8. SURGICAL REFERRAL FOR CHOLECYSTECTOMY IN PATIENTS WITH ATYPICAL SYMPTOMS - A CASE FOR HELICOBACTER PYLORI TESTING AND PROTON PUMP INHIBITOR TRIAL
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Background: Amidst the constellation of classic biliary colic symptoms, patients are often referred for cholecystectomy for concomitant or isolated atypical symptoms such as heartburn, bloating, epigastric or other non-specific abdominal pain. The aim of our study is to identify the impact of preoperative clinical symptomatology of biliary colic – whether classic, atypical or dyspepsia type – on operative and non-operative clinical outcomes.

Methods: Under IRB approval, we retrospectively reviewed patients who were referred to our clinic for evaluation of gallstone disease from 2014-2018. Demographics, clinical symptoms, and outcomes were collected and analyzed. Symptoms were classified into three categories: classic biliary colic, classic dyspepsia, and atypical biliary colic. Univariate and multivariate analyses were performed to evaluate clinical outcomes.

Results: A total of 746 patients were evaluated for gallstone disease. The median age was 43 years, median BMI was 30, 93.4% (n=697) were Hispanic, and 85.0% (n=634) were female. Of the entire cohort, 21.3% (n=159) had concomitant classic biliary and atypical biliary colic, 44.9% (n=335) concomitant classic biliary colic and dyspepsia, 14.6% (n=109) concomitant atypical biliary colic and dyspepsia. Of 94 patients managed non-operatively with medical therapy, 63.8% (n=60) experienced symptom resolution with medical management (OR=0.4, 0.1-0.9, p=0.03). The remaining patients were not offered surgery and discharged to PCP for continued workup. A total of 87.4% (n=652) of patients underwent cholecystectomy, of whom 90.8% (n=592) had symptom resolution postoperatively whereas 9.2% (n=60) did not. Significant predictors of unresolved symptoms postoperatively are shown in figure 1. On multivariate analysis, heartburn/reflux remained significantly associated with unresolved symptoms postoperatively (OR 2.1, 1.0-4.4, p=0.04). Among these 60 patients with unresolved symptoms following cholecystectomy, 38.3% (n=23) experienced symptom resolution with medical therapy. Overall, 11.1% (n=83) of all 746 referred patients and 20.2% of all patients presenting with atypical and/or dyspepsia symptoms (n=411) improved with medical management of gastritis or Helicobacter pylori triple therapy administered either pre- or post-operatively.

Conclusion: In a cross-section analysis of a county, Hispanic pre-dominant patient population, concomitant atypical biliary colic and/or dyspepsia on presentation is associated with unresolved, persistent symptoms following cholecystectomy. Patients referred for surgical evaluation with atypical biliary and/or dyspepsia symptoms may benefit from H. pylori testing and PPI trial prior to cholecystectomy. Ultimately, identifying this subset of patients who can be managed medically has significant implications to optimize patient outcomes and reduce unnecessary surgical intervention.
Predictors of Unresolved Symptoms After Cholecystectomy

<table>
<thead>
<tr>
<th>Symptom</th>
<th>OR</th>
<th>LCL</th>
<th>UCL</th>
<th>P VALUE</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUQ Pain</td>
<td>2.2</td>
<td>0.8</td>
<td>6.2</td>
<td>0.13</td>
<td>82.3% (n=613)</td>
</tr>
<tr>
<td>Postprandial Pain</td>
<td>1.4</td>
<td>0.7</td>
<td>2.8</td>
<td>0.27</td>
<td>71.7% (n=535)</td>
</tr>
<tr>
<td>Nausea/Vomiting</td>
<td>1.9</td>
<td>1</td>
<td>3.4</td>
<td>0.03</td>
<td>58.0% (n=433)</td>
</tr>
<tr>
<td>Epigastric Pain</td>
<td>1.8</td>
<td>1</td>
<td>3</td>
<td>0.04</td>
<td>35.7% (n=266)</td>
</tr>
<tr>
<td>LUQ Pain</td>
<td>2.9</td>
<td>1.1</td>
<td>7.4</td>
<td>0.02</td>
<td>7.2% (n=54)</td>
</tr>
<tr>
<td>Pain Radiating to Back</td>
<td>1.3</td>
<td>0.8</td>
<td>2.2</td>
<td>0.31</td>
<td>38.1% (n=284)</td>
</tr>
<tr>
<td>Heartburn/Reflux</td>
<td>2.7</td>
<td>1.5</td>
<td>5</td>
<td>0.009</td>
<td>15.8% (n=118)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>3.5</td>
<td>1.7</td>
<td>7.2</td>
<td>0.0005</td>
<td>8.2% (n=61)</td>
</tr>
<tr>
<td>Constipation</td>
<td>2.5</td>
<td>1</td>
<td>5.9</td>
<td>0.04</td>
<td>6.6% (n=49)</td>
</tr>
<tr>
<td>Regurgitation</td>
<td>3.3</td>
<td>0.3</td>
<td>32.5</td>
<td>0.27</td>
<td>0.7% (n=5)</td>
</tr>
<tr>
<td>Bloating</td>
<td>1.2</td>
<td>0.4</td>
<td>3.4</td>
<td>0.78</td>
<td>7.2% (n=54)</td>
</tr>
<tr>
<td>Flatulence</td>
<td>10</td>
<td>0.6</td>
<td>162.2</td>
<td>0.05</td>
<td>0.8% (n=6)</td>
</tr>
<tr>
<td>Belching</td>
<td>2.5</td>
<td>0.3</td>
<td>22.7</td>
<td>0.4</td>
<td>1.5% (n=11)</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>0.6</td>
<td>0.2</td>
<td>2.8</td>
<td>0.55</td>
<td>5.2% (n=39)</td>
</tr>
<tr>
<td>Lower Abdominal Pain</td>
<td>2.6</td>
<td>0.8</td>
<td>8</td>
<td>0.09</td>
<td>4.2% (n=31)</td>
</tr>
<tr>
<td>Chest Pain</td>
<td>2.2</td>
<td>0.6</td>
<td>7.8</td>
<td>0.22</td>
<td>3.0% (n=22)</td>
</tr>
<tr>
<td>Chronic Cough</td>
<td>10</td>
<td>0.6</td>
<td>162.2</td>
<td>0.05</td>
<td>0.4% (n=3)</td>
</tr>
<tr>
<td>Combined Classic &amp; Atypical Biliary</td>
<td>2.4</td>
<td>1.3</td>
<td>4.3</td>
<td>0.002</td>
<td>21.3% (n=159)</td>
</tr>
<tr>
<td>Combined Classic Biliary &amp; Dyspepsia</td>
<td>1.9</td>
<td>1.1</td>
<td>3.2</td>
<td>0.02</td>
<td>44.9% (n=335)</td>
</tr>
<tr>
<td>Combined Atypical Biliary &amp; Dyspepsia</td>
<td>3.3</td>
<td>1.7</td>
<td>6.2</td>
<td>0.0001</td>
<td>14.6% (n=109)</td>
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</tbody>
</table>