

Image Quiz for Surgeons

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Gallstone Ileus: A Rare Cause of Intestinal Obstruction – Case Report and Literature Review

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Rezumat

Ileus biliar: cauză rară de ocluzie intestinală – prezentare de caz și recenzie literaturii

Ileusul biliar este o complicație mai puțin frecventă a litiazei biliare, cu o morbiditate și mortalitate ridicată. Prezentăm un caz rar de ocluzie intestinală printr-un calcul biliar la o pacientă de sex feminin, de 87 de ani cu fistulă colecistoduodenală. Am practicat în același timp operator enterolitomie cu extragerea calculului și enterorafie, colecistectomie și sutura fistulei. Evoluția postoperatorie a fost prelungită de apariția dehiscentei plăgii operatorii care a necesitat sutură secundară, prelungind spitalizarea. Au fost trecute în revistă aspectele diagnostice și terapeutice, ținând cont că diagnosticul acestei afecțiuni, este de obicei dificil și de multe ori pus intraoperator. De fapt, nu există o procedură chirurgicală standard pentru această boală. Intervenția chirurgicală într-un singur timp ar trebui rezervată pacienților stabili, dar în cazurile cu comorbidități asociate, practicarea doar a unei enterolitomii reprezintă cea mai bună opțiune.

Cuvinte cheie: ileus biliar, fistula colecistoduodenală, ocluzie intestinală

Abstract

Gallstone ileus is an uncommon complication of cholelithiasis with a high morbidity and mortality rate. We report a rare case of small bowel gallstone obstruction in an 87-year-old female patient with cholecystoduodenal fistula. We performed an enterolithotomy, repair of fistula and cholecystectomy. During the postoperative course a wound dehiscence appeared, which required suturing and prolonged hospitalisation. We review the diagnostic and therapeutic aspects, given that the diagnosis of this condition is usually difficult and often made intraoperatively. In fact, here is no standard surgical procedure for this disease. The one-stage procedure should be reserved for stabilized patients, but in cases with associated comorbidities, only enterolithotomy can represent the best option.

Key words: gallstone ileus, cholecystoduodenal fistula, intestinal obstruction

Introduction

Gallstone ileus is a rare disorder in emergency surgical practice, the diagnosis being usually difficult and only established during surgery (1). It is a rare mechanical intestinal obstruction due to the passage of a large gallstone through a biliary-enteric fistula (most commonly between the gallbladder and the duodenum) and impaction within the gastrointestinal tract: small bowel, duodenum and rarely in the colon (2). The treatment is surgical, by enterolithotomy, but there is some controversy

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over the need to repair the fistula (1). The choice for surgical treatment by one or two stages procedures depends on intestinal obstruction gravity and associated comorbidities. Some authors recommend the one stage procedure, enterolithotomy, repair of cholecystoduodenal fistula and cholecystectomy, because the type of intervention does not significantly influence post-operative morbidity and mortality rates (3).

Case report

An 87-year-old female patient was admitted in our service under emergency status with abdominal pain, distension, postprandial vomiting and pain relief afterwards, absence of transit of feces and flatus, over the previous 3 days. Past medical history was significant for diabetes, hypertension, congestive heart failure, obesity and cholelithiasis untreated for 15 years.

At admission, physical examination revealed a distended abdomen, with tenderness, but no muscle contraction or rebound. At auscultation hyperactive bowel sounds were noted.

Biologic tests revealed a moderate renal failure and mildly elevated white blood cell count. Other tests were of no significance in the context of the disease.

Plain abdominal radiography demonstrated dilated bowel loops, air-fluid levels suggestive of intestinal obstruction and pneumobilia. We did not record any image of a stone (Fig. 1).

Ultrasonography of the abdomen showed dilated loops of the small intestine, gallstones, and gas within the biliary tract and pericholecystic fluid. Computer tomography (CT) scan brought new elements in view, as we could not carry out contrast enhanced exploration because of the abnormal kidney function tests.

