Dexmedetomidine as Adjunct to Standard-of-Care in Acute Alcohol Withdrawal-Related Agitation: A Retrospective Cohort Study

Kyleigh Maday, Pharm.D. Candidate; Alexis Kasniunas, Pharm.D., BCCCP
HSHS St. John's Hospital

Southern Illinois University Edwardsville School of Pharmacy

Introduction

- Acute alcohol withdrawal syndrome (AWS) is a life-threatening condition with mortality as high as 15% from complications such delirium tremens if left untreated.[1]
- AWS results in decreased gamma-aminobutyric acid (GABA) activity and increased glutaminergic activity which results in nervous system hyperactivity upon alcohol cessation.[2]
- Benzodiazepines are the standard-of-care in AWS as they bind to GABA receptor and alleviate the symptoms of seizures, tremors, and restlessness associated with depressed GABA activity.[2]
- Dexmedetomidine, a central alpha-2 adrenergic agonist, has shown some benefit in AWS by reducing ICU length of stay and reducing the need for mechanical ventilation.[1,3]

Objective

To determine if the addition of dexmedetomidine to symptom triggered benzodiazepine therapy based on CIWA scores reduces the benzodiazepine requirement without causing adverse effects due to decreased GABA receptor inhibition.

Methods

Study Design

- This retrospective cohort study assessed patients' charts who were admitted to HSHS St. John's Hospital intensive care units for AWS between 06/01/2018 and 06/30/2019.

Patient Selection

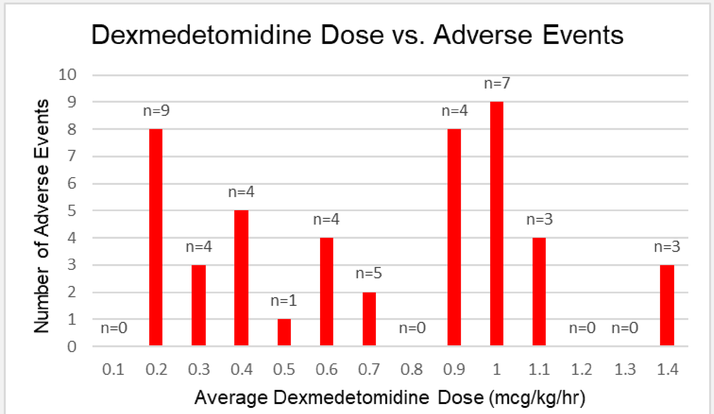
- Inclusion Criteria: Adults (≥ 18 years old) admitted to the ICU for AWS; Dexmedetomidine administered in addition to CIWA protocol
- Exclusion Criteria: Patients admitted to the ICU for indications other than AWS; Patients with a clinical indication for deeper level of sedation; Patients that require dexmedetomidine for indications other than AWS

Statistics

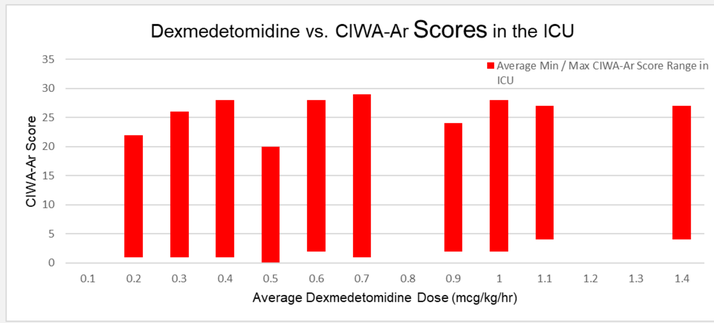
- A total of 80 patients were required for power set at 80%.
- Descriptive analyses were used to evaluate the patient data.

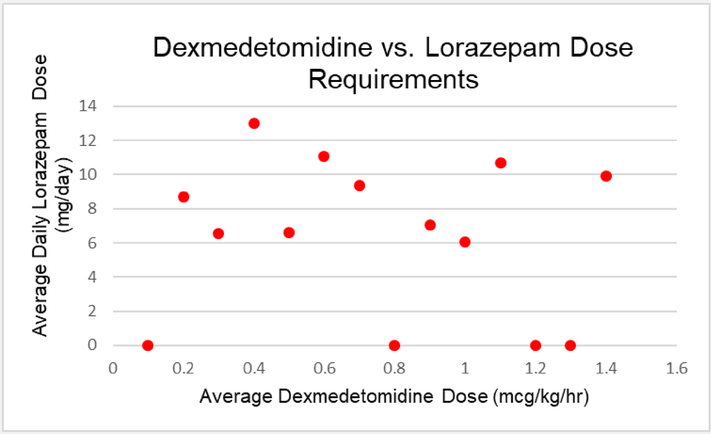
Results

Patient Demographics	
Total (n)	44
Male (%)	34 (77.2)
Age (years, SD)	51.96 ± 12.7
Height (inches, SD)	68 ± 3.7
Body weight (kilogram, SD)	76.8 ± 20.7
Blood-Alcohol Content on Arrival	0 – 0.41
CIWA on ICU Admission	3 – 39
Length on CIWA protocol (hours)	31 – 387
Propofol Continuous Infusion (%)	13 (29.5)
Midazolam Bolus (%)	12 (27.2)
Haloperidol (%)	21 (47.7)



Adverse Events	
ICU Mortality (%)	2 (4.5)
Seizure (%)	5 (11.3)
Delirium Tremens (%)	11 (25)
Hallucinations (%)	13 (29.5)
Mechanical Ventilation (%)	17 (38.6)





Limitations

- Due to the small sample size and not reaching power, this study is at risk of a type II error.
- Retrospective nature of the study potentially means that there was missing or uncharted patient data.

Conclusion

Although the study did not meet power, one can see that a high frequency of patients still experienced delirium tremens and hallucinations. Providers should use caution when using dexmedetomidine in addition to symptom triggered benzodiazepine therapy due to the potential to precipitate adverse events including delirium tremens and seizures if there is not enough GABAergic activity. Therefore, more studies will have to be conducted to determine whether dexmedetomidine as adjunct to standard-of-care is appropriate to reduce benzodiazepine use, while still minimizing symptoms of AWS.

References

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Disclosure

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