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Effect of Integrated Yoga, Acupuncture and Naturopathy Management on Inflammation in Patient with Seronegative Rheumatoid Arthritis: A Case Report

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ABSTRACT:
Seronegative rheumatoid arthritis (SNRA), a phenotype of rheumatoid arthritis is characterized by the absence of circulating antibodies. Integrated yoga, clinical acupuncture and naturopathy (IYAN) interventions have been shown to effectively manage SNRA related pain and stiffness. This case report examines the effect of these interventions on inflammation in a 44-year-old woman with a 3-year history of SNRA. After one month of interventions, including yoga therapy, clinical acupuncture, massage therapy, hydrotherapy and electrotherapy, her C - reactive protein levels reduced from 6.3 mg/L to 2.27 mg/L. Her pain, joint stiffness and mobility also improved. These findings suggest that IYAN management may be a beneficial approach in treating patients with SNRA.

KEY WORDS: Acupuncture, Autoimmune Disease, Complementary therapy, Integrative Medicine, Naturopathy, Rheumatoid Arthritis, Seronegative Arthritis, Yoga.

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INTRODUCTION:

Seronegative rheumatoid arthritis (SNRA), a phenotype of rheumatoid arthritis is an autoimmune syndrome [1]. Rheumatoid arthritis (RA) in general is characterized by joint pain, stiffness, swelling, weakness, fatigue, malaise, weight loss, fever, and depression [2]. The proportion of SNRA patients among all RA cases is around 20-30% in recent times as established in various registries [3]. The prevalence of SNRA is more in women compared to men [4]. SNRA differs from the seropositive phenotype by the absence of circulating antibodies like rheumatoid factor (RF), anti-citrullinated protein antibodies (ACPA) as well as other anti-modified protein antibodies. Contrary to seropositive RA, environmental factors play a more critical role in the development of SNRA compared to genetic susceptibility. Immunopathologically, while seropositive RA showed more lymphoplasmacytic infiltrates in the synovial tissue, SNRA synovitis has more macrophages, monocytes and dendritic cells [1]. While conventional medication controls the inflammatory activity and prevents development of erosion in SNRA patients [5], clinically patients experience non-nociceptive pain and fibromyalgia despite the medication [6,7]. An integrative approach including yoga, clinical acupuncture and naturopathy (IYAN) widely practised in India has demonstrated potential in reducing pain and joint stiffness in early diagnosed SNRA [8]. This case report presents the positive effects of IYAN interventions in a patient with chronic SNRA.

CASE HISTORY:

A 44-year-old female who is a known case of Seronegative Rheumatoid Arthritis (SNRA) presented with a three-year history of symmetrical joint pain involving all major and minor joints of upper extremity as well as the low back, knee, ankle and foot joints. The pain was accompanied by joint tenderness and stiffness. The pain in her shoulders progressively worsened and became more severe compared to the other joints. The pain was described as a screwing-type sensation and was aggravated by activities such as lifting objects, exposure to cold, and was particularly worse at night. She reported morning stiffness lasting for about 45 to 60 minutes, along with occasional joint swelling. The pain significantly impaired her mobility and interfered with day to day activities, especially household chores. She also reported generalized fatigue and sleep disturbances due to persistent pain. The laboratory values of the patient upon initial diagnostic assessment in March 2022 are presented in Table-1. Her symptoms had only partially improved with prior medical treatment. She visited the outpatient department at International Institute of Yoga and Naturopathy Medical Sciences in Chengalpattu on January 2025 and underwent IYAN interventions for a period of 1 month.

THERAPEUTIC INTERVENTION:

After a detailed consultation and baseline assessment, an integrative approach including yoga therapy, clinical acupuncture, massage therapy, hydrotherapy and electrotherapy [Table-

2] was planned and administered to the patient regularly for a period of 1 month after obtaining informed consent. The patient was also advised appropriate diet and lifestyle modifications. At the end of the treatment, she was instructed to follow the yoga practices regularly at home and revisit the hospital if any of the symptoms aggravated.

Assessment criteria

The following outcome criteria measures were used to assess the patient's condition before and after the intervention:

- **C - reactive protein (CRP):** measured to assess systemic inflammatory activity.
- **Visual Analogue Scale (VAS):** utilised to assess the intensity of pain.
- **Subjective symptom assessment:** patient-reported changes in stiffness, swelling, sleep disturbances and functional ability was recorded.

