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Case Report: Rapid Progressive Quadriparesis in Guillain-Barre Syndrome

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Abstract:

Guillain-Barre syndrome (GBS) is an acute immune-mediated polyneuropathy with an incidence of 0.6-2.4 per 100000 annually. GBS affects mostly lower extremities but can ascend to upper extremities and cause weakness of intercostal muscles, disturbing the ability to breathe and swallow. The tendon reflexes will be affected and the cranial nerves can be damaged. GBS extremely affects the autonomous nervous system and causes arrhythmia, blood pressure changes, tachycardia. Treatment varies for every individual, although the acute phase requires careful management of vital functions and instant treatment with plasmapheresis and high-doses of intravenous immunoglobulin. We present a case of a 40-year-old male patient, who was diagnosed with Guillain-Barre syndrome. He suffered from the following symptoms: progressive muscle weakness, dysarthria, upper limbs numbness, and tingling.

Keywords: Guillain-Barre syndrome, polyneuropathy, paralysis, rehabilitation.

Introduction

Guillain-Barre syndrome (GBS) is an acute immune-mediated polyneuropathy, quadriparesis and is a common cause of respiratory paralysis [1]. The incidence of GBS is reported to be 0.6-2.4 per 100000 annually [2,3,4]. It usually is proceeded by upper respiratory tract infections or gastrointestinal tract infections. [5] Clinical features are very progressive and include fairly symmetric muscle weakness, absent or depressed deep tendon reflexes. The muscle weakness might differ from mild difficulty with walking to nearly complete paralysis of all extremities, facial, respiratory and bulbar muscles [6]. Studies from the United States and Europe show that the weakness usually starts in the legs and only 10% of cases start in the arms or facial muscles. Severe respiratory muscle weakness with the need for ventilation develops in 10-30% of patients [7]. More than 50% of patients develop facial nerve palsies and oropharyngeal weakness [8,9]. The pain is due to nerve root inflammation, typically located in the back and extremities can be a presenting feature and is reported during the acute phase by two-thirds of patients with all forms of GBS [10,11]. Typical laboratory finding having increased levels of protein in cerebrospinal fluid with ~~a~~ normal white blood cell count that might be normal in the early stages. The acute phase requires careful management of the disease and is combined with both supportive therapy and immunotherapy. Every treatment plan varies for each individual [12]. Treatment plans include plasma exchange, intravenous gamma globulin therapy, and immunosuppressive therapy based on immunopathology [13]. There is a possibility to recover to an extent such that independent walking after GBS treatment. Nevertheless, some patients experience negative outcomes regarding daily activities and impaired muscular function even at 3-6 years after the onset of GBS [14]. So, it is very important for GBS patients to undergo rehabilitation treatment to increase the likelihood of regaining independence in the daily lifestyle and to improve muscular strength [5].

Case report:

A healthy 40-year-old male patient, with no history of chronic diseases, was rushed to the ER with complaints of numbness in both hands; muscle weakness in all extremities and disturbed speech.

On the 18th of October, the patient developed a dry cough followed by vomiting. His ~~both~~ children were sick with upper respiratory tract infection at that moment. On the 24th of October 2018, the patient's sleep was interrupted by a sudden pain in his neck and nausea. He thought the pain was caused by an improper sleeping position, the patient ended up throwing up several times. The following morning, the pain was tolerable, however coughing and vomiting continued. Around 10 A.M. the patient came back home from work due to unexpected but progressive fatigue and vomiting. By midday, getting up from the bed he perceived muscle weakness in both hands and feet. The patient called an ambulance and was taken to the nearest hospital where, during an examination, his speech was impaired and his hand numbness was getting worse. Head CT showed light a subcortical hypodense zone near the caput of the caudate nucleus, but a chance of ischemia was not excluded. Lung Rö showed a small amount of liquid in the right pleural sinus. Due to unclear diagnosis, the patient was transferred to a 3rd level hospital.

<u>Findings during the examination</u> :

- vesicular breathing and fine crackles during lung auscultation,

- breathing rate – 26 times/min.,
- febrile fever (37.6°C),
- blood pressure 162/76mm/Hg.,
- pulse – 76 bpm.
- Neurologically – the patient was conscious, oriented, coughed and his speech was dysarthric. Inadequate eye convergence was found. Due to throat secretion, the patient was gagging.
  - *Hands*: only flexible and extensive movements, muscle strength – 4 points. Slight flexion via elbow joints. No proximal movements. Areflexia.
  - *Feet*: no proximal movements, flexion, and dorsiflexion – 4 points. No patellar reflexes. Achill tendon reflexes were positive both sides. No pathological reflexes. The sensation was intact. Stiff neck. Positive Brudzinski symphysial sign.

The patients' symptoms were progressing quickly, and since diagnosis was unclear, he was hospitalized to the intensive care unit due to quadriparesis and respiratory failure.

Table 1. shows progress of the symptoms, diagnostic measures that were used during the time of hospitalization as well as the treatment.

