Case Report

Efficacy of Naturopathy and Yoga Interventions in the Management of Tenosynovitis of the Hand: A Case Report

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ABSTRACT

Tenosynovitis, an inflammation of the tendon sheath, can lead to pain, swelling, and impaired function in the affected area. While conventional treatments involve anti-inflammatory medications and physical therapy, alternative approaches such as Naturopathy and Yoga have gained attention for their potential benefits in managing musculoskeletal conditions. An 80-year-old retired patient presented with complaints of pain, swelling, and impaired function in the left wrist, thumb, and index finger. The symptoms had gradually worsened over three months, significantly affecting the patient's ability to grip objects and carry weight with the left hand. Initially, the orthopedic department prescribed anti-inflammatory drugs and recommended an MRI of the left hand, which revealed findings consistent with tenosynovitis. After four months of Naturopathy and Yoga interventions like hot arm bath, ginger compress, acupuncture, and diet, the patient experienced remarkable improvements. Pain, tenderness, and swelling resolved completely, and the patient regained the ability to make a fist. Grip strength (in kg) improved substantially from weak (12.6) to Normal (32.1), the DASH score decreased from 45 to 5, while the PRWE score reduced from 35 to 7, and social well-being from 75 to 100, indicating a significant improvement in hand and wrist function. This case report highlights the potential benefits of Naturopathy and Yoga intervention in managing tenosynovitis and improving hand and wrist function in an elderly patient, leading to enhanced quality of life.

Key words: Tenosynovitis, Yoga and Naturopathy, Grip strength, Wrist joint

Tenosynovitis, an inflammation of the fluid-filled synovial sheath surrounding tendons, can affect the tendons of the hand, wrist, and foot. The tendons of the flexor digitorum superficialis and profundus muscles, which cross the palm and enter the fibrous tunnels on the palmar aspect of each digit, are commonly involved. The etiology of tenosynovitis can be broadly classified into infective and non-infective types. Infective tenosynovitis is commonly caused by organisms such as Staphylococcus aureus (40-75%), methicillin-resistant Staphylococcus aureus (MRSA, 29%), Staphylococcus epidermidis, and beta-hemolytic streptococci [1]. Non-infective tenosynovitis can be autoimmune, idiopathic, related to crystalline deposits, or caused by overuse [2]. Notably, 87% of patients with rheumatoid arthritis exhibit signs of tenosynovitis [3], and 9.4% of patients develop infectious tenosynovitis [4].

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During tenosynovitis, distension of the tendon sheath apparatus with purulent fluid increases pressure. If left untreated, inflammation can lead to scar tissue formation, necrosis, and destruction of the sheath, tendon, and adjacent structures [5]. In cases of infectious flexor tenosynovitis, the "Kanavel signs," which include swelling, pain, erythema, and difficulty in moving the affected joint, are observed [6].

Conventional treatment approaches for tenosynovitis often involve anti-inflammatory medications and physical therapy. However, complementary and alternative medicine (CAM) modalities, such as Yoga and Naturopathy, have gained interest for their potential benefits in managing musculoskeletal conditions. Yoga and Naturopathy is a drugless medical technique that employs minimally invasive or non-invasive methods to make modifications in the body

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that facilitate recovery [7]. it emphasizes the body's innate ability to heal itself through various modalities, including nutrition, herbs, hydrotherapy, and mind-body techniques [8]. This holistic approach aims to address symptoms through non-invasive means, promoting overall well-being and potentially alleviating discomfort associated with the condition.

CASE REPORT

An 80-year-old retired patient complained of swelling and discomfort in his thumb, index finger, and left wrist. Three months ago, the symptoms started, and they got worse over time. His grasp and ability to bear weight were hampered by his inability to flex his thumb and index finger. No notable medical, traumatic, or occupational history existed. Anti-inflammatory medications were supplied by the orthopaedic department, and an MRI was suggested to look at the underlying problem. After the written consent was obtained from the patient an Integrated Naturopathy and Yoga intervention such as Hot arm bath, ginger compress, mustard pack, acupuncture, diet, and yoga therapy was given for 4 months and we observed the progress. The details of the intervention given to the patient are given in **[Table 1].**

During the examination, the patient was thoroughly questioned about various aspects of his condition, including pain, tenderness, stiffness, warmth, and swelling in the left hand. Specific tests were conducted to evaluate his symptoms further. **Finkelstein's test** diagnoses tenosynovitis by assessing tendons inflammation in the thumb side of the wrist [9], indicating a positive response with sharp pain during fist making. **Phalen's test** is a sensitivity test used to differentiate carpal tunnel syndrome by examining median nerve compression in the wrist when the patient flexes their hands [10], this position compresses the median nerve, which runs through the carpal tunnel in the wrist, suggested negative with carpal tunnel syndrome. **DASH (**Disabilities of Arm, Shoulder, Hand) questionnaire is an effective tool in evaluating the pathology of upper limb as its score with outcome scale is high and its philosophy fits into WHO guidelines [11]. **PRWE**, a patient-rated wrist evaluation, is a valid tool for assessing pain and disability in patients with hand and wrist injuries [12], indicating significant impairment in function.

The hand grip is assessed using a hand dynamometer, where the patient sits comfortably, elbow is at 90 degrees, and hand and forearm are placed on a table. The dynamometer measures isometric muscular activity of the hand and forearm [13]. An **MRI** (Magnetic resonance imaging) scan on February 25, 2023, revealed mild synovitis in the distal radioulnar joint, fluid in the scapholunate joint, inflammation in the carpal radial joint synovium, mild subcutaneous oedema in the dorsal hand, and a subarticular cyst. These findings suggest a potential inflammatory process in the left hand.

