandhigata vata. However, adoption of certain specification is always required for the breakdown of the three pathways of Samprapti. Furthermore, drugs exhibiting quick control over vitiated Vata and depleted Kapha are required during Vegavastha. Hence, logically, the drug administered in the treatment of Sandhigata vata, should be able to overcome vitiated Vata and depleted Kapha for immediate and symptomatic relief. Vagbhata emphasizes that, a drug acts by its Rasa, Vipaka, Virya, Guna and Prabhava. Normally, the effect of Rasa is less than that of Vipaka. Effect of Vipaka is lesser than that of Virya, which further is lesser than Prabhava, provided all are present in equal proportions. The overall pharmacodynamics of Sameer Pannaga Rasa is Katu Rasa, Ushna Guna, Ushna Virya, Katu Vipaka and Kapha Vataghna and other effect on other diseases are explained in Rasa Tantra Sara Evum Shidhaprayoga Samgrah.[8] These dynamic actions are helpful in breaking the pathogenesis of Sandhigata vata. In Osteoarthiritis one of the main factor is interleukin-1 (IL-1), which is a potent pro-inflammatory cytokine that, in vitro, is capable of inducing chondrocytes and synovial cells to synthesize MMPs. Stent-based As_2O_3 delivery effectively inhibited expression of

inflammation associated proteins such as monocyte chemoattractant protein-1 (MCP-1) and interleukin-6 (IL-6), in agreement with the western blotting results. This shows the antinflammatory and anti interlukin effect of arsenic compounds which helps in eluding the pathology of osteoarthiritis.[9]

In Sameer Pannaga Rasa, juice of Tulsi leaves (Ocimum sanctum) is used as Bhavana Dravya. Some studies have proved that extract of Ocimum sanctum inhibits the arsenic induced toxicity. Ocimum sanctum has shown effective role in protecting animals from arsenic induced oxidative stress and in the depletion of arsenic concentration.[10]It has been proved that Ocimum extract can protect against mercury toxicity in mice. It significantly enhanced reduced glutathione, which implicates that oral administration of Ocimum extract provides protection against mercury induced toxicity in Swiss albino mice.[11] Thus, Ocimum may help in nullifying possible Adverse Drug Reactions.[12]

In the study, Nagavallidala (Piper betel) was taken as Sahapana for Sameer Pannaga Rasa. Some studies showed the suppression of inflammatory and neurogenic pains by the extract which implies that it contains active analgesic principle that acts as both centrally and peripherally. So the extract can be used to manage acute as well as chronic pain.[13] The extract of Piper betel significantly inhibited paw edema induced by carrageenan which suggests a possible inhibition of cyclooxygenase synthesis and this effect is similar to that produced by non-steroidal anti-inflammatory drugs whose mechanism of action is inhibition of the cyclooxygenase enzyme. Saponins and flavonoids shows inhibiting effect on pain perception as well as anti-inflammatory properties due to their inhibitory effects on enzymes involved in the production of the chemical mediator of inflammation.[14] Considering all these, explains the effectiveness of Nagavallidala which can reduce arsenic induced oxidative stress as well as the control of diseases through inhibition of production of inflammatory mediators and acts as analgesic.

CONCLUSION

The results reveal that the Sameer Pannaga Rasa has a significant role in reducing the sign and symptoms of osteoarthritis. Treatment shows more than fifty percent of relief in pain with the least effect in local crepitus. Analysis of the data generated during the study shows that; all the patients have better quality of life after taking the medicine. None of the treated patients developed any adverse effects during the study period.

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