



“No, it only rhymes with hysteria!”



Jennie Leverman, MD, CCFP(EM)

Bessie's case

Bessie, 78, is brought to the ED by her worried family. She has become progressively more confused over the past 24 hours and has had 2 falls. For the past 3 days, she complained of headache, nausea and abdominal cramping with occasional diarrhea.

Medical history

Bessie has a history of Type 2 diabetes for which she takes metformin. She also has chronic obstructive pulmonary disease (COPD) and is currently on prednisone for a recent exacerbation. Her other medical problems include hypertension and hypercholesterolemia.

Examination

- Looks unwell, mucous membranes are moist
- Heart rate 110 bpm, BP 80/60, respiratory rate 20, SaO₂ 97% on room air, temperature 38.8°C
- Drowsy
- Head, eyes, ears, nose and throat exam: pupils equal and reacting to light, throat normal, tympanic membranes normal, no nodes, no nuchal rigidity
- Skin: flushed, no rash, skin turgor not decreased
- CV: S1 S2 2/6 systolic murmur, aortic area
- Respiratory: bilateral fine crackles with expiratory wheeze
- Abdomen: soft, non-tender
- Neurologic: Uncooperative, even deep tendon reflexes, down-going plantar reflexes, no rigidity

Her chest x-ray, urinalysis and ECG are all normal.

For more on Bessie, turn to page 2.

Questions & Answers

1. What is the differential diagnosis?

There is a very broad diagnosis for a febrile elderly patient presenting with confusion and falls

- Infection: pneumonia, urinary tract infection, GI infection, central nervous system (CNS) infection
- Cardiac: ischemia, arrhythmias
- Respiratory: infection, pulmonary embolism, hypoxia due to underlying lung disease
- Neurologic: stroke, transient ischemic attack, progressive dementia, normal pressure hydrocephalus
- Other

CNS infection is a strong possibility in Bessie's case, presenting with headache, falls and confusion and hence needs to be investigated.

2. What are some of the more common bacterial pathogens involved in CNS infections?

- *Strep pneumoniae*
- Staphylococcal species
- *Neisseria meningitidis*
- *Listeria monocytogenes*
- *Pseudomonas aeruginosa*

Back to Bessie

Bessie undergoes a lumbar puncture in the ED. She is empirically treated with 2 g of ceftriaxone. The Gram's stain shows Gram-positive rods. Parenteral ampicillin and gentamicin are added to her antibiotic therapy.

She is admitted to hospital and makes a slow recovery with minimal residual symptoms.

3. *What are the basic facts about Listeria?*

Listeria monocytogenes is a Gram-positive bacillus that is non-spore forming. It grows between 4°C and 37°C (*i.e.*, even when refrigerated). It proliferates most rapidly between 30°C and 37°C. Its incubation time is three to 70 days. It can be found in wood, soil, decayed matter and feces. It is widespread in the environment.

Certain foods are more frequently contaminated with *Listeria*. These include contaminated processed meats, improperly pasteurized dairy products (*i.e.*, soft cheeses like Brie, Feta, Camembert) and vegetables.

4. *How does Listeria infection present?*

Mild cases present with gastroenteritis which is self-limited with no systemic involvement. Moderate disease may have flu-like symptoms, mild renal failure and increased transaminases from hepatic granuloma. Severe cases may present with meningoenzephalitis. Features include:

- headache,
- confusion,
- vomiting,
- bacteremia,
- often no nuchal rigidity and
- seizures are common.

There are often brainstem signs.

5. *Who is at risk for listeriosis?*

Neonates, immunocompromised, pregnant and elderly patients are most at risk. Healthy, immunocompetent patients rarely develop invasive disease.

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6. What is the significance of Listeria infection in pregnancy?

There is an especially high risk of infant mortality. Listerial infection is transmitted via either ascending or transplacental route. The mother exhibits a viral-type syndrome two to 14 days before delivery. Preterm labour is the rule (70% of cases). Neonatal sepsis is common. Mortality rates are from 40% to 50% with death from sepsis or stillbirth.

7. How is listeriosis diagnosed?

Stool cultures are of minimal use in diagnosing listeriosis. Up to 5% of the population is colonized with the bacterium. Cultures of blood, central spinal fluid (CSF) and amniotic fluid may be useful. Gram's stain of CSF may be helpful, however *Listeria* does not always take up stain, leading to potential error in identification.

8. What antibiotics are effective in treating listeriosis?

Listeria is highly resistant to cephalosporins. Drugs of choice include ampicillin and gentamicin, sulfamethoxazole/trimethoprim, rifampin and ciprofloxacin. Vancomycin is the drug of choice in penicillin allergic patients. 