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Case Series

Impact of ayurvedic panchakarma therapy on osteoarthritis

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ABSTRACT

Osteoarthritis is the leading cause of chronic pain and disability in adults, imparting a substantial economic burden on both society and individuals. This case series explored the impact of Ayurvedic Panchakarma therapy on knee osteoarthritis. Data from procedures conducted between March 2022 and January 2024 at a clinic in Maharashtra, India was collected. Patients of either gender who were clinically diagnosed with osteoarthritis grade 2 and underwent Knee Rejuvenation Therapy were included in this analysis. Follow-up was conducted after 1 month and at 90 days. Baseline data was compared with follow-up data. A total of 16 patients with mean age of 57.63 ± 10.20 years were included in the study. The Knee Injury and Osteoarthritis Outcome Score (KOOS) score (day 1: 20.31±11.18, after 1 month: 49.94±10.85, day 90: 71.31±5.89, p=0.00), pain (day 1: 25.44±14.03, after 1 month: 57.81±10.66, day 90: 80.63±5.78, p=0.00), symptoms (day 1: 30.69±14.59, after 1 month: 55.75±12.94, day 90: 83.00±6.04, p=0.00), sports (day 1: 2.81±6.84, after 1 month: 25.31±15.05, day 90: 39.69±15.76, p=0.00), function (day 1: 31.25±16.69, after 1 month: 58.94±12.34, day 90: 78.81±7.98, p=0.00), and quality of life (day 1: 14.13±14.83, after 1 month: 52.00±10.78, after 1 month: 73.50±4.50, p=0.00) increased from baseline to the 90-day follow-up. Ayurvedic treatment is effective in improving the KOOS score and reducing the severity of arthritis in diagnosed osteoarthritis patients.

Keywords: Ayurveda, Exercise, Knee osteoarthritis, KOOS score, Pain relief

INTRODUCTION

Osteoarthritis is a chronic, degenerative, and progressive disorder and is the most predominant type of musculoskeletal disorder worldwide.[1] It is characterized by loss of articular cartilage, bone hypertrophy at the margins, subchondral sclerosis, and biochemical and morphological alterations of the synovial membrane and joint capsule.

Symptoms include pain, especially after prolonged activity and/or weight bearing. If inactive for too long, stiffness may occur. The estimated prevalence in India is 22–39%.[2] Knee osteoarthritis is among the most prevalent osteoarthritis. Treatment of knee osteoarthritis includes medications, conservative and operative treatment. Therapeutic drugs such as non-steroidal anti-inflammatory, and analgesics have gastrointestinal, renal, and cardiovascular side effects.[3] Complementary and alternate therapies are widely accepted in India, and incorporating evidence-based practices from these alternative therapies can be beneficial in the management of osteoarthritis.

Current guidelines advocate for the inclusion of physiotherapy and rehabilitative measures as effective strategies for managing osteoarthritis in the knee and other joints of the body.[1] Ayurveda is a traditional medicine with wide acceptance in India. It employs treatment approaches such as manual therapies, lifestyle changes, nutritional advice, medication, yoga, and purification techniques. However, evidence assessing these treatment approaches are scarce.[4] Against this background the present case series was designed to explore the role of therapeutic exercise as

intervention in managing pain associated with knee osteoarthritis.

CASE SERIES

Data from procedures conducted between March 2022 and January 2024 at a clinic in Maharashtra, India was collected. Patients of either gender who were clinically diagnosed with osteoarthritis grade 2 and underwent Knee Rejuvenation Therapy were included in this analysis. All patients provided written informed consent for then collection and analysis of the data for research purposes.

Knee rejuvenation therapy

The first step was centripetal oleation with Vatari oil (*Nirgundi Dashmula*) and Murchit oil (Til oil) for 20–25 mins twice weekly. *Nirgundi* oil has anti-inflammatory and anti-arthritic properties. It relieves pain and edema, promotes hair growth, cleanses wounds, and promotes healing. This step is performed twice weekly. The second step was *Janu Basti* procedure to both knee joints. The tense machine was used for 10 mins, *Janu Basti* with Vatari oil was administered for 30 mins and *Nadi Swed* with *Dashmool decoction* was administered for 7–10 mins. *Janu Basti* relieves pain and inflammation, increases blood circulation, and strengthens and nourishes the knee joints. It also relieves stiffness by lubrication of the knee joint and maintaining synovial fluid levels. This step was performed twice weekly. The third step was Shalishasti pinda sweda with a combination of *Shalishasti rice* and *Balya Bharad* to soften the skin, dilate the blood vessels, improve peripheral circulation, reduce congestion, excrete metabolic waste and toxins through sweat and reduce edema. It lasted for 20–25 mins. Thermal vasodilation with *Dashmula* decoction for 10–15 mins was also administered. This step was performed twice weekly. The last step was per rectal herb decoction administration (*Basti*). The first oil used was *Mat B* (Vatex oil) for 5–10 mins which was useful in neuo-muscular disorders due to its anti-inflammatory, analgesic, and diuretic properties. The second oil used was a combination of *Panch Tikta Bharad*, *Panch Tikta Ghrut*, and *Murchit til* oil for 5–10 mins. This was useful in Kapha disease, skin diseases, and neuro-muscular disorders. The last oil used was *Sahachar oil*. This oil has anti-inflammatory and analgesic properties and improves blood circulation and eliminates metabolic waste. This step was also performed twice weekly. The treatment plan is outlined in Table 1. Low calorie low carb protein rich vegetarian diet plan was followed by patients.

