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Rehabilitating a patient with ischemic stroke & epileptic disorder: A case report

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ABSTRACT

Strokes are among the leading causes of serious physical and mental impairment in adults. The far more prevalent type of stroke is ischemic stroke, which accounts for around 80% of all cases. These can be formed by a cardiac embolism, arterial embolism, or a minor blood vessel disease in the brain. Epilepsy is a severe neurological condition marked by spontaneous seizures. Physical therapies as well as occupational therapy are crucial components of treatment programs for increasing functional ability and avoiding deconditioning. The main clinical findings were limited range of motion, moderate tightness, and patient relying on someone else. Treatment strategies have been demonstrated to be beneficial in reducing difficulties and better patient outcomes. The physiotherapy program included a range of motion exercises, strength training, functional mobility exercises, posture control exercises, balance shift exercises, weight-bearing exercises, and the use of electric modality.

Keywords: Ischemic stroke, epilepsy, seizures, neuro-physiotherapy, case report

1. INTRODUCTION

Stroke is a prominent trigger of hospitalization that is linked to high readmission percentages, post-acute care expenditure, and long-term damage (Kumar et al., 2019). As per National Stroke Association, almost 795,000 people have been diagnosed with major or subsequent strokes annually. Around 60% of them will have varying levels of motor deficiencies, whereas 50% are not self-sufficient and necessitate ongoing therapy, retraining, and social care. As a result, strokes are a severe medical, societal, and issue of poverty (Zielonka-Pycka et al., 2018). Ischemic stroke is a very prevalent kind of stroke, accounting for roughly 80% of all cases. It can be induced by cardiac thromboembolism, an arterial blood clot, or a tiny vascular illness in the nervous system (Rahayu et al., 2017).

The hallmark indications of a stroke or cerebrovascular accident, include hemiplegia or hemiparesis in the body half opposite the source of the lesions (Yadav et al., 2019). Stroke results in impairment, which can influence bodily functioning as well as the person's Activities of Daily Living. The core

objective of stroke treatment is to restore potentially increase ADL independence. Therapy can help people preserve and reduce their reliance on ADLs. Restoration of motion in the manner of physiotherapy is highly suggested as an initial approach to reducing ADL dependences in stroke patients due to its potential to increase brain organization and plasticity (Callegari et al., 2021).

Individuals having right-sided hemiparesis have had more difficulty with tasks like feeding and writing, according to Baumann et al., and routine workouts can help with them (Argier, 2021). In an attempt to restore the participant's motor and sensory capabilities and enhance tasks of daily life, physical therapy is essential in addition to medicinal and surgical treatments (Kumar et al., 2020). Additionally, it is critical to raise alertness, encourage dynamic movement enhance body balance increases functioning movement, establish self-care tasks, as well as enhance patient performance (Mishra et al., 2020). Unprovoked seizures are a symptom of epilepsy, which is amongst the most highly prevalent neurological illnesses of the brain (Amoudi et al., 2021). Physiotherapists play a crucial role in epileptic seizure recovery. People with epilepsy benefit psychologically and physiologically from regular physical activity (Yakasai et al., 2020).

2. PATIENT INFORMATION

A 46-year-old gentleman with a dominant right extremity was hospitalized with complaints of failure to conduct any action on his right half of the body (both extremities and trunk). Owing to weakness, he had difficulties doing ADLs, was unable to speak, and was unable to walk or stand after his stroke. The patient had an ischemic stroke a year ago, which resulted in a sudden onset of headache, troubled speaking, and a collapse due to loss of consciousness. His brother promptly admitted him to the hospital. Along with many other blood tests, an MRI of the brain and a color Doppler of the right upper extremity were performed. After this incidence, the patient began to suffer from epilepsy for the past four months, having 3-4 episodes every 2 hours with characteristic features such as up rolling of eyes and clenching of teeth. He was taken to the medical ward with these complaints. For the last ten years, the patient has been a chronic alcoholic.

3. CLINICAL FINDINGS

After receiving written consent and admittance to the ward, a full assessment was performed. Due to the patient's inability to communicate, an initial mental state examination could not be completed. There was a problem with comprehension, as well as a problem with receptive language. The sensory assessment was also hampered, due to a lack of speech.

Motor Assessment

Spasticity, joint play, and soft tissue compliance were all evaluated thoroughly. The motor assessment scale has been used to evaluate motor functioning.

Spasticity assessment

Spasticity was measured using the Modified Ashworth Scale. Shoulder flexors, elbow flexors, wrist flexors, and hip flexors had grade 1 spasticity, while knee flexors and ankle plantar flexors had grade 1+ spasticity.

Reflex

All deep tendon reflexes, 1+ i.e., reduced.

