Spinal Level and Cord Involvement Predict Sepsis Following Vertebral Fracture Repair for Traumatic Spinal Injury

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No Disclosures
Introduction

• Despite a known association with adverse outcomes, identifying hospitalized patients at risk for sepsis can be challenging.

• Surgical vertebral fracture repair poses a risk of post-operative infection, which may be exacerbated in cases where patients present following traumatic spine injury (TSI).

• We aimed to characterize the epidemiology and clinical risk of sepsis in patients who have undergone vertebral fracture repair following TSI.
Methods

• Retrospective cohort study of 29,050 patients
• Analyzed data from initial hospitalization
• National Trauma Data Bank, 2011-2014
  • Age ≥ 18
  • TSI defined based on ICD-9 code for spinal fracture, spinal cord injury
  • Vertebral fracture repair defined based on ICD-9 procedure code
• Multiple imputation for missing data
• Multivariable analysis using linear and logistic regression models, adjusted for demographics, comorbidities, and accompanying injuries
Demographics

- 317 patients (1.1%) developed sepsis during initial hospitalization.

- Patients who developed sepsis were disproportionately older, male, and covered by non-private insurance in comparison to patients who did not develop sepsis following vertebral fracture repair.
Mechanism of Injury

Motor vehicle accidents are the most prevalent mechanism of injury in both groups, followed by falls. The larger proportion of motor vehicle accident-related injuries in the patients who developed sepsis could reflect increased injury severity.
Factors significantly associated with the development of sepsis in patients undergoing vertebral fracture repair predominantly relate to injury severity. Additionally, male sex and obesity are associated with an increased likelihood of developing sepsis.
Cervical spine injury is significantly associated with developing sepsis following vertebral fracture repair, but thoracic and lumbar spine injury are not. Additionally, there is a strong significant association between presenting with spinal cord injury and developing sepsis following vertebral fracture repair.
Even though developing sepsis had strong associations with multiple indicators of increased injury severity, developing sepsis during initial hospital admission was not associated with requiring an ICU stay. However, patients who developed sepsis were more likely to require discharge to a rehabilitation facility or home with rehabilitative services as compared to other patients who underwent vertebral fracture repair. Patients who developed sepsis were also significantly more likely to die or be discharged to hospice following their initial hospitalization.
Patients who underwent vertebral fracture repair and developed sepsis required hospitalization for an average of 16 additional days as compared to patients who underwent vertebral fracture repair but did not develop sepsis. This analysis was conducted using an adjusted linear model.
Conclusions

• Approximately 1.1% of adult patients who underwent vertebral fracture repair following TSI developed sepsis during their initial hospitalization.

• Multiple factors associated with increased injury severity, particularly cervical spine injury and spinal cord injury, were significantly associated with developing sepsis.

• Patients who developed sepsis had an increased average length of stay, as well as an increased likelihood of adverse discharge and death/discharge to hospice.