Case Report

An Integrated Approach of Yoga and Naturopathy in the Management of Post-Traumatic Stroke - A Case Report

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ABSTRACT

The World Health Organization defines stroke as a sudden onset of focal or global disturbance of cerebral function, lasting 24 hours or resulting in death, with vascular origin. In India, population-based studies show stroke prevalence rates range from 84 to 262 per 100,000 in rural areas and 334 to 424 per 100,000 in urban areas. Complementary and alternative medicine (CAM) modalities like Yoga and Naturopathy have the potential to manage musculoskeletal conditions. These approaches are drugless and employ minimally invasive or non-invasive methods to enact modifications within the body, thereby aiding in the process of recovery. A 23-year-old patient came to the Outpatient department on January 10, 2022; with a known case of stroke in the past 6 months. An Integrated Yoga and Naturopathy intervention has been given for 4 months. The patient was assessed pre and post-data for the study taking data on Body Mass index (BMI), Fugl Meyer Assessment (FMA), Modified Birth Index (MBI), Berg Balance Scale (BBS), and QOL SF-12, and results show that after 4 months yoga and naturopathy intervention like yoga, acupuncture, and hydrotherapy there was considerable change in FMS from 48 to 92 and MBI scale from 60 to 90 and BBS from 38 to 56 and QOL SF-12: from 73 to 98.83. The results suggest that Yoga and Naturopathy interventions are likely to play a role in rehabilitation of the stroke patients.

Key words: Yoga and Naturopathy, Stroke, Musculoskeletal condition, Rehabilitation

The World Health Organization defines stroke as a sudden onset of focal or global disturbance of cerebral function, lasting 24 hours or resulting in death, with vascular origin (1). In the prevalence of stroke, it is estimated over 600 million people globally live with disabilities. In the United States, approximately 2.6% of individuals aged 20 and above were affected by strokes, with ischemic strokes comprising about 85% of all strokes. Among those aged 45 and older, around 17.8 % have reported stroke symptoms, and silent cerebral infarction occurs in approximately 6% to 28 % of the population, with prevalence rising with age (2). On average, someone dies of a stroke every four minutes (3). In India, population-based studies indicate an estimated adjusted prevalence rate ranging from 84 to 262 per 100,000 in rural areas and 334 to 424 per 100,000 in urban areas. The observed incidence rate falls between 119 and 145 per 100,000 individuals (4). Yoga and Naturopathy (YN) stands out as a drug-free medical approach, utilizing gentle, non-invasive interventions to foster a sanctuary for the body's natural healing processes. It harnesses the innate potential of the body to heal itself, ensuring a safe treatment option with no known adverse effects, effectively addressing various illnesses, and promoting overall well-being (5). Therapeutic yoga interventions can improve physical functioning after stroke, potentially complementing traditional rehabilitation methods (6). Interest is growing in using yoga (7), and acupuncture (8) for post-stroke recovery, especially in improving balance and functionality among older adults (7). Thus, the purpose of this case study is to investigate how combined Yoga and Naturopathy can improve the stroke patient.

Access this article online	
Received – 9th August 2024	Quick response code
Initial Review – 15th August 2024	
Accepted – 21st August 2024	

CASE REPORT

On 09 April 2023, a 23-year-old male patient came to our Outpatient department (International Institute of Yoga and Naturopathy Medical Sciences, Chengalpattu, Tamil Nadu) with a known case of stroke past 6 months. He had a history of road traffic accident on 2, April 2023. He reported being unable to use his right hand and leg. The patient was given a comprehensive treatment plan of Integrated Yoga and Naturopathy interventions (balanced diet, yoga practices,

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Naturopathy interventions, and engaging in physical activity) has been given for 4 months. The details of the intervention provided to the subject are given in Table 1. The patient was assessed pre and post for the study with informed consent and the data were taken; they are Magnetic Resonance Imaging (MRI), the Fugl–Meyer Assessment (FMA) scale, which is a quantitative instrument that evaluates the upper and lower limbs and measures sensorimotor stroke recovery.

There are 17 things for the lower extremities and 33 items for flexor synergy. which has a total score of 100. The scale consists of 17 items with a score range of 0–34 for the lower limbs and 33 items with a score range of 0–66 for the upper extremities (9). Modified Barthel Index (MBI) scale, ten activities linked to mobility and self-care are measured. Continence, eating, dressing, grooming, bathing, using a wheelchair, walking on a level surface, and stairs are all included. Five levels can be applied to each activity, signifying varying levels of independence. Higher levels denote greater independence; the lowest level is 1 and the highest is 5. A score of 100 is normal (9). The Berg balance scale (BBS) is used to examine balance and mobility and identify those who may fall. The patient's capacity to switch between different postures is evaluated using 14 balance-related activities, which are scored in a 0–4 range.

Greater scores indicate less impairment to balance. The total score goes from 0 to 56 (10). Fall risk is indicated by a score of less than 45, while adequate functional balance is indicated by a score of 56, and the quality of life was assessed using a Short Form 12-item Survey (SF 12) which is a common patient-reported instrument to measure physical and mental health-related quality of life (11). After the 4-month follow-up with the yoga and naturopathy interventions, the patients showed positive changes in the FMS from 48 to 92, MBI scale from 60 to 90 and BBS from 38 to 56 and QOL SF-12 from 73 to 98.83 (results given in Table 2) he showed improved quality of life, felt lightness of body with reduced symptoms which were there earlier and the patient was instructed for a regular follow-up with intervention & assessments and ensured his regular visits with neurologist for monitoring his routine checkup and drug alterations. He turned to his routine work with normal motor abilities.

