



Case report

**Effectiveness of chest physiotherapy and early mobilisation in patient with Guillain-Barre syndrome**

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**ABSTRACT**

Guillain-Barré syndrome (GBS) is a rare disease in which the peripheral nerves are attacked by the immune system of a person. It can affect individuals of all ages, but it is more common in adults and in men. An infection to gut or respiratory system is thought to precede before Guillain-Barré syndrome. This may be an infection that is bacterial or viral. Vaccine administration or surgery can also cause Guillain-Barré syndrome. Weakness and tingling sensation are usually the first symptoms which starts in legs and can extend to upper limbs. Diagnosis is confirmed by symptoms and managed primarily by IV Immunoglobulins and plasmapheresis. Present case is a 28-year-old female came with history of weakness of lower extremities more than upper extremities. She was diagnosed as GBS based on symptoms, NCV and Lumbar Puncture. She was treated in ICU with IV Immunoglobulins and physiotherapy. She was given Chest Physiotherapy and early limb mobilisations in ICU which were continued in ward. After 8 days his SPO2 levels increased and bed mobility was improved. We conclude by this case report that early management will lead a path for long standing results and can help patient to gain faster recovery.

**Keywords:** Guillain - Barre syndrome, Chest Physiotherapy, Early Mobilisations, Physiotherapy Rehabilitation.

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**INTRODUCTION**

Guillain-Barré syndrome (GBS) is a rare condition in which nerve cells are destroyed by the body's immune system, causing muscle weakness and occasionally paralysis [1]. 2016 marks 100 years since the first description of Guillain-Barré syndrome (GBS), which is now recognized as the world's most common cause of acute post-infectious flaccid paralysis. GBS remains a major neurological emergency, albeit uncommon (with an occurrence of 1-2 cases per 1,00,000) [2]. A diagnosis of GBS is commonly made on the basis of history and analysis. Historical infectious symptoms are described by most patients, Infectious diarrhoea triggered by *C. jejuni* and upper respiratory tract are the most severe causes. A small percentage (0.1 percent) with Gastroenteritis produces GBS [3]. Physiotherapy rehabilitation has been proved to be effective in the management of acute neurological conditions to increase the speed of recovery and early return to patient's lifestyle. It was proved in other neurological conditions earlier which forms a base in present case [4].

**Case presentation**

Patient is a 28-year-old female who was apparently, completely normal till January 4<sup>th</sup> 2021. On 4<sup>th</sup> January evening patient experienced fatigue and tingling sensation over the left upper extremity and lower limb, the patient was carried to the nearest hospital by her

husband as soon as the relatives discovered this. She was given medications for blood pressure and some pain-relieving drugs were given as well. As the symptoms did not subside and gradually progressed up till the next evening, hence on third day the patient again consulted a nearby clinician where she was advised to be shifted to a nearby local hospital. After the admission, the patient was advised for NCV and the reports showed of Pure Motor Polyneuropathy. Following this the patient was advised to be shifted to AVBRH, Wardha for further management. On admission to AVBRH the patient was kept in ICU for monitoring the vitals for 3 days and then shifted to the ward. Later on, the patient was referred for Physiotherapy to improve functional independence.

**Clinical Findings**

Patient was mesomorphic built, well oriented, intact sensations in bilateral upper and lower extremities. Muscle power was reduced in Bilateral upper and lower limbs where there was grade 2 of MRC in upper limbs and grade 1 in bilateral lower limbs. Lower limbs were involved more than upper limbs. Deep tendon reflexes were diminished in upper and lower limbs. Abdominal reflexes were absent, Bowel and Bladder function was affected and patient was catheterized. Breathing was normal with no secretions but difficulty in taking deep

breaths which was the main reason for early fatigue.

Physiotherapy guides in early return of activities including sports [10].

She was diagnosed with GBS with NCV and Lumbar puncture findings. The CMAP Latency was delayed in all the Tested Nerves and Conduction Velocity was reduced in all the tested nerves. Sensory Nerve Conduction Study was normal in Lt Median, Lt Ulnar and Lt Sural Nerves. The SNAP Amplitude, duration and Conduction Velocity was normal in all the tested nerves. F wave latencies were prolonged in all nerves. Lumbar puncture was done, it revealed Albumino – Cytological Dissociation. Range of motion was reduced in extremities.

### Physiotherapy Intervention

As the patient was in ICU for three days intervention was mainly focused on chest and mobility. Breathing exercises, Thoracic expansion exercises, Pursed lip breathing, Positioning was taught to reduce stress on lungs as it is proved that supine was not advisable much, we have advised her to be in side lying position as much as possible. Because of severe weakness of extremities there were high chances of subluxation of shoulder and left shoulder showed grade 1 subluxation, for which we have advised positioning, precautions and brace. To increase mobility in bed and extremities we focused on Passive and Active Range of motion exercises for which the patient responded well. Details of the treatment given is shown in table 1.

### RESULTS

SPO<sub>2</sub>, Barthel Index scale and Muscle strength were our main outcome measures. There was a great improvement in maintenance of SPO<sub>2</sub> levels which was fluctuating and reached to a level of above 93%. Strength of upper limbs reached to 2+ and lower limbs reached 2- after 8 days of treatment. There was even improvement in Barthel index score levels which was 4/20 on day 1 and 5/20 on day 8.

### DISCUSSION

Over the past decade, GBS therapy has shifted from basic supportive treatment and complication management to an active process (plasma exchange and intravenous immunoglobulin infusion) that shortens the duration of the disease, especially for seriously affected patients [5]. Our management focused in line with the previous studies which stated that Acute treatment of paralysis and associated complications, the treatment of the underlying cause and the long-term recovery of the patient are involved in GBS management [6]. Studies proved that early Physiotherapy leads to early recovery in critically ill patients in ICU [7][8]. There was a tremendous level of recovery in vitals which we mainly assume to be because of planned intervention in ICU and in the ward. The recovery in ADL's was very mild which is in according to previous studies which states that rehabilitation plays a major role in increasing the speed of recovery [9]. Our main focus was on fatigue and weakness and the improvement was according to previous studies which states that focus on fatigue gives better acute results. Studies also published on Early Focused

Table 1. Physiotherapy Goals and strategies

Problem identified	Probable cause	Goal Framed	Physiotherapy Intervention
Decreased air entry in lungs	Weakness of Diaphragm and intercostal muscles	Improve the aeration of lungs with active contraction of diaphragm	Diaphragmatic breathing exercises and thoracic expansion exercises, Pursed lip breathing
Subluxation of left shoulder	Weakness of Stabilizers of shoulder	Increasing the strength of shoulder musculature	Active Range of Motion exercises along with positioning advise to prevent complications.
Weakness of extremity muscles	Decreased nerve conduction	Stimulate the nerves an improve motor performance	Planned for giving electrical stimulation an increase the muscle performance
Decreased Activities of daily living	Decreased performance of muscles	Advise the patient to be as active as possible	Encouraged how to use the extremities to involve in activities of daily living
Decreased bed mobility	Weakness and decreased pulmonary and muscular endurance	Improve bed mobility an prevent pressure sores	Rolling facilitations and transition training started within the ICU
Decreased out of bed transitions	Weakness in girdle muscles and decreased stability	Increase functional performance	Transition training, supine to sit, and sit to stand

### CONCLUSION

Our study concludes that early management of fatigue and weakness yields better results and reduces ICU stay in individuals with GBS. Study further signifies the importance of planned physiotherapy protocol in the management of acute GBS cases.

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