Gallstone ileus: a comprehensive approach in the context of human medicine - case report and clinical considerations

Íleo biliar: uma abordagem detalhada no contexto da medicina humana - relato de caso e considerações clínicas

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ABSTRACT: Gallstone ileus, a rare complication of cholelithiasis, predominantly affects elderly women with other relevant medical conditions. This condition arises due to the impaction of gallstones in the ileum after passing through a bilioenteric fistula. The clinical picture often manifests itself with nonspecific symptoms and insidious obstruction, sometimes resulting in a delay in diagnosis. Computed tomography (CT) is crucial for research, being considered the gold standard tool. The morbidity and mortality associated with the gallstone ileus are directly related to the advanced age of the patients and the presence of concomitant comorbidities, negatively influencing the prognosis. This study describes the case of a 65-year-old woman, diabetic and hypertensive, presenting with an acute obstructive abdomen. The obstruction in the terminal ileum was evidenced by CT, not allowing the determination of the obstructive factor. The diagnosis of gallstone ileus was confirmed during the exploratory laparotomy, which identified a large impacted calculus in the distal ileum, with expansion of loops upstream. The surgical approach included enterotomy for calculus extraction, followed by two-plane enterorrhaphy and washing of the abdominal cavity. Due to the patient’s clinical conditions, cholecystectomy and correction of the cholecystoduodenal fistula were not performed in the same surgery.

KEY WORDS: Ileus; Intestinal Obstruction; Gallstones.

RESUMO: O íleo biliar, uma complicação rara da colecitíase, predominantemente afeta mulheres idosas com outras condições médicas relevantes. Essa condição surge devido à impactação de cálculos biliares no íleo após a passagem por uma fistula bilioenterica. O quadro clínico frequentemente se manifesta com sintomas inespecíficos e obstrução insidiosa, resultando, por vezes, em atraso no diagnóstico. A tomografia computadorizada (TC) é crucial para a investigação, sendo considerada a ferramenta padrão-ouro. A morbidade e mortalidade associadas ao íleo biliar estão diretamente relacionadas à idade avançada dos pacientes e à presença de comorbidades concomitantes, influenciando negativamente no prognóstico. Este estudo descreve o caso de uma mulher de 65 anos, diabética e hipertensiva, apresentando quadro de abdome agudo obstrutivo. A obstrução em íleo terminal foi evidenciada por TC, não permitindo a determinação do fator obstrutivo. O diagnóstico de íleo biliar foi confirmado durante a laparotomia exploradora, que identificou um grande cálculo impactado no íleo distal, com dilatação de alças à montante. A abordagem cirúrgica incluiu enterotomia para extração do cálculo, seguida de enterorrafia em dois planos e lavagem da cavidade abdominal. Devido às condições clínicas da paciente, a colecistectomia e a correção da fistula colecistoduodenal não foram realizadas na mesma cirurgia.

PALAVRAS-CHAVE: Ileus; Obstrução Intestinal; Cálculos biliares.

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INTRODUCTION

Biliary ileus is a rare complication, the result of a cholecystoenteric fistula responsible for the migration of gallstones into the gastrointestinal tract, occurring in less than 0.3 to 0.5% of patients with cholelithiasis. It is more prevalent in females, and its incidence increases with advancing age. Due to the complexity of the disease and the morbidity and mortality associated with it, ideal management is not a consensus. The following report aims to present a case of biliary ileus, describing aspects of the diagnosis and treatment chosen, as well as the clinical repercussions of these decisions on the patient’s prognosis, in order to minimize recurrent diseases and post-operative complications.

CASE REPORT

A 65-year-old woman with a history of diabetes mellitus, hypertension, smoking and alcohol consumption. No allergies or previous abdominal surgery. She was taking gliclazide (30 mg/day), atenolol (50 mg/night), simvastatin (20 mg/night), acetylsalicylic acid and insulin (NPH 22 IU in the morning and 10 IU in the evening) subcutaneously. She came to the emergency department complaining of acute bar abdominal pain, which began three days ago and was associated with nausea and multiple episodes of vomiting, without pathological products. He denied fever, weight loss or changes in urinary and intestinal habits. He reported similar previous episodes.

On physical examination at admission, the patient was afebrile, with normal vital signs. The patient presented with hydroaerial noises, a tympanic abdomen that was distended and painful on palpation of the entire upper abdomen, with no signs of peritoneal irritation, negative Blumberg and Murphy signs, and no palpable masses or visceromegaly. A previous abdominal ultrasound (in the context of an outpatient assessment) showed hepatic steatosis and cholelithiasis.

Within the clinical context, laboratory tests were requested (Table 1) and a total abdominal CT scan, which showed a gallbladder with diffuse parietal thickening and heterogeneous content, associated with aerobilia, evident near the hepatic lobes and throughout the assessed segment of the choledochus, suggestive of biliary ileus. Discrete and diffuse distension of the small bowel loops was also observed, with the formation of some hydroaerial levels and a small volume of free fluid, most evident in the right iliac fossa and pelvic cavity. As an initial approach, the following measures were taken: volume replacement, passage of a nasogastric tube for drainage, and antibiotic therapy with ceftriaxone (2g IV 1x/day) and metronidazole (500 mg IV 3x/day).

