

Bacterial meningitis

Rapid recognition prevents patient harm.

By Erik P. Southard, DNP, RN, FNP-BC



JOHN JONES*, age 26, has had type 1 diabetes for 10 years. He presents to the emergency department (ED) with a blood glucose of 425 mg/dL. Mr. Jones, who's unemployed and was recently released from a week in jail, has been rationing his insulin and reusing syringes. He states that he doesn't feel well, has coldlike symptoms, is struggling to control his "sugar," and has been running a low-grade fever. His vital signs are normal except for a temperature of 99.7° F (37.6° C). His A1c is 15%, and his white blood cell count is moderately elevated. After ED triage, the physician determines that Mr. Jones doesn't have diabetic ketoacidosis, and he's admitted to a medical-surgical unit.

The next morning, Mr. Jones tells Tim, his nurse, that his right ear has been sore for 2 weeks, with the pain becoming more severe overnight. Mr. Jones' temperature is 100.6° F (38.1° C). Tim administers acetaminophen and alerts the resident on call about the fever and ear pain. When Tim returns an hour later, Mr. Jones, who's hard to arouse and confused to place, says his ear pain is gone, but he has a severe headache. His blood glucose is 372 mg/dL and his temperature is 103.1° F (39.5° C). Tim notes that Mr. Jones follows him with his eyes but avoids turning his head. Pupil assessment reveals photophobia. Tim activates the rapid response team (RRT).

History and assessment hints

Mr. Jones has a history of incarceration and has challenges accessing healthcare services, and the dormitory-style living has exposed him to multiple people with various health conditions. His blood glucose is elevated because of inexpensive, calorie-dense, nonnutritious foods; insufficient insulin; and stress. This combination is contributing to a compromised immune system.

On the scene

The RRT takes vital signs, obtains a blood glucose level, initiates cardiac monitoring, and starts two large-bore IVs. The hospitalist finds Mr. Jones confused and lethargic with nuchal rigidity and papilledema. She orders stat blood cultures x2, complete blood count, comprehensive metabolic panel, prothrombin time, partial thromboplastin time, international normalized ratio, and serum lactate. The hospitalist also orders IV 0.9% sodium chloride at 20 mL/hour, vancomycin 25 mg/kg x

1, and cefotaxime 2 g IV. In addition, she orders a stat computed tomography (CT) scan, a lumbar puncture after the CT results show no signs of increased intracranial pressure, droplet and seizure precautions, and a private room in the intensive care unit (ICU).

Outcome

Based on the positive blood cultures and cerebrospinal fluid, Mr. Jones is diagnosed with bacterial meningitis and septicemia. He spends 3 weeks in the ICU before being transferred to a step-down unit. Mr. Jones has significant hearing loss in his right ear from a ruptured tympanic membrane and short-term memory problems discovered at his discharge assessment. He's referred to an otolaryngologist, endocrinologist, and neurologist for follow-up.

Education and follow-up

Bacterial meningitis is an inflammation of the lining of the brain and spinal cord from bacteria that enter the bloodstream. In Mr. Jones' case, the bacteria invaded directly from the inner ear to the meninges. Compromised immunity, diabetes, and dormitory-style living are a few of the risk factors for bacterial meningitis; others include hypoparathyroidism, cystic fibrosis, and extremes of age. Preteens, teens, and at-risk adults should consider vaccination to protect against certain bacterial causes of meningitis. Sudden high fever, severe headache, confusion, lethargy, mental status changes, nausea, vomiting, photophobia, and nuchal rigidity are common early symptoms. Some patients with meningitis will exhibit a flat skin rash that doesn't fade with pressure and looks like pinpoint hemorrhages.

Acute bacterial meningitis is life-threatening with a mortality rate approaching 20%; diabetes increases the risk for the infection and mortality from it. Rapid symptom recognition and treatment are critical for survival. Bacterial meningitis must be reported to state and local health departments to ensure close contacts receive antibiotic prophylaxis. ★

*Names are fictitious.

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