Table 1: Knee rejuvenation therapy.

Steps involved	Product	Mechanism of action	Duration (mins)	Frequency	Probable adverse effects
Centripetal oleation	Vatari oil (nirgundi dashmula) Murchit oil (til oil)	Indicated in painful inflammatory conditions, amavata, sciatica, and headache	20–25	Twice a week	Irritation of skin, or skin allergy.
Double janu basti tense	Tense machine	Relieves pain and inflammation, increases blood circulation, and strengthens and nourishes the knee joints. Also helps relieve stiffness by lubrication of the knee joint and maintaining synovial fluid levels.	10	Twice a week	Improper massage on the inflamed part can lead to undue pain.
Janu basti	Vatari oil		30		
Nadi swed	Dashmool decoction		7–10		
Shalishasti pinda sweda	Shalishasti rice + balya bharad	Softens skin, dilates blood vessels, improves peripheral circulation, reduces congestion, excretes metabolic waste and toxins through sweat, and reduces edema	20–25	Twice a week	Fainting, fatigue, excessive thirst, burning sensation, and weakness of the voice and limbs
	Dashmula decoction		10–15		
Per rectal herb decoction administration (basti)	Mat b (vatex oil)	Useful in neuro-muscular disorders and has anti-inflammatory, analgesic, and diuretic properies. Used in kapha disease, skin diseases, and neuro-muscular disorders, anti-inflammatory and analgesic properties, improves blood circulation and eliminates metabolic wastes	5–10	Twice a week	Abdominal discomfort, bloating, or cramping during or after the procedure
	TKB (panch tikta bharad+panch tikta ghrut+murchit til oil)				
	Sahachar oil				

Table 2: Demographics of study patients.

Variable	Day 1	Day 90	P value
Age (in years)	57.63±10.20		
Males, n (%)	2 (12.5%)		
Weight, kg	78.92 ± 19.51	73.86±17.59	0.00
Body mass index	32.18 ± 6.86	30.16±6.13	0.00
Abdominal girth, cm	102.06 ± 12.77	92.75±9.13	0.00
Heart rate, bpm	87.50±9.99	77.00±7.75	0.00
Systolic blood pressure, mmHg	124.50±10.76	114.69±13.17	0.01
Diastolic blood pressure, mmHg	82.50±10.17	75.00±5.00	0.03

All data are expressed as mean±standard deviation.

Table 3: Patient outcomes.

Variable	Day 1	After 1 Month	Day 90	P value
KOOS score	20.31±11.18	49.94±10.85	71.31±5.89	0.00
Pain	25.44±14.03	57.81±10.66	80.63±5.78	0.00
Symptoms	30.69±14.59	55.75±12.94	83.00±6.04	0.00
Sports	2.81±6.84	25.31±15.05	39.69±15.76	0.00
Function/daily living	31.25±16.69	58.94±12.34	78.81±7.98	0.00
Quality of life	14.13±14.83	52.00±10.78	73.50±4.50	0.00

All data are expressed as mean±standard deviation.

Table 4: KOOS score and pain according to gender and knee arthritis grade.

	KOOS score						Pain					
	Before	**After**	**1 Months**	**Change % (Day 1–7)**	**Change % (Day 90 to After 1 Month)**	**Change % (Day 1 to After 1 Month)**	**Before**	**After**	**1 Months**	**Change % (Day 1–7)**	**Change % (Day 90 to After 1 Month)**	**Change % (Day 1 to After 1 Month)**
Female	18.21±10.12	70.79±5.68	48.50±10.43	288.63	-31.48	166.27	23.14±13.48	80.29±6.10	56.36±10.52	246.91	-29.80	143.52
Knee arthritis Grade 1	47.00±0.00	75.00±0.00	71.00±0.00	59.57	-5.33	51.06	58.00±0.00	83.00±0.00	81.00±0.00	43.10	-2.41	39.66
Knee arthritis Grade 2	15.67±3.68	65.83±2.79	43.17±6.91	320.21	-34.43	175.53	21.67±6.99	76.00±5.42	51.33±5.76	250.77	-32.46	136.92
Knee arthritis Grade 3	16.29±8.10	74.43±4.59	49.86±8.84	357.02	-33.01	206.14	19.43±11.51	83.57±4.66	57.14±9.16	330.15	-31.62	194.12
Male	35.00±6.00	75.00±6.00	60.00±8.00	114.29	-20.00	71.43	41.50±2.50	83.00±0.00	68.00±4.00	100.00	-18.07	63.86
Knee arthritis Grade 1	41.00±0.00	81.00±0.00	68.00±0.00	97.56	-16.05	65.85	44.00±0.00	83.00±0.00	72.00±0.00	88.64	-13.25	63.64
Knee arthritis Grade 2	29.00±0.00	69.00±0.00	52.00±0.00	137.93	-24.64	79.31	39.00±0.00	83.00±0.00	64.00±0.00	112.82	-22.89	64.10

