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RESEARCH ARTICLE

INTEGRATIVE YOGA AND NATUROPATHIC MANAGEMENT FOR HYPOTHYROIDISM WITH CO-EXISTING MUSCULOSKELETAL PAIN: A CASE REPORT

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Abstract

Hypothyroidism is a common endocrine disorder that is associated with musculoskeletal manifestations such as pain, stiffness, weakness and restricted mobility. This case report describes a 43-year-old woman with a 13-year history of hypothyroidism, accompanied by cervical spondylitis, right frozen shoulder, plantar fascitis and migraine. She underwent a 12 - days integrated naturopathy and yoga intervention comprising dietary modification, therapeutic fasting, hydrotherapy, mud therapy, massage, acupuncture and moxibustion, yoga therapy, physiotherapy and heliotherapy. Clinical outcomes were assessed using Visual analog scale, Shoulder pain and disability index, Neck disability index, Billewicz Index, Migraine disability assessment, Foot function index and shoulder range of motion. Following the intervention, improvements were observed in pain, musculoskeletal disability, hypothyroid-related symptoms, migraine disability, foot function and shoulder mobility. The patient remained clinically stable without any adverse events during 6 months of follow-up. This case study suggested that an integrated yoga and naturopathy approach will provide supportive benefits for hypothyroidism with co - existing musculoskeletal complaints. Further research, including large randomized controlled trials, is necessary to validate these findings.

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Introduction:-

Hypothyroidism is a condition characterized by inadequate production of thyroid hormones and may present with a wide range of clinical manifestations depending on its underlying cause. It is broadly classified into primary and secondary hypothyroidism. Primary hypothyroidism occurs due to impaired hormone synthesis or secretion by the thyroid gland itself, whereas central hypothyroidism is less common and results from dysfunction of the hypothalamic-pituitary axis despite an otherwise structurally and functionally intact thyroid gland. Autoimmune thyroiditis and iodine deficiency remain among the major causes of hypothyroidism, while central hypothyroidism is relatively rare [1]. Hypothyroidism affects approximately 4–5% of adults in developed countries, with subclinical hypothyroidism reported in 4–15% of the population. It is more common among women than in men. In India, hypothyroidism represents a major public health concern, affecting approximately 11% of the population and making it substantially more prevalent than reported rates in the UK (2%) and USA (4.6%) [2]. The implementation of the Universal Salt Iodization (USI) programme has substantially influenced the iodine status and, consequently,

the thyroid health of the Indian population. India is currently undergoing a transition from a state of iodine deficiency toward iodine sufficiency, which may contribute to changes in the prevalence and pattern of thyroid disorders.[3]

Hypothyroid myopathy is a common musculoskeletal manifestation of hypothyroidism, reported in approximately 30%–80% of affected individuals, and may occur in both congenital and acquired forms. It is characterized by generalized myalgia, muscle weakness, pain, and stiffness. Therefore, patients with hypothyroidism should be routinely assessed for musculoskeletal symptoms. The proximal muscle groups, particularly those involving the thighs, hips, shoulders, and neck, are commonly affected [4]. Hypothyroid myopathy results from inadequate thyroid hormone availability and may occur in both overt and subclinical hypothyroidism. Although its underlying mechanisms are not completely established, thyroid hormone deficiency may impair muscle energy metabolism, including glycogen utilization and mitochondrial function, leading to muscle fiber dysfunction and reduced contractile efficiency. Alterations in muscle carnitine metabolism and accumulation of glycosaminoglycans within muscle tissue may also contribute to muscular changes [5]. Naturopathy and yoga are widely practiced complementary and alternative medicine approaches that are increasingly being used worldwide for the prevention and management of non-communicable diseases [6]. This case report explains in detail the management of hypothyroidism and musculoskeletal disorders using a Naturopathic approach and aims to enhance the understanding of holistic health care strategies and to support the management of hypothyroidism-related symptoms and co-existing musculoskeletal conditions, focusing on pain reduction, improved functional mobility, and enhanced quality of life.

Case Presentation:-

A 43 years aged female patient came with a K/C/O Migraine since 25 years, Hypothyroidism since 13 years, Cervical Spondylitis since 10 years, Right Frozen Shoulder and Plantar Fascitis since 3 years. She is currently working as a School Principal in Saudi Arabia. Patient's symptoms were exacerbated by prolonged physical exertion, postural strain, psychological stress, and sleep disturbances, and were partially alleviated by rest and pharmacological management. Shoulder pain was intensified during active movements, particularly abduction and external rotation. Heel pain is more at the morning which gradually decreases as the day progresses. There was an surgical history of Hysterectomy [done on 2022], Ovarian cystectomy, Appendicectomy and Hernioplasty. She had a maternal family history of hypothyroidism and hypertension. Currently she is under Tab . Thyronorm 100mcg [1-0-0]

Clinical Findings:-

On examination, the patient was 170cm tall and weighed 90 kgs, resulting in a Body Mass Index (BMI) of 31.1 kg/m^2 , indicating obese grade 1 status. She appeared to be normally built and well - nourished. Her blood pressure was 130/90 mmHg, pulse rate was 76 beats per minute and respiratory rate was 18 cycles per minute. Examination of the abdomen showed a scar mark, no organomegaly. In Cardiovascular system, S1 and S2 heard. Musculoskeletal system showed decreased ROM in right shoulder upto 60° .

