

Case Report

Impact of a Six-Week Naturopathic Regimen on Pain, Inflammation, and Quality of Life in a Patient with Rheumatoid Arthritis: A Case Study

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ABSTRACT

Rheumatoid arthritis (RA) is a chronic autoimmune disorder that leads to joint inflammation, pain, and potential damage, with significant disability and systemic involvement. Conventional treatments often carry adverse effects, prompting interest in complementary and alternative medicine (CAM) therapies like yoga and naturopathy. This case study evaluates the impact of a six-week naturopathic regimen, including massage therapy, reflexology, hot baths, mustard packs, and cupping, on a 34-year-old female with RA. Following treatment, the patient showed significant improvements in inflammatory markers (ESR, CRP, Anti-CCP) and reduced depression symptoms (PHQ-9). The therapies appeared to enhance circulation, modulate pain-relieving neurotransmitters, and decrease pro-inflammatory cytokines. The findings suggest that yoga and naturopathy may effectively complement conventional RA treatments, improving pain, inflammation, and overall quality of life.

Key words: Complementary and Alternative Medicine, Rheumatoid Arthritis, Yoga and Naturopathy

Rheumatoid arthritis (RA) is a chronic autoimmune disorder marked by inflammation of the synovial joints, resulting in pain, swelling, and potential joint damage. It can also lead to extra-articular manifestations affecting various tissues and organs [1]. RA represents articular symptoms such as symmetrical joint pain and swelling, morning stiffness, joint deformities, and reduced range of motion [2]. Extra-articular manifestations include rheumatoid nodules, fatigue and malaise, lung complications like interstitial lung disease, increased cardiovascular risks, and potential vasculitis causing skin rashes and ulcers [3]. The global prevalence of RA is estimated to be between 0.5% and 1% of the population, and it significantly contributes to global disability, with approximately 3.2 million Disability-adjusted life years (DALYs) reported in 2019 [4, 5].

Women are 2-3 times more likely to develop RA, which typically occurs between ages 30 and 60 but can arise at any age. Risk factors include a family history of RA, smoking, certain infections, obesity, hormonal changes during pregnancy or menopause, and other autoimmune diseases like lupus or Sjögren's syndrome [6]. Conventional management of RA includes NSAIDs (Nonsteroidal Anti-Inflammatory

Drugs) for pain relief, DMARDs (Disease-Modifying Antirheumatic Drugs) like methotrexate to slow disease progression, biologics targeting the immune system, corticosteroids for rapid relief, JAK (Janus Kinase) inhibitors for inflammation, and analgesics like acetaminophen for pain management [7]. Pharmacological management of RA has many untoward effects including gastrointestinal disturbances, increased risk of some renal and cardiovascular diseases, osteoporosis, marrow suppression, and increased risk of cataract and glaucoma [8].

This shows the need for CAM therapy in the management of RA. Studies have shown that patients who undergo CAM therapy have fewer complications than non-CAM users [9]. CAM therapy for RA includes acupuncture, hydrotherapy, physiotherapy, yoga, diet therapy, and lifestyle modification which are aimed at reducing symptoms and improving quality of life. Yoga is an ancient practice from India that combines physical postures (asanas), breath control (pranayama), meditation, and ethical principles to unify the body, mind, and spirit. Naturopathy is a holistic medical system focused on natural remedies and the body's innate healing ability, integrating therapies such as herbal medicine, nutrition, and lifestyle counselling to emphasize prevention and address

Access this article online

Received – 30th December 2024
Initial Review – 15th January 2025
Accepted – 6th March 2025

Quick response code

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underlying causes of illness. This case study is aimed to evaluate the effectiveness of yoga and naturopathy in patients with RA.

