Alcohol Abusing Patients that experience Delirium Tremens during admission for hip fractures experience higher morbidity

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Background

• Alcohol abuse disorder is common
  – 10% of women and 20% men in western societies

• Decrease life span

• Severe Reduction of alcohol intake leads to symptoms of withdrawal tremens
  – Delirium Tremens (DT)
Criteria for Alcohol Withdrawal

• Cessation or reduction of heavy alcohol consumption

• And at least two withdrawal symptoms
Criteria for Delirium

- Decreased attention/awareness
- Sensory Disturbance
- Cognitive Disturbance
- No other cognitive disorder
Delirium Tremens

• Meets criteria for Alcohol Withdrawal and Delirium

• Untreated DT with the current benzodiazepine treatment regimens have reported mortality rates of 1-4%
Hip Fractures

• Hip fracture incidence is 0.5-1.0%

• Usually require surgery and hospitalization

• Poor outcomes in hip fracture patients who abuse alcohol
Objective

- Effects of DT on acute hip fractures patients
- Incidence of DT in at risk patients with hip fractures
- Characteristics of DT vs. Alcohol Abusing patients with hip fractures
- Identify rates of morbidity, mortality, and increased health care utilization
Objective

• Evaluate effect of DT prophylaxis on alcohol abusers suffering hip fractures
Hypothesis

• DT in hip fracture patients will have an increase of inpatient morbidity, mortality, and health care resource utilization
Inclusion Criteria

– ICD-9 Diagnosis codes for Subtrochanteric, intertrochanteric, neck or head femur fractures
  • 820.00, 820.01, 820.02, 820.03, 820.09, 820.20, 820.21, 820.22, and 820.8

– ICD-9 Diagnosis codes for Alcohol abuse and/or Delirium Tremens diagnosis
  • 291.x, 303.0x, 305.0, 305.00, 305.02, 790.03, 980.0, 980.1, 980.2, 980.3, 980.8, 980.9, E860, E860.0, E860.1, E860.2, E860.3, E860.4, E860.8, E860.9, V11.3, V70.4, V79.1
Exclusion Criteria

- Incomplete records or imaging
- Patients younger than 18 years of age
- Periprosthetic fractures
- Non-operative greater trochanteric fractures
Methods

• Institutional review board approval

• Retrospective chart review April 2006-August 2015
Methods

• Occurrence of DT in alcoholic hip fracture patients

• Characteristics of DT vs. Alcohol Abusing patients with hip fractures
  – Age, gender, Charleson Comorbidity Index, Injury patterns, Surgical treatment

• Evaluated morbidity, mortality, length of stay, and ICU utilization
Statistical Analysis

- Fisher’s exact tests
- Wilcoxon rank-sum test
- Kaplan-Meier curves
Results

• 86 patients identified

• 45 patients met inclusion criteria
## Demographics

<table>
<thead>
<tr>
<th></th>
<th>Age (mean)</th>
<th>Sex</th>
<th>Charleston Co-Morbidity Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>No DT</td>
<td>53</td>
<td>69% Male</td>
<td>2.2</td>
</tr>
<tr>
<td>DT</td>
<td>62</td>
<td>100% Male</td>
<td>3.1</td>
</tr>
<tr>
<td>Fracture</td>
<td>DT</td>
<td>No-DT</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Femoral Head</td>
<td>0 %</td>
<td>6.1%</td>
<td></td>
</tr>
<tr>
<td>Femoral Neck</td>
<td>14.3%</td>
<td>45.5%</td>
<td></td>
</tr>
<tr>
<td>Intertrochanteric</td>
<td>71.4%</td>
<td>33.3%</td>
<td></td>
</tr>
<tr>
<td>Subtrochanteric</td>
<td>14.3%</td>
<td>15.1%</td>
<td></td>
</tr>
</tbody>
</table>
## Surgery Type

<table>
<thead>
<tr>
<th>Surgery</th>
<th>DT</th>
<th>No-DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIF</td>
<td>0%</td>
<td>15.2%</td>
</tr>
<tr>
<td>Intramedullary Nail</td>
<td>85.7%</td>
<td>48.5%</td>
</tr>
<tr>
<td>Sliding Hip Screw</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Hemiarthroplasty</td>
<td>14.3%</td>
<td>15.2%</td>
</tr>
<tr>
<td>Total Hip Arthroplasty</td>
<td>0%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Closed Treatment</td>
<td>0%</td>
<td>6%</td>
</tr>
</tbody>
</table>
Results

- 16% experienced DT
- LOS significantly longer in the DT group (p=0.0013)
Results

• DT group more likely to require an ICU stay (p=0.0018)
Results

- ICU LOS was significantly longer ($p=0.0052$)
- Inpatient complications significantly higher ($p=0.0035$)
Results

• DT patients more frequently received benzodiazepine treatment

• Duration of prophylaxis not significantly different

• Number of prophylactic regimens not significantly different
• Significant delay to surgical intervention in DT patients (p=0.04).
Discussion

• Patient characteristics
  – DT trending to be older male patients with higher CCI from low energy mechanisms
  – The non-DT ETOH abusing patients included a higher proportion of trauma patients therefore a greater range of treatments and injury patterns. Also likely reason for younger age.
Discussion

• DT group suffered significantly more inpatient morbidity
  – Sepsis, Pneumoniae, Aspiration

• DT group experienced a significant delay on average of almost 2 more days until having surgical treatment
Discussion

• DT group
  – Significant increase in LOS: 20 vs 6 days
  – Significant increase in ICU Days: 8 vs 1 days

These increases are likely due to the increased morbidity experienced by these patients.
Discussion

• Alcohol supplementation

• Prophylactic regimens utilized
Discussion

• Potential biomarkers for DT screening:
  
  – Phosphatidylethanol
    • May be a marker for chronic alcohol intake
  
  – Carbohydrate-deficient transferrin (CDT)
  
  – Blood ethanol
Discussion

- Weakness
  - Retrospective chart review
    - Diagnosis entry errors?
  - Limited Number of Patients
Conclusion

- DT may occur in 16% of at risk alcohol abusing patients that suffer a hip fracture
- Patients with hip fractures complicated by DT have significant increases in inpatient morbidities
- DT hip fracture patients have significant increases in resource utilization
- Aggressive use of DT prophylaxis in at risk hip fracture patients
Conclusion

• Further studies?
  – National hospital database review
  – Review non-alcohol abusing hip fracture patient characteristics at our institution
References

Thank You