After discussing the case, the patient underwent exploratory laparotomy, which confirmed the diagnosis of biliary ileus, with the identification of a large stone (Figure 1) in the distal ileum and intestinal distension upstream. The decision was made to perform an enterotomy in the ileum with the extraction of the calculus, which was approximately 2.5 cm in diameter (Figure 2). This was followed by enterorrhaphy in two anatomical planes using non-absorbable thread, with subsequent washing of the abdominal cavity and laparorrhaphy.

Table 1 - Results of the patient’s laboratory tests on admission (pre-surgical results) and from the first to the third post-operative day.

<table>
<thead>
<tr>
<th></th>
<th>Pre-surgical results</th>
<th>Immediate post-operative period</th>
<th>First post-operative day</th>
<th>Second post-operative day</th>
<th>Third postoperative day</th>
<th>Day of discharge from ICU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood glucose (mg/dL) (RV = 70-99 mg/dL)</td>
<td>-</td>
<td>-</td>
<td>118 - 175</td>
<td>118 - 176</td>
<td>114 - 183</td>
<td>-</td>
</tr>
<tr>
<td>Urea (mg/dL) (RV = 10-45 mg/dL)</td>
<td>-</td>
<td>47,1</td>
<td>47,1</td>
<td>36,6</td>
<td>37,2</td>
<td>23,5</td>
</tr>
<tr>
<td>Creatinine (mg/dL) (RV = 0.6-1.2 mg/dL)</td>
<td>-</td>
<td>1,6</td>
<td>1,40</td>
<td>1,30</td>
<td>0,70</td>
<td>0,50</td>
</tr>
<tr>
<td>Sodium (mEq/L) (VR = 135-145 mEq/L)</td>
<td>143</td>
<td>145</td>
<td>143</td>
<td>147</td>
<td>153</td>
<td>140</td>
</tr>
<tr>
<td>Potassium (mEq/L) (VR = 3.5-5.1 mEq/L)</td>
<td>3,6</td>
<td>3,1</td>
<td>3,8</td>
<td>3,6</td>
<td>3,5</td>
<td>3,1</td>
</tr>
<tr>
<td>Hemoglobin (g/dL) (RV = 11.7-15.7 g/dL)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10,20</td>
</tr>
<tr>
<td>Hematocrit (%) (VR = 36-47%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>31,90</td>
</tr>
<tr>
<td>Total leukocytes (cel./mm3) (VR = 4,000-11,000 cel./mm3)</td>
<td>- 3640</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5920</td>
</tr>
<tr>
<td>Sticks (%) (RV = 0-5%)</td>
<td>-</td>
<td>1,00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,00</td>
</tr>
<tr>
<td>Segmented (%) (RV = 40-70%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>69,00</td>
</tr>
</tbody>
</table>

RV: reference value
Source: Prepared by the authors.
The patient was sent to the intensive care unit (ICU), intubated and initially no vasoactive drugs were used. It was decided to maintain the preoperative antibiotic regimen with metronidazole and ceftriaxone. During the first 24 hours after surgery, it was necessary to start parenteral noradrenaline at a low dose (up to 0.3 mL/Kg/h), while maintaining the interventions necessary for clinical management, such as a delayed bladder catheter, orotracheally intubation, invasive blood pressure measurement, and a nasogastric tube for drainage. The wound remained dry, without abnormalities, with a distended abdomen and no signs of peritonitis. In addition, the patient had prolonged diuresis (<100 ml/24 h) but satisfactory general laboratory tests.

During hospitalization, she had a good clinical evolution and was extubated on the second postoperative day without complications, with improved renal function and diuresis after volume replacement. She did, however, present mild hypokalemia associated with her clinical condition (K+ = 3.1 mEq/L) on the day she was discharged from the ICU, after the third postoperative day. A liquid oral diet was started with compliance and ion replacement to correct the hydroelectrolytic disorder in the ward under the care of the multidisciplinary team. The patient was discharged after 5 days in the hospital with a complete recovery. After six months’ follow-up, the patient had no complaints.

**DISCUSSION**

Biliary ileus is considered to be one of the rare complications of cholelithiasis described, with the potential to occur in around 0.3-0.5% of patients with this diagnosis. It has a higher prevalence in females, with a ratio of 3.5 to 4.5:1, increasing its incidence with advancing age, and can reach 25% of cases of small bowel obstruction in women over 65 years of age.

Its pathophysiology lies in the occurrence of a bilioenteric fistula, allowing a stone to be displaced from the biliary tree into the gastrointestinal tract. This process usually begins with an episode of acute lithiasic cholecystitis, generating an internal biliary fistula. The inflammatory process of the gallbladder induces adherence to adjacent structures (duodenum, colon, stomach, hepatocoledoch), and the pressure caused by the stone produces ischemia and, consequently, erosion of the gallbladder wall and the adhered viscera, with subsequent migration of the stone through the fistula. This abnormal communication tends to be most present in the duodenum (65%), followed by the colon (25%) and stomach (15%). The size of the stone, the site of the biliary fistula and the intestinal lumen can determine whether an obstruction will occur. In general, stones smaller than 2 cm can pass spontaneously through a normal gastrointestinal tract and be eliminated in the feces. However, when the size is significant, it can cause obstruction, with the most common sites being the distal ileum and the ileocecal valve (60-75%), although it can be found throughout most of the length of the gastrointestinal tract.

