Reconsidering Perioperative Antibiotic Use in Elective Laparoscopic Cholecystectomy

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Reconsidering Perioperative Antibiotic Use in Elective Laparoscopic Cholecystectomy

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Introduction

- Increasing antibiotic resistance has made the routine use of prophylactic perioperative antibiotics (PPA) questionable in cases with a low rate of surgical site infection (SSI)\(^1,2\)
- Elective laparoscopic cholecystectomy (ELC) is considered a clean-contaminated case (estimated risk of infection of 3-11\%)\(^3\)
- Goal: evaluate institutional use of PPA and subsequent SSI rates in ELC

Methods

- Retrospective review
  - Single-institution
  - Children <18 years old
  - Elective laparoscopic cholecystectomy (biliary dyskinesia, symptomatic cholelithiasis, hyperkinetic gallbladder, gallbladder polyp(s))
  - July 2010 - August 2020
  - SSI defined as infection requiring antibiotics within 30 days of surgery

Results

- 502 patients underwent ELC during the study period
  - Majority (78\%) female and Caucasian (80\%) (Table 1)
  - 60\% (n=301) received PPA, 40\% (n=201) did not
  - Overall SSI rate: 3\% (no PPA = 5\% vs. PPA = 1\%)
  - Children who received PPA were 77\% less likely to develop SSI on multivariate logistic regression analysis (see Table 3)
  - All superficial SSIs
  - Only 1 child readmitted (IV antibiotics)
  - NNT = 24

<table>
<thead>
<tr>
<th>Diagnosis (symptomatic cholelithiasis as reference)</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biliary dyskinesia</td>
<td>2.19 (0.74-6.49); 0.16</td>
<td>2.39 (0.72-7.94); 0.16</td>
</tr>
<tr>
<td>Hyperkinetic gallbladder</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Gallbladder polyp(s)</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Table 2. SSI rate by diagnosis.

<table>
<thead>
<tr>
<th>Outcome: SSI</th>
<th>Unadjusted OR (95% CI); p-value</th>
<th>Adjusted OR (95% CI); p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perioperative antibiotic administration</td>
<td>0.23 (0.07-0.74); 0.01</td>
<td>0.23 (0.07-0.76); 0.02</td>
</tr>
<tr>
<td>Gender</td>
<td>1.11 (0.31-4.02); 0.87</td>
<td>1.05 (0.27-4.08); 0.94</td>
</tr>
<tr>
<td>Age</td>
<td>0.98 (0.83-1.17); 0.86</td>
<td>0.99 (0.83-1.21); 0.99</td>
</tr>
<tr>
<td>Ethnicity (Caucasian as reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.69 (0.36-7.87); 0.51</td>
<td>2.40 (0.45-12.67); 0.30</td>
</tr>
<tr>
<td>Asian</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Other</td>
<td>2.84 (0.60-13.50); 0.19</td>
<td>4.01 (0.76-21.08); 0.10</td>
</tr>
</tbody>
</table>

Table 3. Results from logistic regression analysis.

Conclusion

- PPA use decreases the rate of SSI in ELC however, all SSIs in our cohort were superficial in nature and only one child required hospitalization for further treatment.
- We advocate for limited PPA use to avoid antibiotic-related complications (resistance, C. difficile infection) and to decrease healthcare costs.

References