Oct 13th, 12:00 AM

Impact of Mean Arterial Blood Pressure Compliance on Neurologic Outcomein Patients with Traumatic Spinal Cord Injuries

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“Impact of Mean Arterial Blood Pressure Compliance on Neurologic Outcome in Patients with Traumatic Spinal Cord Injuries”

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Introduction

- Nearly 300,000 Americans currently live with a spinal cord injury with 17,500 new spinal cord injuries occurring yearly.
- The early clinical management of traumatic spinal cord injury (TSCI) is crucial to patient outcomes.
- The American Association of Neurologic Surgeons recommended that mean arterial blood pressure (MAP) be maintained between 85-90 mmHg for seven days after TSCI.
- However, 100% adherence to these guidelines is rarely accomplished in practice.
- The objective of this study was to determine physician compliance with MAP guidelines and neurologic function in TSCI patients.

Methods

Retrospective chart review of consecutive adult patients with TSCIs presenting to an urban Level 1 trauma center.

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Electronic medical records were used to identify to obtain demographics, patient outcomes, and daily MAPs 1week post-admission.

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Non-Compliant
Average weekly MAPs <85mmHg

Compliant
Average weekly MAPs ≥85mmHg

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Neurologic Improvement
Quantified by American Spinal Injury Association (ASIA) scale.

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Chi squared and Student’s t-test

ASIA Impairment Scale		
A	Complete	No motor, no sensory, no sacral sparing
B	Incomplete	No motor, sensory only
C	Incomplete	50% of muscles LESS than grade 3 (can’t raise arms or legs off bed)
D	Incomplete	50% of muscles MORE than grade 3 (can raise arms or legs off bed)
E	Normal	Motor and sensory function are normal

Results

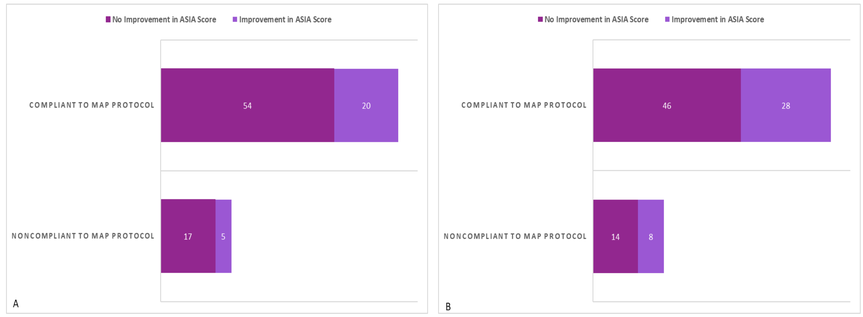


Figure 1A shows no significant difference in ASIA score improvement at discharge (p=0.7).
Figure 1B shows no significant difference in ASIA score improvement at initial clinic follow-up (p=0.9).
When stratified by MAP guideline compliance, no significant differences were observed regarding age (p=0.5), BMI (p=0.6), comorbidities (p>0.05), and spinal surgery (p=0.2).

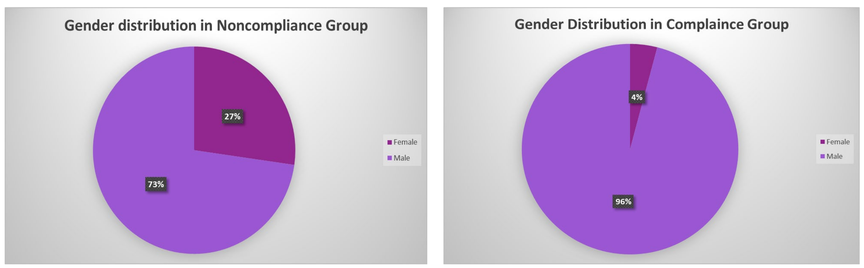


Figure 2 shows patients in the non-compliance group were more likely to be female (p=0.001).

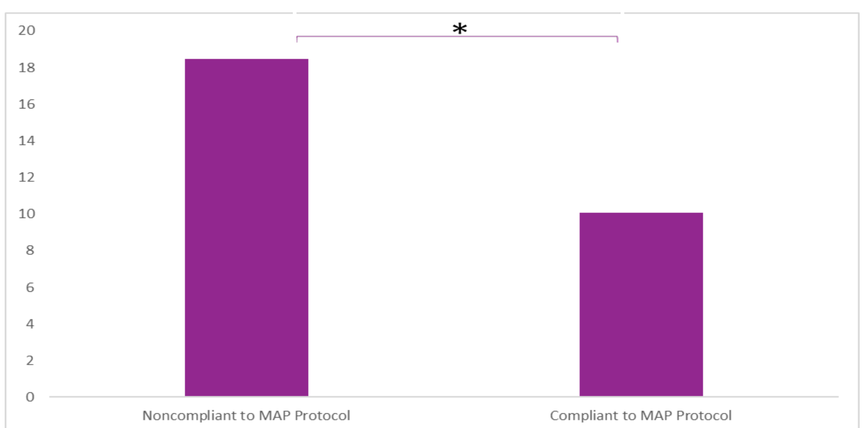
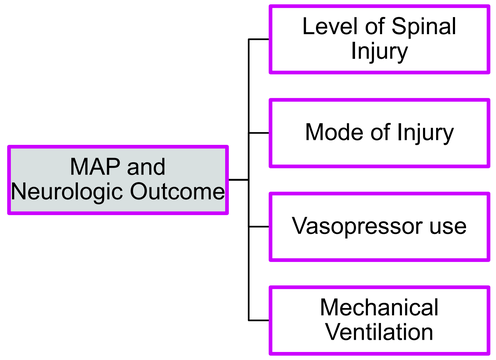


Figure 3 shows patients in the non-compliance group were more likely to be have a significantly longer ICU length of stay (p=0.01).

Conclusion

- In this study, compliance with current guidelines did not show an association with neurologic outcome at discharge or at follow-up. Non-compliance group had longer ICU length of stay and more likely to be female.
- Future studies will focus on further elucidating risk factors (such as mode of injury) for non-compliance with MAP goals and how this plays a role in post-MAP protocol neurologic improvement.
- A multicenter prospective arm across several trauma centers is being performed.
- We hope to ultimately gain insight into the optimal MAP range that leads to the greatest improvement in neurologic outcome in TSCI patients.



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