Table-1: Laboratory values of the patient upon initial diagnostic assessment in March 2022

Laboratory Investigation	Values
Erythrocyte Sedimentation Rate (at the end of 1hour)	9 mm
Rheumatoid factor	>10.0 IU/mL
C-Reactive Protein (immunoenzymatic method)	10.5 mg/L
Anti-Cyclic Citrullinated Peptide	1 U/mL
Antistreptolysin O	<50.0 IU/mL

Table-2: Details of IYAN interventions

Intervention	Duration	Number of Days
Therapeutic Yoga	30-40 minutes	25 days
Sthithi Tadasana	10 counts holding	
Sithila Tadasana	10 counts holding	
Sthithi Dandasana	10 counts holding	
Sithila Dandasana	10 counts holding	
Sthithi prone position	10 counts holding	
Makrasana	10 counts holding	
Sthithi supine position	10 counts holding	
Shavasana	10 counts holding	
Padanguli Naman	8 rounds	
Goolf Naman	8 rounds	
Goolf Chakra	8 rounds	
Goolf Ghoornan	8 rounds	
Janu Naman	8 rounds	
Ardha Titaliasana	8 rounds	
Mushtika Bandhana	8 rounds	
Manibandha Naman	8 rounds	

Manibandha Chakra *Kehuni Naman* *Kehuni Chakra* *Skandha Chakra* *Greeva Sanchalana* *Nadi Shodhana Pranayama*	8 rounds 8 rounds 8 rounds 8 rounds 8 rounds 5 rounds	
Acupuncture **Acupuncture Points** CV-5, ST-36, SP-9, SP-10 ST-36, SP-9, LI-4, LI-14, LI-15 **Dry Cupping Therapy** *Ah-shi* points of bilateral shoulder joints	 20 minutes 20 minutes 20 minutes	 11 days 14 days 3 days
Massage Therapy Partial massage to low back Partial massage to both knees	 10 minutes 10 minutes	 5 days 5 days
Hydrotherapy Hot Foot Bath Steam Bath	 10 minutes 10 minutes	 3 days 2 days
Electrotherapy Interferential Current Therapy to low back	 7 minutes	 4 days

Table-3: Baseline and post intervention assessment

Parameters	**Baseline Assessment**	**Post Assessment**
C-Reactive Protein (Immunoturbidimetry method)	6.3 mg/L	2.27 mg/L
Visual Analogue Scale	8	4
Subjective symptom assessment	Presence of joint swelling, tenderness and stiffness Reduced joint mobility Disturbed sleep Presence of generalized fatigue	Reduced joint swelling, tenderness and stiffness Improved joint mobility Improved sleep quality Improved energy levels

RESULT AND DISCUSSION:

IYAN interventions were found to improve the CRP, VAS and other symptoms suggesting that IYAN can be beneficial in reducing the seronegative RA related inflammation and pain. The baseline and post intervention results are presented in Table-3.

Seronegative rheumatoid arthritis, while not immunologically similar to its seropositive counterpart, does not differ much in its clinical manifestations. Yoga has been shown to regulate gene expression favourably, downregulate pro-inflammatory mediators such as IL-6 and IL-17, and upregulate IL-10, TGF-β and FoxP3, which promotes T-reg cells, thereby suppressing inflammation and maintaining immune homeostasis in Rheumatoid arthritis [9]. *Pawanmuktasana* series of practices (anti-rheumatic group) enhances flexibility, tone, and lubrication of joints and also rejuvenates joint tissues by improving nutrition and elimination. [10]. *Nadishodhana pranayama* has been proven to reduce pain, stress (a major causative factor of autoimmune diseases) and also improve the quality of life [11]. Acupuncture produces anti-inflammatory effects via neuroendocrine regulation, including activation of the vagal-adrenal anti-inflammatory pathway. Stimulation of *zusanli* (ST 36) and *sanyinjiao* (SP 6) reduces key pro-inflammatory cytokines such as TNF-α, IL-1β and IL 6 in rheumatoid arthritis [12,13]. Acupuncture points LI 4 and LI 15 are frequently indicated in shoulder joint pain and have shown improvements in both range of motion and pain intensity in musculoskeletal disorders [14]. Dry cupping therapy administered to *Ah-Shi* points over shoulder joints exerts therapeutic effects by enhancing local microcirculation, inducing myofascial relaxation, modulating the inflammatory markers, and producing significant analgesic effects in musculoskeletal pain [15]. Massage therapy modulates the levels of stress hormone cortisol and the inflammatory mediators, which may alleviate pain and improve joint function [16]. Hot foot bath is known to enhance sleep quality by promoting the onset and depth of sleep through heat transfer from the core to periphery via dilatation of peripheral blood vessels and by modulating the firing rate of warm-sensitive neurons in the anterior hypothalamus and preoptic area through their sensitization [17]. Steam bath when administered eases generalized stiffness and pain. A study by Hannuksela and Ellahham (2001) emphasized that heat-based therapies such as steam improve rheumatic pain by increasing endorphin release, reducing joint rigidity, and promoting blood flow to inflamed regions [18]. Interferential current therapy when administered to the low back stimulates the large nerve fibres, leading to reduced pain and improved circulation [19].

CONCLUSION:

This case report demonstrates that IYAN interventions produce a notable reduction of inflammation and pain in seronegative RA. However, further

extensive controlled studies need to be done to validate the effectiveness and understand the advantages of these interventions.

Informed written consent:
Informed written consent was obtained from the patient for the purpose of publishing this case report.

Conflict of interest: The author declares that there is no conflict of interest.

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