Impact of Sarcopenia on Treatment Outcomes for Patients with C1 or C2 fractures

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Nothing to disclose
Introduction

• Fractures of upper cervical vertebrae are challenging conditions to manage in the clinical setting. Motor vehicle accidents and falls make up the majority of these cases while the population who suffer from C1 and C2 cervical spine fractures are mostly elderly.

• For the clinical management, determining the factors impacting the outcome becomes very crucial especially while choosing the type of treatment (medical vs. surgical). Among these factors; sarcopenia, which is defined as the loss of muscle mass, was shown to have impact on recovery for patients with spinal fractures at other locations.
Objective

• To determine the impact of sarcopenia on clinical outcomes of patients suffering from C1 and C2 fractures.
Methods

- A retrospective chart review of patients who presented with the fracture of C1 or C2 vertebra between 2011 and 2019 was conducted.
- Information on baseline demographics as well as the injury status at the time of admission and outcomes such as length of stay, traumatic brain injury (TBI), mortality and complications were collected.
- Concurrently, radiographic measurements were performed using axial CT scans at admission. For muscle mass, the area of both sternocleidomastoid muscles at C4 mid-pedicle level and the area of the vertebral body at the same level were measured.
- Multivariable regression analyses were performed to evaluate the impact of these measurements on the outcomes mentioned.
Results

- Out of 48 patients analyzed, 21 of them presented with C1 fractures and 27 of them presented with C2 fractures. The most common type of trauma was falls (n=24), followed by motor vehicle accidents (n=21) and impact injuries (n=3).

- Median age (range) of patients was 70 (18-95) with a 1.1:1 male-to-female ratio.

- In multivariable regression analyses all radiographic parameters were significantly associated with TBI outcome (p-value < 0.0001), while only abbreviated injury scale (AIS) score at admission was significantly associated with mortality (p-value< 0.0001) and any complications.

- Finally, falls (p=0.031) and injury severity score (ISS) at admission (p=0.016) were significantly associated with the length of hospital stay.
Conclusion

• The analysis revealed a strong association between muscle mass measurements and TBI outcomes following C1 or C2 fractures. However, other outcomes such as mortality, length of hospital stay and complications after injury were still dependent on the severity of the injury at the time of admission. These findings suggest that sarcopenia may be an important factor to evaluate for in the long-term management for patients presenting with upper cervical vertebral fractures.
Questions and discussion