This study demonstrates the classic clinical presentation of biliary ileus, which occurred in an elderly woman with episodic subacute obstruction resulting from the migration of a stone into the intestinal lumen. Many affected patients have concomitant serious comorbidities, including coronary heart disease, lung disease and diabetes mellitus, like the patient in the study. Symptoms include diffuse abdominal pain and vomiting, which subside as the gallstone moves and clears the pathway, but reappear when the stone occludes the distal intestinal lumen. Therefore, vague and intermittent symptoms may precede the evaluation, and the average duration of symptoms is up to 5 days before hospital admission. Laboratory changes are non-specific and can include leukocytosis, hydroelectrolyte imbalance due to dehydration and high levels of aminotransferases.

Currently, the gold standard imaging test for the diagnosis of biliary ileus is total abdominal CT, which can visualize Rigler’s Triad (pneumobilia, distension of the intestinal loops and presence of calculi) in 77% of cases. When CT is not available, simple abdominal X-rays or ultrasounds can be used. Other tests can be carried out when X-ray or CT cannot define the diagnosis of biliary ileus. Magnetic resonance cholangiography can be particularly important in some cases, mainly because it detects stones, which are isodense in relation to the fluids on CT, as well as allowing visualization of the fistulous tract.

The frequency of preoperative diagnosis of biliary ileus is variable, with confirmation of the disease in around 31-48% of cases - in other words, the diagnosis is usually established during the surgery itself. In line with the data in the literature, the patient described in this case did not have her diagnosis pre-
surgically, as she did not have Rigler’s triad on CT, making it impossible to visualize the calculus or other specific findings of biliary pathology.

The treatment of this pathology is surgical, but always preceded by the correction of associated clinical imbalances and antibiotic therapy. Biliary ileus involves three main elements: cholelithiasis, biliary-enteric fistula and intestinal obstruction. The main initial therapeutic objective is intestinal clearance, usually treated with enterolithotomy. Cholelithiasis and biliary-enteric fistula are usually treated together with a combined biliary procedure involving cholecystectomy and closure of the fistula.

All affected patients who are candidates for surgery should undergo enterolithotomy with the aim of relieving intestinal obstruction. Low-risk patients can also undergo the biliary procedure at the same time as the enterolithotomy. High-risk patients, on the other hand, can postpone the biliary procedure to a later date or postpone it indefinitely, unless they develop recurrences. Or in more serious cases, resection of a segment of intestine may be necessary, particularly in the presence of ischemia, perforation or previous stenosis. An individualized surgical approach should therefore always be taken, geared towards the patient’s needs and specificities.

It is important to note that in low-risk patients, there are differences in the literature as to whether or not the bile duct should be approached during the same surgical time as the removal of the calculus. However, most studies advocate performing cholecystectomy in a second stage for those patients whose life expectancy is high or who persist with symptoms after enterolithotomy.

Patients who underwent cholecystectomy, correction of the fistula and resolution of the obstructive condition in the same surgery had a mortality rate of 16.9% compared to 1.7% in those who underwent only enterolithotomy and, after recovery, cholecystectomy. However, this lower morbidity and mortality in patients who underwent only initial clearance is concomitant with a risk of biliary ileus recurrence ranging from 2 to 8% - with rates of up to 17 to 33% having already been reported in patients who underwent enterolithotomy alone.

In the case described, enterolithotomy was chosen. The aim was to promote intestinal clearance and improve the patient’s condition, in order to avoid any condition that could worsen the patient’s clinical conditions. As for cholecystectomy, it was decided to postpone the procedure to be carried out electively within 6-12 months, maintaining outpatient clinical follow-up during this period.

The post-operative period in these patients can be characterized by high infection rates (20 to 55%) as most of them are elderly patients with concomitant serious comorbidities. The mortality rate from biliary ileus remains high, ranging from 4.5 to 25% in the first series to between 5.5 and 6.7% in contemporary studies.

CONCLUSION

Biliary ileus is a medical emergency, so the ability to diagnose it early is essential and has a direct impact on reducing the morbidity and mortality of those treated by urgent and emergency services. Prior knowledge is of the utmost importance, since the treatment of choice should be aimed at resolving the intestinal obstruction, through enterolithotomy. Its approach depends on several factors, including the surgeon’s competence and experience, the type of support offered, the place of care and the patient’s general condition.

There is disagreement in the literature as to how to approach the bile duct at the same surgical time for low-risk patients, and it is up to the surgeon’s clinical judgment in each case, always taking into account the increase in morbidity and mortality. In order for this management to be of high quality, it is necessary to raise the awareness of health professionals and deepen studies and research into this pathology and its complications, so as to direct care and, consequently, improve the prognosis of these patients.

**REFERENCES**


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