Gait

The patient couldn't stand or walk. Even before the stroke, he was able to walk normally at residence and outside without a need for any assistive device.

Functional assessment

As determined by FIM, the patient required the most assistance with basic ADLs (feeding, showering, moving, and going to the toilet) and also Instrumental ADLs (communication, transportation, and medication handling).

Timeline

On 15th October 2020 patient suffered from CVE and was hospitalized on the same day. He came for physiotherapy on 10th September 2021.

Diagnostic Methods

The Motor Assessment Scale was designed to diagnose difficulties related to the person's day-to-day lifestyle, such as activities of daily living and motor functioning. STREAM, FIM was used to measure basic mobility tasks, it aided in the development of the rehabilitation program and the achievement of the compliance function

Motor assessment scale - On the Motor assessment scale patient scored 8 on 1st day.

FIM - On the FIM scale patient scored 18 on 1st day.

STREAM – On this scale patient scored minimal points on 1st day.

Diagnostic challenges

The diagnosis was revised due to the client's misunderstanding of the illness and knowledge. The patient's refusal to have a check-up and diagnostics resulted in a stroke. Interaction with the individual was a huge struggle owing to a comprehension issue. Following on, the patient began to respond with motions.

Therapeutic intervention

To obtain a favourable prognosis, the individual was handled through a multidisciplinary strategy that comprised a team of doctors, nurses, physiotherapists, speech therapists, and occupational therapists. Physiotherapy therapies were structured around functional goals, with the main goal of preventing additional complications and improving the patient's quality of life.

Week 1

After being released from the hospital, the patient was moved to a physical therapy outpatient clinic for retraining. His family member was told of the condition but also provided information on a comprehensive rehabilitation program that was tailored to the patient's specific needs. Patient positioning was instructed throughout the first week of therapy, as well as passive and vigorous motions on the afflicted and sound sides. ROM exercises with 10 repetitions twice a day were used to exercise the normal limb (Figure 1). With the assistance of a healthy limb, the client was requested to perform simultaneous Range of motion exercises for both limbs in the second half of the first week of therapy. Spasticity was reduced by incorporating stretching (Figure 2).

Figure 1 (A) Passive movements of upper limb, (B) Adductor stretching

Week 2-4

Incremental resistive activities for the normal limb were given in the second week of therapy. To decrease spasticity icing technique was used to combine the Roods method, in which three strokes were delivered distally to proximally with stretching. A static orthosis was recommended. Segmental rolling was delivered to the patient. The patient was administered electrical muscle stimulation by the following different indicators to strengthen his upper limbs. Pulse of stimulation: Biphasic Symmetry, Amplitude: 0- 60 mA, Pulse width: 300 seconds, Frequency: 25 to 50 Hz, Duty cycle: 10 seconds off, 10 seconds on.

Week 5-8

Spasticity was at its peak during this stage of therapy. As a result of the limited active contractions of the afflicted extremity, the number of repetitions of the ROM exercise was raised. In the supine resting posture, exercises such as the knee to chest, straight leg elevating, hip abduction, and adduction were included. Both limbs were fitted with PNF. The EMS and FES services were maintained. Dexterity tasks were conducted in the sitting posture. Because the patient's hand functions were impaired, tasks such as holding a flask, a pencil, and so on were begun. The progression of functional task-oriented actions was made.

