Cervical Osteomyelitis: Unique Presentation And Fatal Outcome

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Vertebral osteomyelitis represents 1% of the bone infections. Only 3-6% involve the cervical spine. Its presentation can be very dramatic with rapid deterioration if immediate intervention is not done. The most common risk factors include diabetes mellitus, immunocompromised status, IV drug use, end-stage renal disease. Hematogenous spread is the most common route of infection spread to cervical spine. The involvement of cervical spine is most common at the level of C5-6 (40%) followed by C6-7 (20%) spine with relatively uncommon involvement of C1-2 and C3-4.

Case description

A 60-year-old male, active smoker, degenerative joint disease of the cervical and lumbar spine was admitted with the complaints of generalized weakness and worsening back pain for four days. Back pain worsened with movement. He developed acute onset paralysis of all four extremities that started 1 week before arrival. It was not cleared why he did not present earlier.

Vitals: Temp 87.0 F, BP 130/66 mmHg, Pulse 83, Resp.rate 20, O2 sats 98% on room air.

Physical examination: labored breathing and dense motor and sensory deficits in upper and lower extremities. He did not have any sensations below the T1 dermatomal level. The patient was able to communicate verbally and follow commands.

Initial labs: WBC 22.6k, Hgb 12.5, platelets 301. Electrolytes were significant for sodium 129, potassium 3.4, chloride 97, bicarb 25, BUN 8, creat 0.8, anion gap 18.

Imaging: CT c-spine showed evidence of osteomyelitis affecting C3-4 with surrounding epidural phlegmon resulting in severe cord compression. MRI C-spine confirmed the CT scan findings.

Hospital course:
After arrival at the ED, patient went into cardiopulmonary arrest due to severe hypoxia and was emergently intubated. Blood cultures ordered came back positive for methicillin-sensitive staph aureus bacteremia.

CSF showed leukocytosis, high glucose, and protein content. Infectious disease was consulted and patient treatment was narrowed to Nafcillin. The patient was initially weaned off from pressors but later he had episodes of worsening spinal shock manifesting in the form of hypotension and bradycardia episodes with progression to asystole. He was started on vasopressor support. Neurosurgery recommended that surgical intervention would not help given patient presentation was very late and neurological deficits recovery was very unlikely.

PEG tube was placed for feeding purposes. During entire hospital course, patient was riding the ventilator and never been able to breathe above the set rate. He progressively develop worsening leukocytosis. Extensive workup revealed negative C.diff stool toxin. CT abdomen pelvis showed pneumoperitoneum with inflammatory process around duodenum. Ascitic fluid revealed neutrophilic leukocytosis suggesting peritonitis and cultures were positive for candida. Antifungal medications were started. Repeat CT abdomen pelvis with contrast via PEG tube that showed resolution of pneumoperitoneum and no evidence of contrast extravasation. There was no evidence of visible perforation, hence patient was treated for fungal/ bacterial peritonitis. Patient repeat blood cultures remained negative on antibiotic therapy. Despite appropriate treatment, patient leukocytosis and oxygen requirements continue to increase. He developed progressive renal failure and was started on renal replacement therapy. Given patient unable to wean off from ventilator and overall poor prognosis, family decided to proceed with comfort care. Patient passed away same day after initiation of comfort measures.

Discussion

- Our patient was unique in a way, he did not have any of the risk factors.
- His late presentation in the form of acute onset respiratory failure, quadriplegia, and ventilator-dependent status made him unsuitable candidate for surgical intervention.
- Unfortunately, his hospital course was complicated by persistent sepsis, peritonitis and renal failure which adversely affected his prognosis.
- This is the first case described in literature where cervical osteomyelitis resulted in severe cord compression and diaphragm paralysis and patient presented with respiratory arrest and quadriplegia.

Learning objectives

- Recognize diaphragm paralysis in the form of respiratory arrest as fatal outcome of cervical osteomyelitis.
- Early recognition and timely intervention is key to survival for cervical osteomyelitis complications.

References

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