Rates of Infections and Clinical Outcomes after Intracerebral Hemorrhage
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Objectives
1. To identify the prevalence of infections in an ICH sample.
2. To assess the different type of infections present and identify the most common types (pneumonia, urinary tract infection: UTI, bacteremia).
3. To compare outcome at discharge (Glasgow Outcome Scale: GOS and discharge disposition) between infected and non-infected subjects.

Methods
• Retrospective review of consecutive patients with ICH admitted to the Baylor-St. Luke’s Medical Center Neurosciences Critical Care Unit (NCCU) (January 2008 – December 2012) (Figure 1).
• Demographics, baseline characteristics, occurrence of infections (identified by chart review), type of infection (pneumonia, UTI, bacteremia) were collected.
• Patients divided in infected and non-infected groups.
• Rates of infections and outcome at discharge (GOS, discharge disposition) were compared between the two groups using multivariate logistic regression model.

Results
• Infection rates in our sample were comparable to other recent ICH infection rates reported.
• Infections were identified in 141 patients (23.5%) (Table 1).
• UTI was the most common infection (45.2%) followed by pneumonia (28.8%) and bacteremia (19.2%) (Table 1).
• Clinical outcome was significantly worse for subjects who experienced any type of infection during hospitalization, compared to non-infected subjects.
• Poor outcome (GOS < 4) was found on 63.8% and 42.8% for the infected and non-infected groups respectively ($p = 0.0168$) (Figure 2).
• Unfavorable discharge disposition (LTAC, SNF, hospice, death) was higher in the infection group compared to the non-infected group, 62.4% and 42.2%, respectively ($p = 0.004$) (Figure 3).
• This increased risk was significant after controlling for gender, ethnicity, admission GCS, admission NIHSS and admission mRS.

Conclusions
• Infection rates in our sample were comparable to other recent ICH infection rates reported.
• Our study shows a significant association between infections and poor clinical outcomes at hospital discharge after controlling for admission status.
• We additionally demonstrated a higher risk for unfavorable discharge disposition for infected patients.
• Further large prospective studies are required.

Background
• Intracerebral hemorrhage (ICH) is a leading cause of disability and mortality.
• Infections are a common complication observed in ICH and might be associated with worse outcomes.

Table 1. General patient demographics, infection rates and comparison among infected and non-infected patients.

<table>
<thead>
<tr>
<th>Infections</th>
<th>Non-infected (%)</th>
<th>Infected (%)</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>55.6</td>
<td>56.4</td>
<td>0.765</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>47.5</td>
<td>51.2</td>
<td>0.316</td>
</tr>
<tr>
<td>Bacteremia</td>
<td>20.2</td>
<td>19.2</td>
<td></td>
</tr>
</tbody>
</table>

Infection rates in our samples were comparable to other recently reported ICH cohorts.

Poor clinical outcome (GOS and unfavorable disposition) was more frequent for the infected patients.