All data are expressed as mean±standard deviation.

Table 5: Average function/daily living and quality of life according to gender and knee arthritis grade.

	Average of function/daily living						Quality of life					
	Before	After	1 Months	Change % (Day 1–7)	Change % (Day 90 to After 1 Month)	Change % (Day 1 to After 1 Month)	Before	After	1 Months	Change % (Day 1–7)	Change % (Day 90 to After 1 Month)	Change % (Day 1 to After 1 Month)
Female	27.50±10.28	79.57±4.84	58.00±12.69	189.35	-27.11	110.91	11.64±14.00	73.29±4.77	50.50±9.62	529.45	-31.09	333.74
Knee arthritis Grade 1	56.00±0.00	81.00±0.00	78.00±0.00	44.64	-3.70	39.29	44.00±0.00	75.00±0.00	75.00±0.00	70.45	0.00	70.45
Knee arthritis Grade 2	24.67±0.47	75.33±2.13	51.00±10.75	205.41	-32.30	106.76	7.33±8.52	69.00±3.46	44.83±6.74	0.00	-35.02	0.00
Knee arthritis Grade 3	25.86±9.25	83.00±3.93	61.14±10.67	220.99	-26.33	136.46	10.71±12.78	76.71±2.71	51.86±5.57	616.00	-32.40	384.00
Male	57.50±26.50	73.50±1.50	65.50±6.50	27.83	-10.88	13.91	31.50±6.50	75.00±0.00	62.50±12.50	138.10	-16.67	98.41
Knee arthritis Grade 1	84.00±0.00	72.00±0.00	72.00±0.00	-14.29	0.00	-14.29	38.00±0.00	75.00±0.00	75.00±0.00	97.37	0.00	97.37
Knee arthritis Grade 2	31.00±0.00	75.00±0.00	59.00±0.00	141.94	-21.33	90.32	25.00±0.00	750.00±0.00	50.00±0.00	0.00	-33.33	0.00

All data are expressed as mean ± standard deviation.

Table 6: Symptoms and sports according to gender and knee arthritis grade.

	Symptoms						Sports					
	Before	After	1 Months	Change % (Day 1–7)	Change % (Day 90 to After 1 Month)	Change % (Day 1 to After 1 Month)	Before	After	1 Months	Change % (Day 1–7)	Change % (Day 90 to After 1 Month)	Change % (Day 1 to After 1 Month)
Female	27.93±13.51	82.57±6.34	53.79±12.50	195.65	-34.86	92.58	1.43±3.98	38.21±13.31	23.93±15.14	2575.00	-37.38	1575.00
Knee arthritis Grade 1	61.00±0.00	86.00±0.00	71.00±0.00	40.98	-17.44	16.39	15.00±0.00	50.00±0.00	50.00±0.00	233.33	0.00	233.33
Knee arthritis Grade 2	25.67±9.57	79.33±3.86	53.00±9.24	209.09	-33.19	106.49	0.00±0.00	30.00±11.18	16.67±11.79	0.00	-44.44	0.00
Knee arthritis Grade 3	24.14±10.87	84.86±7.20	52.00±13.90	237.50	-38.72	106.82	0.71±1.75	43.57±11.87	26.43±13.81	6000.00	-39.34	3600.00
Male	50.00±0.00	86.00±0.00	69.50±5.50	72.00	-19.19	39.00	12.50±12.50	50.00±25.00	35.00±10.00	300.00	-30.00	180.00
Knee arthritis Grade 1	50.00±0.00	86.00±0.00	75.00±0.00	72.00	-12.79	50.00	25.00±0.00	75.00±0.00	45.00±0.00	200.00	-40.00	80.00
Knee arthritis Grade 2	50.00±0.00	86.00±0.00	64.00±0.00	72.00	-25.58	28.00	0.00±0.00	25.00±0.00	25.00±0.00	0.00	0.00	0.00

All data are expressed as mean±standard deviation.

