


I'm Seeing Double

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Teaching points to be addressed

- When should a CNS toxin be considered highly in the differential of weakness?
- When is the optimal timing of imaging, procedures, and therapy in patient with a suspected CNS toxin ingestion?
- What empiric therapy should be initiated in patients with suspected CNS toxin ingestion?

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Case Presentation

- 43-year-old female with upper respiratory tract symptoms for a week
- Now has complaints of diplopia, dysarthria and dysphagia
- Patient's eyelids are noted to be "droopy"
- Patient is able to answer all questions appropriately

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Past Medical History & Social History

- No past medical history
- No chronic medications
- No history of surgery
- Admits to "social" use of subcutaneous heroin

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Physical Exam

- VS: 37.1, 125/90 (93/70 standing), 105, 18, sat 98%
- Awake and alert
- Cooperative with exam
- Pulmonary, cardiac, abdomen: Normal
- No cutaneous findings on arms or legs
- Pupils 7mm, reactive; Ptosis noted
- Upper extremities weaker than lower extremities; DTR's also decreased




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Your Differential Diagnosis?


Differential Diagnosis

- Neurologic
 - Stroke
 - Myasthenia
 - Lambert-Eaton
- Infectious etiologies
 - Meningitis
 - Poliomyelitis
- Metabolic
 - Metabolic
 - Endocrine
 - Toxicologic
 - Tick paralysis
 - Aminoglycoside toxicity
 - Botulism

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ED Course

- What should be done and in what order?

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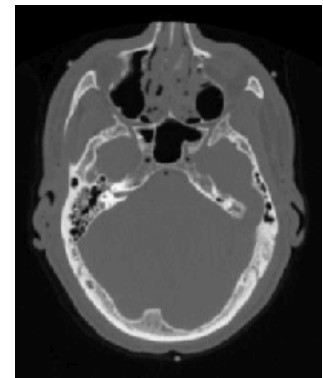
ED Course-what occurred

- Verify A,B,C's
- IV access, labs, blood cultures
- Early assessment of ventilatory function; our patient required intubation
- Non-contrast cranial CT
- Lumbar puncture

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Non-contrast Cranial CT

- Midline structures appear normal
- No gross abnormalities



Lumbar puncture

- Normal Protein/glucose
- 0 RBC/WBC
- Normal opening pressure
- Gram stain - no bacteria

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Lab Results

- WBC = 7
- Hct = 42
- Platelets = 263
- Chemistry = wnl

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ED Course

- What is the next step in this patient's management?

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Case course

- Patient was given botulinum antitoxin for presumptive diagnosis of botulism
- Antitoxin obtained from California Department of Health Services
 - Also helped with wound culture
- Blood/stool cultures obtained, but of little help
- Penicillin given to help eradicate spores
- Admission to ICU after intubation
- Prolonged stay (one month intubated, three months for rehabilitation)

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Risk Factors

- Wound botulism can happen in any patient
- Identified risk factors
 - Traumatic wounds
 - Work near farm equipment
 - Injection of black tar heroin

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Presentation-4 D's

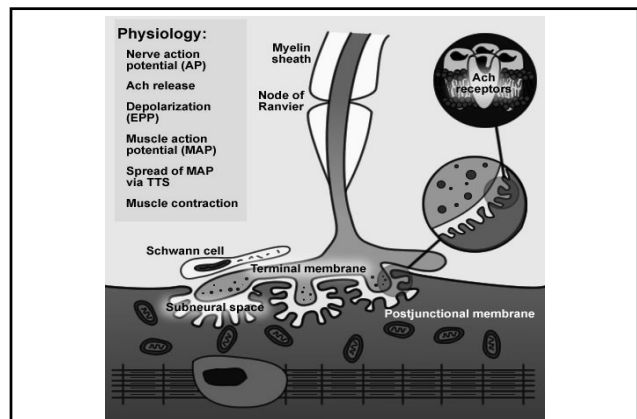
- Dysphagia, Diplopia, Dysarthria, Dry mouth—the four classic findings in botulism
- Symptoms start 18 to 36 hours after exposure
- Over 90% of affected patients have these symptoms
- Sensorium is intact

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Anatomy and Pathophysiology


- Wound botulism caused by gram positive, anaerobic, spore-forming bacteria (*C. botulinum*)
- Germinates in areas of high pH (>4.6) or local oxygen concentrations
- After toxin absorption, the toxin binds irreversibly to the presynaptic nerve endings and prevent the transmission of acetylcholine through the neuromuscular junction; effectively denervates muscles by preventing acetylcholine transmission

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Lab studies

- CBC, chemistries
- Coagulation studies
- Blood/stool/urine cultures
- Other cultures as appropriate

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Procedures

- Lumbar puncture
 - Normal protein helps to exclude Guillain- Barré
 - Glucose and protein normal
- Electromyography (EMG) demonstrates potentiation
 - Repetitive testing at 50 Hz should demonstrate potentiation from this supramaximal stimulation with jitter and blocking

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Emergency Department Care

- Prompt recognition
- Prompt intervention
 - Give antitoxin early
 - Do not delay pending diagnostic interventions in high-suspicion cases
 - Antibiotics

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Consultations

- Will depend upon institution
- Ill patients - ICU admission
- General surgery for any signs of trauma
- Infectious disease, neurology, or others might be helpful

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Summary

- Wound botulism may present only ptosis or the other extreme of autonomic dysregulation
 - Think of the 4 D's: Diplopia, Dysarthria, Dry mouth, Dysphagia
- Acute intervention may limit morbidity and mortality
- Antibiotics (PCN) and antitoxin
- Avoid aminoglycosides (neuromuscular junction blockade)

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Teaching points

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Teaching points

- **When should a CNS toxin be considered highly in the differential of weakness?**
- **Any patient with a descending paralysis with a history of injection drug abuse should raise suspicion for wound botulism**

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Teaching points

- **When is the optimal timing of imaging, procedures, and therapy in patient with a suspected CNS toxin ingestion?**
- **Early. Obtain CT/LP early and start therapy before confirmatory testing returns**

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Teaching points

- **What empiric therapy should be initiated in patients with suspected CNS toxin ingestion?**
- **Start with penicillin, preferably before the I&D; reduces toxin burden**
- **Initiation of antitoxin reduces Morbidity/mortality**

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Questions???

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