DISCUSSION

This study shows that yoga and naturopathy interventions has effectively improvement on stroke patients. A recent systematic review (Lazaridou A et al 2013) shows that Yoga and Meditation practice yields significant neurological benefits. It enhances gray matter density in brain areas associated with memory, self-awareness, and compassion, while reducing gray matter in the amygdala, known for fear and stress responses. Moreover, relaxation techniques boost mitochondrial energy production and resilience by enhancing ATPase activity and insulin function, thereby promoting overall physiological well-being (12). Another study (Platania-Solazzo A et al., 1992) shows that yoga is a good training technique for muscle relaxation. It also reduces anxiety and cortisol levels (13).

Another study (Lee JD et al., 2003) shows that acupuncture produces rhythmic discharge in nerve fibers and causes the release of endogenous opioids and various neuropeptides. In the study intramuscular electrical stimulation of the brachioradialis muscle. Specifically, increased regional cerebral blood flow (rCBF) was noted in the contralateral secondary somatosensory cortex, anterior cingulate cortex, Brodmann's area 40, ipsilateral cerebellum, and some activation in the contralateral primary motor and sensory cortex, anterior insular cortex, thalamus, and lentiform nucleus (14), Acupuncture enhances better quality of life and functional recovery. Scalp acupuncture uses special techniques to harmonize and regulate the functional activities of the brain and body. It appears to be safe and effective for stroke rehabilitation (8).

A recent study shows that core stability-enhancing exercises are highly effective in improving the ability to maintain static posture and balance following dynamic movements in stroke patients (15). A Randomized control study (Kerimov K et al., 2021) demonstrated that 4 weeks of isokinetic strengthening was superior to home-based exercises in increasing wrist extensor peak torque and peak isometric muscle strength. Isokinetic strengthening exercises offer potential for improving motor and functional recovery in the affected upper limb of post-stroke hemiplegic patients (16). Therapeutic massage improves blood flow, and parasympathetic activity, and reduces neuromuscular excitability and muscle tension. It can reduce hyperexcitability in the reticulospinal tracts and facilitate further therapeutic procedures.

Different massage methods are particularly helpful in reducing muscular overactivity. Massage therapy can also help patients with anxiety and reduce pain after strokes, promoting relaxation and pain relief (17). Considering that this is a single case study, the limitations implies that the validity and reliability of these findings may differ. The strength of this study showed no adverse effects were reported and these interventions felt safe and comfortable for the patient and improved his quality.

CONCLUSION

The results suggest that Yoga and Naturopathy interventions are effective in patients with stroke and have notable changes in FMA, MBI, and BBS and improved quality of life. This suggests that YN can be suggested as a part of rehabilitation in recovery from stroke post road traffic accident. Even there are no changes in the MRI report, the patient recovered and turned to his normal routine. However, further clinical studies with larger sample sizes are recommended to validate the results of the study.

Table 1: A detail of the Yoga and Naturopathy intervention

Name of the therapy	Duration in mins	Frequency in 3 months
Naturopathy intervention:		
Neutral enema while standing the patient is made to lean forward as possible, and a nozzle is inserted in the anal canal, and water is passed, and allowed the patient to pass the stools while feeling an urge.	-	First day
Cold arm pack and leg pack wrapping cold wet linen cloth around the upper and lower limb followed by a woolen cloth, and allowed to rest.	20 mins	Alternate days
Partial massage to the upper limb and lower limb Swedish massage is employed centrifugally.	20 mins	Alternate days
Passive exercise to the upper limb and lower limb An assisted passive exercise is given		Daily
Electro-Acupuncture (Points used: GB34, ST 36) Scalp acupuncture motor area	20 mins	Thrice a week
Yoga practices:		
Asanas: *Sukshma Vyayama* (all joints)	20 minutes	Everyday
Pranayama: *Nadishudhi pranayama, Bhramari pranayama, AUM Chanting*	5 minutes	
Relaxation: Deep relaxation technique, *Yoga nidra*	15 minutes	

Table 2: Results of pre and post-assessment

Assessments	Pre data	Post data
Height (cm)	168	168
Weight (kg)	65	67
BMI (kg/m^2)	22.8	22.9
FMS	48	92
MBI	60	90
BBS	38	56
HBA1C (%)	5.9	5.0
SF-12	67	98.4

*BMI: Body mass Index; SBP: Systolic Blood pressure; DBP: Diastolic Blood pressure; FMA: Fugl–Meyer Assessment Scale; MBI: Modified Birth Index; BBG: Berg Balance Scale HBA1c: Glycated hemoglobin; SF -12: Short Form 12-item Survey.

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How to cite this article: A Jaheer Hussain, K Venkateswari, S Rithaniya, S Prashanth. An Integrated Approach of Yoga and Naturopathy in The Management of Post-Traumatic Stroke - A Case Report. Indian J Integr Med. 2024; 4(4):156-159.

Funding: None; *Conflicts of Interest: None Stated*