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Title of the Abstract: Paravertebral Nerve Block vs. Epidural Analgesia for Geriatric Rib Fracture Patients: How Invasive Should We Be?

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Paravertebral Nerve Block vs. Epidural Analgesia for Geriatric Rib Fracture Patients: How Invasive Should We Be?

Introduction

It has been estimated that adults 65 years and older will make up more than 20 percent of the total US population by the year 2030. Along with this change, geriatric blunt thoracic trauma is also expected to rise, resulting in a similar trend in the incidence of geriatric rib fractures. Geriatric rib fractures carry with them a high risk for complications (especially pulmonary), longer hospital and ICU lengths of stay, and mortality. This increasingly prevalent condition represents a significant healthcare burden for the US. Multiple pain control modalities exist for rib fracture patients. The use of epidural analgesia (EA) in older adults has been associated with a high-risk profile. The aim of our study is to compare outcomes among geriatric rib fracture patients who received PVNB vs. EA.

Methods

We conducted a 2011-2015 analysis of the Nationwide Readmission Database (NRD). The NRD is part of a family of databases and tools developed for the Healthcare Cost and Utilization Project (HCUP). It contains nationally representative and longitudinally collected data on hospital readmissions of patients of all ages, containing information on approximately 18 million discharges per year.

We queried the NRD to include geriatric (≥65y) trauma patients with rib fractures. We excluded patients who were dead on arrival, those with head-AIS ≥3, spine-AIS >0, penetrating injuries, and cognitive impairment. Propensity score matching was performed, which is a well-established method for controlling for measurable confounding factors, such as patient demographics, comorbidities, and injury parameters. Patients who received PVNB were matched to a similar cohort of patients who received EA, in a 1:2 ratio. A logistic regression model was used to generate a propensity score (ranging from 0 to 1) for each patient. A nearest-neighbor model match, using a caliper width of 0.001, was performed to identify patients that were subsequently included in the post-match analysis. Primary outcomes were delirium, length of stay (LOS), and

mortality. Secondary outcomes were respiratory complications, readmission, and mechanical ventilation (MV).

Results

We included a total of 2,855 patients. From this a matched cohort of 1,041 patients was obtained (347 received PVNB vs. 694 received EA). Mean age was 78±8y, chest-AIS was 3[2-3], and ISS was 9[4-16]. Majority of patients (70%) had >3 rib fractures. No difference was found in rates of delirium (12.4% vs. 12.9%; p=0.81), LOS (5[3-9] vs. 6[4-11]; p=0.63), index-hospital mortality (5.2% vs. 6.8%; p=0.30), 90-day mortality (7.6% vs. 8.4%; p=0.65), respiratory complications (10.1% vs. 10.4%; p=0.85), readmission (20.1% vs. 16%; p=0.27), and MV (7.5% vs. 7.4%; p=0.94) between the two groups.

Conclusion

The use of PVNB in geriatric trauma patients with multiple rib fractures is associated with comparable in-hospital and post-discharge outcomes relative to EA. PVNB is relatively easy to perform and has a better side effect profile. The use of PVNB as part of rib fracture management protocols warrants further consideration.