Following the Naturopathy and Yoga intervention, the Grip strength increased from weak (12.6) to Normal (32.1). Meanwhile, the DASH and PRWE scores, which were initially high at 45 and 30, respectively, indicating significant functional limitations, dropped significantly to 5 and 7 after the intervention, indicating a significant improvement in hand function and decreased disability. Additionally, the signs of inflammation were completely resolved. The patient's social well-being also improved significantly, with a score of 100/100 after the treatment, compared to 75/100 before. The post MRI findings suggested a positive response **[Table 2].**

DISCUSSION

This study shows, that Naturopathy is effective in treating inflammation like tenosynovitis of the hand, after months of intervention the patient has a lot of symptomatic relief and his quality of life has improved in a better way the DASH score and PRWE score have reduced. These changes are attributed to Naturopathy and Yoga interventions; such as Acupuncture, Hydrotherapy, and Diet therapy play an important role in treating pain caused due to inflammation and reducing the signs of inflammation.

According to a recent randomized control trial (Leung K et al.,2020) 68 subjects with tenosynovitis were treated with acupuncture for a period of 5 sessions for 2 weeks the results were found to be the visual analog scale VAS score reduced by 19.5 points, reduced pain intensity, improved grip and pinch strength of affected hands [14]. Acupuncture showed an effective role in managing pain by modulating the nor-adrenaline and serotonin signalling system, production of endogenous opioids, somatostatin, and other neurotrophins that together enhance descending inhibition of nociception on spinal afferent [15].

Acupuncture points selected are bilateral Baxie (EX-UE9) proximal to the web margins between the five fingers at the junction of the red and white skin, acupuncture has been widely used to treat patients with hand OA, reducing joint pain, cartilage degeneration is reduced reduces inflammation [16]. Stress has a strong effect on the inflammatory response, and the inflammatory response could be seen as the “ultimate stress response” [17]. Yoga practices can improve the quality of life, grip strength, and stress of the RA patients [18]. Also, it elevates anxiety, depression, sympathetic activity, and blood pressure [19].

Hot ginger compress reduces joint pain, and stiffness and improves circulation ginger contains shogunal, gingerol, paradol, enzyme cyclo-oxygenase, and zingerone, the heat effect can eliminate inflammation and acidity of the fluid in the joints, and it has an analgesic effect that creates vasodilation conditions in vessels resulting to decrease pain

[20]. Hot application or as a bath also has an analgesic effect by the transient receptor potential (TRP) membrane channels. The TRP vanilloid 1 (TRPV1) receptor conducts the sensation of heat and also regulates anti-nociceptive pathways in the brain. It increases the supply of nutrients and oxygen and the removal of pain-inducing mediators produced as a by-product of tissue damage [21]. The application of mustard increases blood circulation through reflexive activation of the vasomotor centre, consequently enhancing blood supply. Additionally, its moderate heat stimulates heat-sensitive nerve endings, contributing to this effect [22]. Anti-inflammatory compound present in the mustard inhibits cyclooxygenase are commonly employed as pain relievers and drugs for modulating inflammation [23].

Table 1: Details of Naturopathy and Yoga Intervention

Name of the therapy	Duration in mins	Frequency
In Hydrotherapy; Hot arm bath with flexion and extension movements of the hand. Both arms are immersed in hot water (up to the comfortable temperature range)	20 mins	Everyday morning
Hot ginger compress A warm cotton cloth is placed over the skin and ground smooth ginger paste is applied over this as a pack.	10 mins	Once in 3 days
Mustard pack Mustard powder is mixed with rice flour in a 2:1 ratio, mixed with normal tap water and applied as a pack.	10 mins	Once in a week
Acupuncture (EX.28, LI 4, SP 9, TW 5)	10 mins Electroacupuncture + 15 minutes without electrical stimulation	Monthly twice Once in month for continuous 5 days
Diet inclusion	Turmeric +honey/ Ginger+ honey (alternate days)	Once in a day daily in the evening
Yoga	Sukshma vyama to upper limb Nadi shudhi pranayama Bhramari pranayama	Once in morning and once in evening daily

The strength of this study showed there were no adverse effects reported and these interventions are felt safe and comfortable by the patient. The limitation suggests that the validity and reliability of these results may vary because this is a single case study.

Table 2: Results

Variables	Before treatment	After treatment
Grip strength (in kg)	weak (12.6)	Normal (32.1)
DASH score	45	5
PRWE score	35	7
Inflammation signs	Redness + Swelling ++ Warmth +	no signs
Social well being	75/100	100/100
MRI – left hand	Mild synovitis in distal radio ulnar joint. Small subarticular cyst in base of first metacarpal. Small amount of fluid in scapulolunate joint. Mild subcutaneous oedema in dorsal aspect of left hand. Thin streak of fluid is seen along tenosynovium along the carpus radialis joint at the level of wrist.	No joint effusion. Osteophytic changes in the articular surface of first carpal bone. Minimal fluid in flexor carpi radialis tendon.

CONCLUSION

The results shows that Naturopathy and Yoga interventions has improved the physical wellbeing of the patient very effective in treating the tenosynovitis symptomatically and have notable changes in his hand grip, strength, reducing pain, swelling and disability. Suggests that these interventions may be considered in the future, however, further clinical studies with larger samples are recommended to validate the results of this study.

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Declaration of the patient: the study was carried out after informing about the detailed procedure and information regarding publishing the data, without using their name or initials, and consent was obtained.

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

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