Therapeutic Focus:-

The line of treatment was focused on reducing body weight, to achieve homeostasis, to reduce inflammation and to improve mobility of shoulder and neck joint. According to Naturopathy principles, an eliminative diet therapy and fasting were implemented. Further more Naturopathy treatments like massage, hydrotherapy, mud therapy, acupuncture, Yoga therapy and Physiotherapy was given for 12 days (Table 1 and Table 2)

Methods:-

Following a detailed case history, initial counseling, and obtaining written informed consent, an individualized intervention plan was developed by a team comprising of Naturopathy physician and a Yoga expert. The patient's vital parameters were monitored daily, and her medications were continued as the same dosage as prescribed by the treating physician throughout the intervention. The patient remained as an inpatient for a period of 12 days.

Assessments:-

Height, weight and BMI was calculated. A comprehensive assessment was performed using standardized scales, along with laboratory investigations. Pain severity was assessed using the Visual Analog Scale (VAS), shoulder pain and functional disability were evaluated using Shoulder Pain and Disability Index (SPADI). Cervical functional impairment was assessed using the Neck Disability Index (NDI). The severity of hypothyroidism-related symptoms

was evaluated using the Billewicz Index, and migraine-related disability was assessed using the Migraine Disability Assessment (MIDAS) questionnaire. Foot pain and associated functional limitations were evaluated using the Foot Function Index (FFI). Shoulder mobility was additionally assessed by measuring the range of motion, particularly shoulder abduction, to determine changes in functional capacity. Relevant laboratory parameters were assessed, all these outcomes were assessed before and after the 12 days of intervention. (Table 3)

Diagnostic Confirmation:-

The patient had a previous diagnosis of hypothyroidism and was receiving Thyronorm 100 µg/day. Cervical spondylitis, right frozen shoulder, and plantar fasciitis were supported by previous MRI findings and clinical assessment. Migraine was based on her established clinical presentation. Previous medical records and available investigation reports were reviewed during consultation.

Intervention:-

This case study was conducted at the Alva's Anandamaya Arogyadhama Nature Cure and Yoga Centre, located in Mijar, Shobhavana, Moodbidri, Dakshina Karnataka.

Table 1: Details of Naturopathy and Yoga Intervention.

Therapy	Specific treatment	Duration /session (min)	Frequency
Hydrotherapy	Cold throat pack	20	12 days
	Neutral douche to whole body	10	4 days
	Neutral Spinal spray	10	6 days
	Neutral deluxe hydromassage	15-20	4 days
	Neutral immersion bath	15-20	12 days
	Steam bath	10-15	6 days
Mud therapy	Abdomen and Eye pack	10-15	12 days
	Full body mud bath	25-30	2 days
Massage therapy	Full body massage	45	5 days
	Hot stone massage	45	5 days
	Partial massage	30	2 days
Acupuncture and Moxibustion	Baihui (GV-20), Dazhui (GV-14), Dazhu(UB-11), Weizhong(UB-40), Chengshan(UB-57), Kunlun(UB-60), Hegu(LI-4), Quchi(LI-11), Sanyinjiao(Sp-9) and Ah-shi points.	25 + 10 (moxibustion)	12 days
Yoga Therapy (everyday for 50 minutes)	Loosening exercises - head to toe	5	12 days
	Asanas - Tadasana, Ardha chakrasana, Uttitapadasana, Setubandasana, Pawanamuktasana, Bhujangasana, Marjari asana.	20	
	Pranayama - Nadishodhana, Brahmari. Relaxation techniques	15	
Physiotherapy	Interferential therapy (IFT)	15	7 days
	Exercise therapy	20	12 days
Heliotherapy	Sun exposure in the morning and early evening.	10-15	12 days

Table 2: Naturopathic Diet protocol

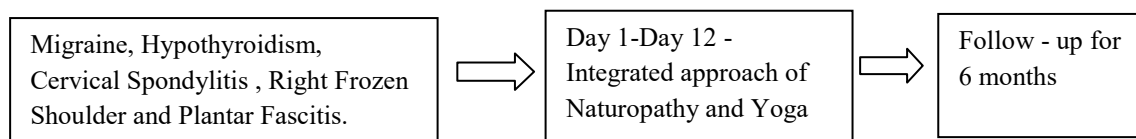
Days	Diet - Content	Times/ day
Day 1 - 2	Naturopathic boiled diet + soup	3 times
Day 2- 3	Raw diet (sprouts salad, vegetable sticks, fruit bowl)	3 times
Day 3-5	Juice fasting (ash gourd juice, tender coconut water, lemon honey water)	4 times
Day 5-7	Juice Fasting (apple juice, carrot juice)	4 times
Day 8-9	Raw diet (fruit bowl, cucumber, carrot salad)	3 times
Day 9-12	Naturopathic boiled diet	3 times