Data collection

Patient demographic, anthropometric and laboratory details were extracted from patient medical records. The details from the KOOS protocol that were filled out at the baseline visit were also extracted. Data from baseline were compared with data after a month and 90 days.

Statistical analysis

Categorical data are expressed as number (percentage) and continuous data are expressed as mean±standard deviation. Paired t test was used to determine the difference between baseline and follow-up at 90 days, p value ≤0.05 was considered as statistically significant. R version 3.4.1 software was used to analyses the data.

Demographics of patients

The mean age of the patients was 57.63±10.20 years. Females comprised 87.5% of the patients. Mean weight (day 1: 78.92±19.51 kg and day 90: 73.86±17.59 kg, p=0.00) and mean body mass index (day 1: 32.18±6.86 and day 90: 30.16±6.13, p=0.00) decreased at the 90-day follow-up. Similarly, systolic blood pressure (day 1: 124.50±10.76 mmHg and day 90: 114.69±13.17 mmHg, p=0.01) and diastolic blood pressure (day 1: 82.50±10.17 mmHg and day 90: 75.00±5.00 mmHg) decreased at the 90-day follow-up. The demographics of the patients is elaborated in Table 2.

Patient outcomes

The KOOS score (day 1: 20.31±11.18, after 1 month: 49.94±10.85, day 90: 71.31±5.89, p=0.00), pain (day 1: 25.44±14.03, after 1 month: 57.81±10.66, day 90: 80.63±5.78, p=0.00), symptoms (day 1: 30.69±14.59, after 1 month: 55.75±12.94, day 90: 83.00±6.04, p=0.00), sports (day 1: 2.81±6.84, after 1 month: 25.31±15.05, day 90: 39.69 ± 15.76, p=0.00), function/daily living (day 1: 31.25±16.69, after 1 month: 58.94±12.34, day 90: 78.81±7.98, p=0.00), and quality of life (day 1: 14.13±14.83, after 1 month: 52.00±10.78, after 1 month: 73.50±4.50, p=0.00) increased from baseline to the 90-day follow-up. The patient outcomes are detailed in Table 3. KOOS score, pain, average of function/daily living, quality of life, symptoms and sports according to knee arthritis grades for females and males is elaborated in Tables 4-6.

DISCUSSION

Osteoarthritis is the leading cause of chronic pain and disability in adults, imparting a substantial economic burden on both society and individuals. Knee osteoarthritis is the most common type with greater prevalence amongst women, as reflected in the current analysis. Its prevalence increases with an increase in body mass index-with higher prevalence among overweight and obese individuals.[5] A large meta-analysis revealed obese or overweight individuals have 2.1 times greater risk of knee osteoarthritis.[6] Prevalence was also higher among rural inhabitants than urban inhabitants, indicative of higher prevalence among individuals with sedentary lifestyle.[7] Thus, as the population ages and the prevalence of obesity increases, the clinical and economic burden rises. Ayurvedic treatment includes a judicious combination of external therapies (Bahya Chikitsa) and internal medication (Abhyantara Chikitsa). The Bahya Chikitsa can include Janu Basti, Abhyanga (massage), Jalaukavacharana (application of leech), Agnikarma (cautery), Basti (medicated enema), and others. Abhyantara Chikitsa can include internal medications in the form of Churna (powder of a single herb/ combination of herbs), Kashaya (decoction), Vati (pills), and others. However, there is a dearth of evidence on Ayurvedic treatment that have implemented Janu Basti in the treatment of knee osteoarthritis. A pilot study 8 of 6 patients explored the efficacy of Janu Basti in which Ksheerbala oil administered followed by local application of medicated steam.

Each session lasted for 40–50 mins daily and was adhered to for 21 days. During the 5-week follow-up, patients massaged the affected knee with Ksheerbala oil, followed by hot residence on their own. Significant improvement was observed-patients reported 100% relief from stiffness, 87.50% relief from pain, and 81.08% relief from physical function according to the Western Ontario and McMaster University Osteoarthritis (WOMAC) index. Another study Janu Basti was performed with 150 ml of Sahachara Taila in each knee joint for 30 mins daily for 14 days along with adherence to Adityapaka, Guggulu tablets days in 15 patients. The WOMAC index score decreased significantly from 49.60 to 29.60. Also, the Visual Analog Scale score decreased from 5.40 to 2.60. A few anecdotal reports also reveal symptomatic relief with Janu Basti.[9,10]

There are a few limitations of the case series. These include small sample size, retrospective study design, and short follow-up duration. Future larger prospective studies with longer follow-up duration are warranted to provide further insights.

CONCLUSION

Ayurvedic treatment is effective in improving the KOOS score and reducing the severity of arthritis in diagnosed osteoarthritis patients.

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