May 5th, 12:00 AM

Case Report: A Patient with Gait Dysfunction with Acute Inflammatory Demyelinating Polyneuropathy Masquerading as Diabetic Polyneuropathy

David Parkes
Rowan University

Russell Mordecai
Rowan University

Case Report: A Patient with Gait Dysfunction with Acute Inflammatory Demyelinating Polyneuropathy Masquerading as Diabetic Polyneuropathy

David Parkes, Russell Mordecai

Department of Emergency Medicine Jefferson NJ and Emergency Medicine Residency Rowan University SOM/Jefferson NJ

Abstract:

New onset gait dysfunction often prompts admission to the hospital for further evaluation. The typical patient is an elderly person who normally is self-sufficient but had recently experienced a decline in their ability to care for themselves. Sometimes, however, those who present with gait dysfunction do not fit the expected demographic. These individuals raise concern for less common "zebra" presentations of neurological dysfunction. We describe one such rare case of a 39-year-old female with a new onset of type 2 diabetes mellitus and recent COVID-19 infection that presented to the emergency department with a sensation of bilateral lower extremity burning with sensorineural changes, weakness, and an inability to ambulate. Emergency department labs and preliminary imaging were grossly unremarkable. Treatment as an inpatient with IVIG led to significant improvement in symptoms. Gait dysfunction is a common presentation in the ED. Recognizing abnormalities to the typical demographic and presentation are important in proper disease workup and remaining vigilant in the face of atypical diagnoses.

Introduction:

Acute inflammatory demyelinating polyneuropathy, also known as Guillain-Barre (GBS) syndrome is an acute polyneuropathy caused by immune-mediated peripheral nerve sheath destruction. Acquired polyneuropathies are known to be associated with vaccinations, autoimmune disorders, Lupus, IBD, DM, acquired immunodeficiencies, neoplastic processes, toxins, recent surgery, and the postpartum state. The typical patient presents with ascending, clinically significant symmetric weakness or even paralysis. These patients also often present with a loss of deep tendon reflexes (DTRs). The largest concern from an emergency standpoint is when this ascending weakness/paralysis reaches the diaphragm necessitating acute and critical interventions. The clinical term of the diagnosis widely varies from days to weeks with recovery extending up to and sometimes beyond 6 weeks. GBS is more accurately classified as a spectrum of disease states that include AIDP, acute motor-sensory axonal neuropathy, acute motor axonal neuropathy, and Miller-Fisher syndrome.

References:

Available on request

Case:

A 39-year-old female with a history of T2DM with diabetic neuropathy diagnosed 2 weeks prior presents to the ED with a chief complaint of bilateral lower extremity pain described as a "burning" sensation for the past 2-3 days. The patient had been following with endocrine since her diabetic diagnosis and was taking Metformin, Glipizide, and Neurontin for neuropathic pain. She claimed that she was previously a healthy person with no significant medical problems until she contracted COVID-19 two months prior to her visit (1/18/22).6 days after the patient's COVID-19 diagnosis (1/24/22) she presented to the emergency department complaining of fatigue, headache, cough, body aches, and nausea/vomiting. At the time she had already received the Johnson & Johnson vaccine. She was discharged with supportive medications after an unremarkable X-ray. She was reportedly ambulatory during her stay.

The patient returned to the ED 3 weeks later for evaluation of worsening bilateral circumferential lower extremity pain and weakness from the knee down for the past 10 days. She claimed that her symptoms were noticeable after she had fallen down steps 1 week prior. She described pain, intermittent numbness, weakness, and decreased sensation in both lower extremities. She claimed that she had been forced to resort to using a walker to get around due to the severity of the symptoms. Of note, during the encounter the patient did admit to heavily drinking for approximately 4 days per week. Labs were significant for anemia to 6.7, leukocytosis to 14.5, transaminitis (Alk phos 171, AST 143, and ALT 44), glucose 656, potassium 3.2, and sodium 127 (corrected to 136). She was given 1 unit PRBC and was admitted to the hospital for new onset DM, symptomatic anemia, transaminitis, and hypokalemia.While inpatient she was started on a diabetic regimen. She continued to complain of bilateral lower extremity weakness, which was attributed to her anemia/diabetes. Physical therapy felt that the patient was unable to stand or walk independently and she had little to no muscle activity/effort. She was diagnosed with functional limitation and was discharged home on Neurontin with plans for continued outpatient therapy. Due to her persisting lower extremity weakness and now pain she returned to the emergency department. She was re-admitted and evaluated by neurology who believed that her presentation was sensorimotor distal symmetrical polyneuropathy concerning for AIDP/CIDP vs. infectious neoplastic/Paraneoplastic vs. unspecified autoimmune etiology. A polyneuropathy workup including EMG/NC, MRI C/T/L spine, INR LP with cell count, and IgA levels was ordered. Her EMG/NCS demonstrated electrodiagnostic evidence of a moderately involved acute sensorimotor peripheral neuropathy with evidence of axonal loss and demyelination with diffuse denervation in the RLE. Eventually, she was diagnosed with AIDP, which was thought to be secondary to her COVID-19 diagnosis. The patient was started on a 5-day course of IVIG with improvement of symptoms. A diagnosis of POEMS was ultimately considered and the patient was discharged to SAR with plans for a full outpatient rheumatology workup for further autoimmune disease.

Discussion:

Reasons for gait dysfunction in the emergency department patient can vary widely. Most reassuring are those that have a clear correlation between labs and/or imaging and their presentation. More concerning are patients with an unusual demographic for gait abnormality, acute onset, red flags on physical exam, and a generally otherwise unremarkable workup. In the hectic emergency department environment it is extremely easy to accept bias from the pre-existing conditions that a patient may present with. For example, little concern for "how did this happen" occurs when a patient with known hypertension presents with high blood pressures.

Red herring patient presentations are arguably some of the most difficult diagnoses to make. Overlapping symptoms between possible offending causes can make the diagnosis that much more difficult. In the diagnosis of Guillain-Barre/AIDP only two criteria are "required" to raise suspicion [2]

Progressive weakness of more than one limb

Areflexia

Criteria that are more "suggestive" include

- Progression over days to weeks
- Relative symmetry of symptoms
- Recovery 2-4 weeks after progression stops
- Autonomic dysfunction
- CN involvement
- Absence of fever

In the case of gait abnormalities in the emergency department it is first important to determine if the complaint is sensory, motor, or sensorimotor [1]. Gait abnormalities as a cause of nervous system dysfunction must be split into either central or peripheral [1]. Lastly, the timing of the illness must be considered. Acute onset over days to hours is typically more indicative of processes that require more immediate intervention (stroke, cauda equina syndrome, MS exacerbation, etc.). Symptoms over weeks to months suggest chronicity that is more compatible with outpatient referral.

Conclusion:

We describe the case of AIDP masquerading as diabetic polyneuropathy in the setting of symptomatic anemia and chronic alcohol abuse in a new diabetic 39-year-old female presenting to the emergency department. The patient was reportedly healthy prior to her diagnosis of COVID-19 one month prior to her initial emergency department encounter and two months prior to her final diagnosis encounter. The patient had significant improvement of her symptoms after EMG/NC studies demonstrated AIDP and she was started on IVIG therapy. The patient was eventually discharged to SAR for further therapy as an outpatient. Gait dysfunction is an extremely common emergency department presentation. Clinical gestalt and required criteria in the face of mimicking conditions can help distinguish subtle differences. Early neurology consultation can help further improve patient diagnostics, especially in the acute onset of gait dysfunction in the abnormal patient demographic. In the unprecedented times of COVID-19, long term effects of the disease and its outreach have yet to be fully studied.