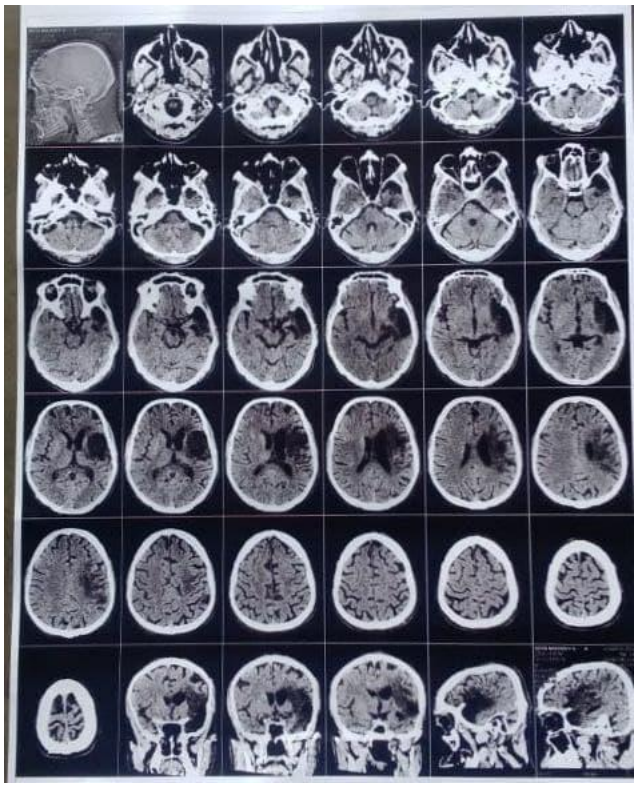

Figure 2 MRI of Brain

Week 9-12

On the MAS, the spasticity rating was 1 throughout this phase of recovery. Both the upper and lower limbs showed mass motions. Strengthening activities were maintained, and functional task-oriented workouts were encouraged. In a multi-direction strategy, functional reach tasks in sitting and standing were tested. The transition from bed to the chair was made easier. Transitions between movements were improved. The patient benefited from mirror therapy since he was able to correct his aberrant pattern. Speech therapy was maintained throughout all of these stages of rehabilitation, with regular medical follow-ups.

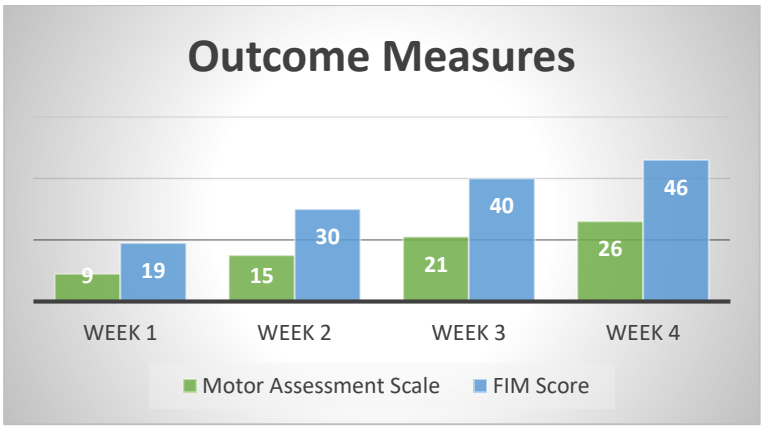

Figure 3 Outcome measures

Follow up and outcomes

Assessment on day 1, at 4th week, 8th week, and 12th week of intervention

Spasticity – Changed from grade 1 on day 1 to grade 1+ & 2 in the 4th week, 1 in the 8th week, and 0 in the 12th week.

Reflex - 2+ on day 1, 3+ in 4th week, 2+ & 3+ (TA & Knee jerk) in 8th week and 2+ in 12th week.

Motor Assessment Scale - 9, 15, 21, 26 scores on respective weeks

FIM score - 19, 30, 40, and 46 on respective weeks (Figure 3).

Limitation

The patient's refusal to have a check-up result him in contracting a fatal condition. Various sorts of strokes cause different types of disabilities. The patient's dominating hemisphere was implicated in this case, which resulted in a communication issue, which became the most difficult challenge during treatment. This therapy strategy is unique to each patient and differs in terms of outcome measures.

4. DISCUSSION

The incidence of stroke increases with advancing age due to an increase in comorbidities such as ischemic heart disease, hypertension, and atrial fibrillation. Of 50 patients, 56% suffered from left-sided hemiplegia, 42% right, and 2% bilateral. The left-sided infarcts are more often better recognized than the right-sided in MRI (Dey et al., 2019). Following physiotherapy, the Barthel Index score improved. The sooner the participants underwent a physiotherapy program better their Barthel Index score. This finding is backed up by an evidence-based study, which indicated that higher intensive and early PT improves motor functioning and abilities for doing ADL after a stroke (Soegiarto et al., 2017). Between week 3 and baseline, individuals with stroke who received physical therapy as a component of a three-tiered rehab facility that used a set of the standardized norm for referrals and therapeutic inputs at every tier demonstrated better improvements in ADL autonomy. Following three weeks, the groups progressed similarly until the trial's end-point, and the research group's advantage was maintained. There were no distinct changes in motor function improvements across groups. In an intention-to-treat analysis, the research group's quality of life increased further across weeks 3 and 9, as well as between baseline and week 3 in a per-protocol interpretation (Xia et al., 2020). Additional studies confirm specific therapies for stroke patients would be good. Despite the reality that research has demonstrated that many aspects such as age might affect restoration, there is a paucity of study on therapies (Kelly, 2016).

5. CONCLUSION

The patient met his maximal aim, as evidenced by the current case report. A complete week-wise recovery plan specific to a person to regain basic ADLs was described. Regular physical activity and a rehab plan significantly improved the outcome marker.

Informed consent

The patient's consent was obtained to prepare the case report.

Author's Contribution

All authors made best contribution for the concept, assessment and evaluation, data acquisition and analysis and interpretation of the data.

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Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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