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Case: 30 year-old male with PMH significant for Charcot-Marie-Tooth presents to the emergency department with a 4-day history of progressive lower extremity weakness and shortness of breath. At baseline, reports lower extremity weakness affecting his gait and uses bilateral knee and ankle braces 2/2 to CMT. However, four days ago symptoms of foot drop causing him to trip. Reports URI symptoms of congestion and fever onset a week ago and diarrhea four days ago. Denies receiving a flu shot, sick contacts, recent travel, rashes, tick bites, fever, chills, CP, abd pain, n/v, and edema. Physical exam revealed a well-developed, well-nourished Caucasian male in mild respiratory distress, CNs and sensation intact, with 4/5 strength in upper extremities and 3/5 strength in lower extremities, decreased reflexes in patella and ankle bilaterally. Unable to perform gait 2/2 weakness. Normal cerebellar testing.

Guillain-Barre Syndrome:
Background: Guillain-Barre syndrome is the most common form of acute generalized neuropathy by an **autoimmune attack on peripherally myelinated motor nerves**. Symptoms tend to be **worst at 2-4 weeks and recovery can take anywhere from weeks to a year**. Mimics of GBS include Lyme disease, carcinomatous meningitis, tick paralysis, acute intermittent porphyria, and spinal cord compression.

Symptoms: Classically symptoms include **prior febrile illness, ascending symmetric paralysis, and loss of deep tendon reflexes**. The preceding febrile or viral illness tends to be **gastroenteritis** in nature. There is a well-known association of **Campylobacter jejuni** infection and the onset of GBS. However, it can also be associated with Cytomegalovirus, Epstein-Barr virus, and Mycoplasma pneumoniae. Neurologic symptoms include **symmetric numbness, tingling, and weakness that tends to begin in the lower extremities followed by progression to the thighs, legs, then arms**. In some cases there can be facial weakness, ophthalmoplegia, severe shooting pains, or ataxia.

Physical exam: The hallmark finding is **loss of deep tendon reflexes with symmetric paralysis**. However, sensation on exam is normal though patients might report subjective sensory changes. Pt is at risk for **respiratory failure and lethal autonomic fluctuations**.

Work-up: Lumbar puncture should be performed and will classically show a **high protein (>45milligrams/Dl), cell count (<10 cells/mm^3) with predominately mononuclear, and normal glucose**. However, protein elevation might take up to a week after symptom onset and even then might not be elevated. Elevated lymphocytes can occur, up to 100/uL, however if this occurs, suspicion for other cause including lupus, HIV, and lymphoma should be investigated.

Treatment: There is no specific treatment that should be started in the ED, however if the patient cannot protect the airway, the patient should be **intubated**. Indications for intubation include vital capacity <15ml/kg or 1L, PaO_2 <70 mmHg on room air, difficulty with breathing, swallowing, or speech, or risk of aspiration. After admission treatments such as **plasma exchange or intravenous immunoglobulin** have been proven to shorten the duration of illness.

References // Further Reading:

- Bunney EB, Gallagher EJ: Chp name: Peripheral Nerve Disorders. Rosen's Emergency Medicine: Concepts and Clinical Practice, ed 8. Saunders, 2013, (Ch) 107:p 1428-1431.
- Andrus P, Jagoda A: Acute Peripheral Neurologic Lesions, in Tintinalli JE, Kelen GD, Stapczynski JS (eds): Emergency Medicine, A Comprehensive Study Guide, ed 7. New York, McGraw-Hill, 2010, (Ch) 166:p 1161-1162.
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