Factors Associated with Ventriculoperitoneal Shunt Dependency Following Glioblastoma Resection

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Disclosures

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- No other disclosures to report
Introduction

- Limited data exists on factors associated with ventriculoperitoneal shunt (VPS) dependency following glioblastoma resection

- Purpose of this study was to investigate these factors
  - Increase awareness of postoperative complications in patients requiring VPS
  - Determine if particular therapeutic plans decrease the risk of postoperative VPS
Methods

467 patients retrospectively identified
2004-2017

Data Collection

*Patient Characteristics:* Demographics & Comorbidities

*Outcome Variable:* Postop VPS dependency

*Tumor/Treatment Characteristics:* Extent of resection, tumor genetic markers, tumor location # of total resections, radiation/temozolomide, antiepileptic drug

*Postop Outcomes:* ICU/hospital length of stay, complications (PE, DVT, SSI), readmission <30 days, KPS, progression-free survival, overall survival

Binomial Logistic Regression Analysis
Rate of VPS Insertion

467 unique patients

693 glioblastoma surgeries
Primary: 67%
Revision: 33%

48 (7%)
VPS insertion

645 (93%)
No VPS insertion
## Factors Associated with Increased VPS Dependency

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative DVT</td>
<td>2.37</td>
<td>0.037</td>
</tr>
<tr>
<td>Postoperative PE</td>
<td>3.62</td>
<td>0.014</td>
</tr>
<tr>
<td>Surgical Site Infection</td>
<td>3.27</td>
<td>0.005</td>
</tr>
<tr>
<td>Readmission &lt;30 days</td>
<td>3.85</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ICU Stay</td>
<td>1.09</td>
<td>0.053</td>
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<tr>
<td>Hospital Stay</td>
<td>1.04</td>
<td>0.055</td>
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</tbody>
</table>
Factors Associated with Decreased VPS Dependency

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progression Free Survival</td>
<td>0.93</td>
<td>0.068</td>
</tr>
<tr>
<td>Extent of Resection (Gross Total vs Subtotal)</td>
<td>0.345</td>
<td>0.06</td>
</tr>
</tbody>
</table>
Discussion

- Demonstrates that various factors are associated with VPS dependency following glioblastoma resection
  - Such data is noticeably absent in the existing literature

- Provides heightened awareness of clinical complications for which patients requiring postoperative VPS are at higher risk
  - DVT, PE, SSI, readmission <30 days

- Suggests that variability in surgical therapy (i.e. extent of resection) affects risk for postoperative VPS
  - Gross total vs subtotal resection
Summary Points

- Low overall VPS dependency following glioblastoma resection (7%)

- Postoperative complications (DVT, PE, SSI), readmissions <30 days, and longer ICU/hospital stay → higher risk of postoperative VPS dependency

- Gross total vs subtotal resection → lower risk of postoperative VPS dependency