CASE DESCRIPTION

A 34-year-old female presents with a known diagnosis of RA for the past four years, reporting worsening multiple joint pain over the last six months. She describes the pain as throbbing, predominantly affecting her wrists, knees, and fingers, accompanied by morning stiffness lasting 1-2 hours. Notably, she experiences occasional swelling in her hands but denies any recent trauma. Her menstrual history is normal, with regular cycles and no associated dysmenorrhea. The patient has no significant past medical history beyond her RA and no family history of autoimmune diseases. Upon examination, her vital signs are stable: temperature at 98.6°F, pulse 76 bpm, respiratory rate 16 breaths per minute, and blood pressure 124/82 mmHg, with a BMI of 27 kg/m². Systemic examination reveals tenderness and swelling in wrists and proximal interphalangeal joints, with a reduced range of motion in the affected areas. Mild swelling and tenderness are also noted in both knees. Cardiac examination shows normal heart sounds with intact peripheral pulses, while respiratory examination reveals clear lung fields. The abdomen is soft and non-tender, and neurological assessment shows no deficits. Skin examination is unremarkable.

After a detailed consultation, the intervention and assessment details were explained to the patient, and written consent was obtained. The treatment regimen was planned for 6 weeks. The patient received a partial massage for 10 minutes on the lower limbs and 10 minutes on the upper limbs on alternate days. The massage was performed by a qualified therapist using lavender essential oil mixed with coconut oil as a carrier oil. Foot reflexology was administered on alternate days, with each session lasting 10 minutes per leg. A warm arm and foot bath was routinely performed before bedtime, with the water temperature maintained between 100 and 104°F. Three spoons of ground mustard powder were mixed with warm water to create a paste. This paste was then spread evenly on a cheesecloth, which was applied to the knees and wrists. After 15 minutes, the cloth was removed, and the area was washed. The mustard pack application was done three times a week. Cupping was performed after cleansing the affected area with alcohol. Small plastic suction cups were used for the procedure. Each session lasted for 10 minutes and cupping therapy was performed once a week [Table: 1].

Table 1: Details of intervention

Name of intervention	Duration of session	Number of Sessions
Partial massage to both feet and arms	20 minutes	21
Reflexology to both foot	20 minutes	21
Hot arm and foot bath	20 minutes	42

Mustard pack to both knees and wrist	15 minutes	18
Cupping therapy	10 minutes	6

The C-reactive protein (CRP), Erythrocyte sedimentation rate (ESR), Anti-cyclic citrullinated cyclic peptide antibodies (Anti-CCP), and Patient health questionnaire are measured as an outcome measure before and after intervention. The Patient Health Questionnaire-9 (PHQ-9) is a self-report tool used to assess the severity of depression through nine questions aligned with DSM-5 criteria. Respondents rate their symptoms over the past two weeks, with scores ranging from 0 to 3, where higher scores indicate more severe depression [10] [Table: 2].

Table 2: Assessment details

Parameter	Baseline assessment	Post Assessment
ESR	30 mins	37 mm
	60 mins	80 mm
CRP	5.0 mg/L	3.85 mg/L
Anti CCP	28 EU/L	12.2 EU/L
PHQ-9	20	11

Note: mm – millimeters per hour; mg/L - milligrams per liter; EU/mL – Enzyme Units per milliliter; ESR – Erythrocyte Sedimentation Rate; CRP – C Reactive Protein; Anti CCP - Anti-cyclic citrullinated peptide; PHQ-9 - Patient Health Questionnaire-9

Naturopathic treatments over a six-week duration reduce pain and improve blood parameters in patients with rheumatoid arthritis. The patient's ESR levels decreased from 37 mm to 18 mm at 30 minutes and from 80 mm to 35 mm at 60 minutes. The CRP level reduced from 5.0 mg/L to 3.85 mg/L, and the anti-CCP level decreased from 28 EU/L to 12.2 EU/L. Alongside these biological markers, the PHQ-9 score improved from 20 to 11.