Table 1. Progress, symptoms, diagnostic measures, treatment

Date	Symptoms, diagnostic measures and treatment
October 24th, 2018	• Urgent CT and CT angiography were performed. No vertebral displacement was shown, hernias were excluded. Neck blood vessels filled with contrast evenly, no signs of aortic aneurysms or dissections. • Diagnosis differentiated between acute meningomyelitis and acute demyelinating polyneuropathy. • The spinal fluid sample was taken – no major changes were found. • At 5 P.M. the patient was intubated due to paralysis of the diaphragm. • CFS – no significant changes (protein - 0,24g/l; WBC – 3 □l; glucose – 4,99 mmol/l) – *minimal changes may be found in the first week.* • After the intubation, the patient remained conscious, reactive to commands. Plegia of the hands – only the left-hand fingers were moving. Feet strength – 0 points proximal and 4-5 points distal, absence of reflexes. • Electromyoneurography (EMNG) – the changes that were found are most common for axonal-demyelinating motoric polyneuropathy with conduction blockages in proximal nerve parts. • The diagnosis was confirmed: **Guillan-Barre syndrome**. • Treatment with i/v IgG was administrated.

October 25h, 2018	• The patient's condition remained severe, he was still conscious but responsive to commands. Hand plegia presented reflexes, feet strength showed regress – 3-4 points distally.
October 27th, 2018	• Rö – negative dynamics, fluid was detected in left pleural sinus.
October 29th, 2018	• Treatment with i/v IgG course was finished. • After i/v IgG the patient showed no improvement. Facial nerve damage on both sides occurred and paralytic lagophtalmus of both eyes. • Rö – negative dynamics. More free fluid in left pleural sinus were detected than before. • Tracheostomy was formed.
October 30th, 2018	• The patient started breathing spontaneously.
November 5th, 2018	• Rö – positive dynamics. The amount of free fluid reduced significantly.
November 6th, 2018	• Central vein punction.
November 7th, 2018	• The neurologist consulted the patient before another spinal puncture. The patient was conscious, responsive to commands, unable to talk due to tracheostomy. Conjunctivitis in both eyes, lagophtalmos was detected. Eye movements were limited (unable to move right eye laterally), diploplia was found. The patient was unable to close both eyes at the same time. Facial nerve paralysis was seen on both sides. Sensations in the face were intact.
November 8th, 2018	• Infectologist consult – doubtful IgM for tick bite encephalitis, however, there was a normal number of cells in the spinal fluid, so it is thought to be cross-reaction. The blood test for syphilis was negative.
December 3rd, 2018	• The patient's condition improved, although insignificantly. During the examination - minimal moves in shoulders and hands proximally, however, there were no movements in the legs. • The patient was transferred to neurology clinic from the ICU for further treatment.
December 4th, 2018	• Early rehabilitation was started (increasing muscle strength, thromboembolic prophylaxis, a course of massages for blood flow, logotherapy).
December 12th, 2018	• Sinus tachycardia approached (pulse – 112bpm on the monitor), so the patient was consulted by a cardiologist. The patient has no history of previous cardiac illnesses. The cardiologist prescribed antihypertensive drugs.
December 21st, 2018	• PM&R consult: biosocial functions remained disturbed. The patient is unable to move or serve himself. 1st stage of rehabilitation was completed. Further rehabilitation is highly recommended.

The patients' condition had positive dynamics and, on December 28th, 2018, ~~so~~ he was transferred to the PM&R clinic. During rehabilitation, a team of PM&R specialists performed a full set of individually formed rehabilitation components. Daily functions and independence of the patient improved significantly: he was able to feed himself, stand up, sit down on his own and lay down by himself or with minor help. He was able to walk short distances with one crutch. Put on upper clothes by himself, pants – with minor help. Muscle strength improved: upper limbs both proximal and distal – 4-5 pts; lower limbs proximal – 1-2 pts, distal – 0-2pts. Pain syndrome was highly expressed due to femoral nerve damage, it was unresponsive, ~~to~~ peroral medication. The Pain Clinic Department of Lithuanian University of Health Sciences performed a femoral nerve blockade to relieve the pain. Two days after the procedure, the pain came back but was tolerable. Barthel index an adapted environment – 55 pts. The patient was discharged on the 1st of March, 2019 with the recommendation for further rehabilitation process in peripheral facilities. Intensive and continuous rehabilitation leads to multi-system improvement, however, the patient is still not fully recovered and is left with a diagnosis of hypertension and treatment with antihypertensive medication.

Discussion

We present a 40-year-old male who was diagnosed with Guillain-Barre syndrome after a complex of symptoms, which includes progressive muscle weakness, dysarthria, upper limb numbness, and tingling. GBS is an acute/subacute onset polyneuropathy typically manifesting with sensory symptoms and weakness over several days and leading to quadriparesis [1] and affects 0.6-2.4 per 100000 people annually [2,3,4]. Our patient's case manifested rapidly with progressive muscle weakness, dysarthria which reached a level of complete quadriparesis, diaphragm paralysis, and facial nerve paralysis. Lung ventilation was needed to maintain breathing as well. Electroneuromyography showed changes most common for axonal-demyelinating motoric polyneuropathy which, combined with rapid progression, suggested the diagnosis of Guillain-Barre syndrome. The patient was treated in the ICU with intravenous immunoglobulin G and supportive care was ensured. After the treatment, our patient underwent a long and intensive personal rehabilitation program which lead to recovery.

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