Table 3: Pre and Post Assessment table

Assessment Tool	Parameter	Pre - Treatment	Post - Treatment	Interpretation
Visual Analog Scale (VAS)	Overall pain	10/10	3/10	Significant reduction in pain
SPADI	Combined Score	91.75%	42.5%	Reduced shoulder impairment
Neck Disability Index (NDI)	Cervical Disability	60%	20%	Significant improvement
Billewicz Index	Hypothyroid Symptoms	+12	+5	Reduced symptom severity
MIDAS	Migraine Disability	28	12	Severe to moderate intensity
Foot Function Index	Heel Pain Disability	65%	30%	Improved weight-bearing tolerance
Range of Motion (Shoulder)	Abduction	Restricted (~60°)	Improved (~140°)	Functional ROM regained

Follow up and outcomes:-

At discharge, the patient was advised to continue the prescribed naturopathic interventions and follow the recommended dietary regimen. She was also encouraged to practice pranayama regularly, obtain adequate sun exposure, and maintain a consistent pattern of sufficient and restorative sleep. These measures were recommended to help sustain the improvements achieved during the treatment period and support overall health and well-being. During the subsequent 6-month follow-up period, the patient remained clinically stable and reported no adverse events.

Treatment Outline –**Discussion:-**

This case report presents an integrative approach in managing of hypothyroidism associated with musculoskeletal disorders through naturopathic interventions. The combination of dietary modifications, detoxification practices and naturopathic remedies aimed at addressing the symptoms of hypothyroidism. Following 12 days of naturopathic intervention, there was a significant reduction in pain and disability scores across all assessment tools. VAS score decreased from 10 to 3, SPADI score reduced from 91.75% to 42.5%, NDI from 60% to 20% , Billewicz Index improved from 12 to 5. Migraine disability also showed improvement, with MIDAS score reducing from 28 to 12. A

reduction in body weight and BMI was also observed following the intervention, with body weight decreasing from 90 kg to 85 kg and BMI from 31.1 kg/m² to 29.4 kg/m².

Thyroid abnormalities may coexist with degenerative cervical pathology. A retrospective MRI study of 1,313 patients with degenerative cervical spondylosis identified incidental thyroid abnormalities in 7.5% of patients, including thyroid nodules, goiter, Hashimoto thyroiditis and thyroid cancer [7]. The coexistence of hypothyroidism and plantar fasciitis in the present case is clinically important. An Indian case-control study reported, thyroid dysfunction and dyslipidemia may adversely influence connective-tissue metabolism, extracellular-matrix integrity, inflammation, and tissue repair, potentially reducing the plantar fascia's capacity to withstand repetitive mechanical stress [8].

The improvement in musculoskeletal symptoms may be attributed to the combined effects of the naturopathy interventions. Hydrotherapy helped in promoting circulation, muscle relaxation and pain relief through thermal stimulation, hydrostatic pressure and buoyancy, while massage therapy reduced muscular tension and improved soft-tissue mobility. Mud therapy has potential anti-inflammatory effects, with previous studies reporting reductions in inflammatory mediators such as TNF- α , IL-1 β , IL-6, IL-8, CRP and PGE₂, which are involved in nociceptor sensitization and pain. Acupuncture and moxibustion, gave analgesic and functional benefits through modulation of pain perception, neuromuscular activity and local circulation. Acupuncture influences pain-processing pathways, while the thermal stimulation of moxibustion may further promote muscle relaxation and local tissue responses. Dietary modification with nutrient-dense plant foods have supported metabolic function and antioxidant defense, while sun exposure for 10 -15 minutes on early morning and early evening rays, supported vitamin D status and musculoskeletal health. Therapeutic fasting have contributed to metabolic regulation through adaptive changes in thyroid hormone metabolism, particularly reduced peripheral T₄-to-T₃ conversion [9 - 11]. Yoga therapy, including asanas, pranayama and relaxation, further improved flexibility, joint mobility, muscle function and autonomic regulation while reducing stress-related muscular tension. These effects may help in attaining the homeostasis by regulating Hypothalamo - pituitary thyroid axis and thus reducing myalgia, stiffness, weakness and restricted mobility [12]. Thus, the integrated use of hydrotherapy, mud therapy, massage, dietary modification, fasting, sun exposure and yoga may have produced complementary effects on inflammation, circulation, metabolic regulation, pain and musculoskeletal function, contributing to the overall clinical improvement. However, further large - scale studies are required to comprehensively observe the effects of individual therapies.

Patient perspective: The patient reported improvement in pain and overall symptoms after the intervention, along with better ability to perform daily activities. She found the multimodal naturopathy and yoga interventions acceptable and expressed willingness to continue the recommended dietary, lifestyle, and yoga practices.

Conclusion:-

This case study suggests that an integrated approach combining yoga and naturopathy interventions may help improve pain, musculoskeletal function, mobility and hypothyroidism-related symptoms.

Informed Consent:- The patient signed an informed consent to publish her de-identified information.

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