DISCUSSION

This study aims to investigate the effects of naturopathic approaches in rheumatoid arthritis (RA) management. The findings indicate that specific naturopathic treatments may be beneficial for RA patients. The following outlines potential mechanisms of action. Substance P is synthesized by nerve cells, eosinophils, lymphocytes, and mast cells. Functioning as a neuroinflammatory mediator, it plays a distinct role in skeletal muscle degeneration and damage observed in RA [11]. The vagus nerve (10th Cranial nerve) is the primary nerve of the parasympathetic branch of the autonomic nervous system. It plays a key role in a neural reflex mechanism known as the inflammatory reflex, which regulates innate

immune responses and inflammation during pathogen invasion and tissue damage [12]. Massage therapy promotes dilation and enhances blood flow in superficial vessels, which helps reduce substance P levels, increases vagal activity, and boosts serotonin [13]. A previous study on RA patients also showed that partial massage of the affected upper limbs enhanced vagal activity and improved range of motion (ROM) and serotonin levels [14].

Additionally, lavender essential oil effects can be linked to linalyl acetate and linalool, which effectively alleviate pain and inflammation, prevent muscle spasms, and reduce tension [15]. Foot reflexology is used in complementary and alternative medicine for medical treatment. Unlike general foot massage, it specifically focuses on the reflex zones of the feet that correspond to various body parts, working on them in a deeper way [16]. Foot reflexology may reduce pain through several mechanisms: it can modulate neuroendocrine signals, leading to the release of pain-relieving neurotransmitters like endorphins, serotonin, and dopamine. By relaxing muscles, reflexology helps alleviate both local and referred pain. The pressure applied may also activate non-painful stimuli that interfere with pain signals, consistent with the Gate Control Theory.

Additionally, reflexology may enhance microcirculation and lymphatic flow, reducing inflammation and promoting pain relief [17, 18]. Heat therapy includes hot arm and foot bath to alleviate pain and stiffness by promoting vasodilation, improving circulation, and loosening stiff joints, which enhances mobility and supports healing [19]. The pathogenesis of RA involves the activation of macrophages, which secrete proinflammatory cytokines like IL-1, IL-17, and TNF α . These cytokines, in turn, stimulate synovial fibroblasts and chondrocytes in the adjacent articular cartilage to release enzymes that degrade proteoglycans and collagen, resulting in tissue destruction [20]. Allyl isothiocyanate in mustard seeds creates a warming effect that improves blood circulation, reduces stiffness, and alleviates pain, while sinigrin in it may lower pro-inflammatory cytokines IL-1&17, which are the crucial inflammatory factors in RA and the warmth after application promotes vasodilation, delivering oxygen and nutrients to ease pain and stiffness [21, 22]. Cupping therapy has been utilized for four primary purposes: pain relief, reduction of inflammation, immunomodulation, and haematological regulation [23].

Local damage to the skin and capillary vessels caused by cupping may generate a nociceptive stimulus that activates the pain-relieving effects described by the Diffuse Noxious Inhibitory Controls (DNIC) theory. DNIC refers to the inhibitory activity of wide dynamic range nociceptive spinal neurons, which is triggered by a second, spatially distant noxious stimulus [24]. Loss of blood and vasodilation during cupping therapy can increase parasympathetic activity, promoting muscle relaxation and benefiting the patient.

Additionally, cupping has been shown to reduce inflammatory markers like C-reactive protein (CRP) and interleukin-6 (IL-6), which are elevated in conditions such as RA [25, 26]. This study focuses solely on the immediate effects of the treatment and does not analyse the long-term effects. We will explore this in future studies.

CONCLUSION

Yoga and naturopathic approaches may contribute to the reduction of muscle stiffness and pro-inflammatory cytokines, while potentially enhancing endogenous pain-relieving substances or activating the gate control theory. Consequently, yoga and naturopathic approaches may offer a beneficial role for patients with rheumatoid arthritis.

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How to cite this article: Soundarapandiyan S, Manoharan T, Karanchery SS, Ravindran DV. Impact of a Six-Week Naturopathic Regimen on Pain, Inflammation, and Quality of Life in a Patient with Rheumatoid Arthritis: A Case Study. *Indian J Integr Med*. 2025; Online First.

Funding: None;

Conflicts of Interest: None Stated