A nasogastric tube was placed with return of 1 L bilious fluid. The patient received treatment for electrolyte rebalancing. On the second day after admission, the patient presented transit for gases, and faeces were evacuated by enema.

On the third day after admission the patient described absence of transit to gases and no faeces evacuated by enema. The abdomen was extremely distended and blood test revealed important alteration of renal probes.

We supposed the diagnosis of intestinal obstruction and its intermittent presentation were probably due to gallstone ileus.

Therefore we decided to perform laparotomy, and surgical exploration showed a generalized distension of the proximal jejunum due to a gallstone impacted in the small bowel, 100 cm from the duodenojejunal angle. We performed enterolithotomy and enteral suture repair (Fig. 2). No other gallstones in the small bowel were discovered.

As the overall condition of the patient was relatively good, it was decided to continue exploring and found the firm adhesion of the scleroatrophic gallbladder to the first portion of the duodenum, suggestive of a cholecystoduodenal fistula which allows gallstones to migrate into the digestive tract (Fig. 3).

We performed repair of the cholecystoduodenal fistula, duodenorrhaphy and cholecystectomy.



Figure 1. Plain abdominal radiography - dilated bowel loops, air-fluid levels and pneumobilia



Figure 2. Gallstone impacted in the small bowel (left) and enteral suture repair (right)

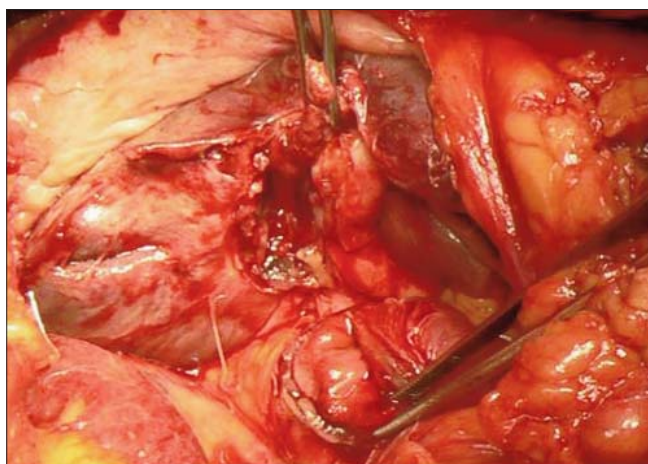


Figure 3. The fistulous tract formed by erosion of the gallstone through the gallbladder and into the duodenum

The pathological examination revealed an acute and chronic inflammation and a fistulous tract walled by fibrous and granulation tissue.

Over the postoperative course a moderate renal failure appeared, that required support with dopamine in the intensive care and a wound dehiscence which required suturing, and prolonged hospital stay. The patient was discharged 21 days later.

Discussions

Gallstone ileus is a rare complication of cholelithiasis, produced by migration and impaction of a gallstone at different levels of the small bowel and affects mainly elderly patients with important comorbidities (3). It occurs at a rate less than 1% of cholelithiasis and at a rate of 1.9% of intestinal obstruction (4). It occurs more frequently in women with average age of 65 years (5).

The first mention of biliary ileus belongs to Bartholin in 1654 (6). Biliary-enteric fistula is a recognized complication of cholelithiasis as originally described by Courvoisier (7). Also, from the beginning of the century, we found a case report with details of the surgical intervention (8). Isolated cases are reported in the literature by many authors, but papers with over 10 cases are rare: Tan IM – 19 cases (2004) (9), Doko M. – 30 cases (2003) (10), Rodriguez Hermosa JI – 40 cases (2001) (11). In Romanian literature, published about this condition Beuran M published about this condition (5), discussing the pathogenesis of this illness presents all the mechanisms described in the medical literature, Andronescu P. (described 7 cases) (12), Mateş IN (6 cases) (4), Leşe M (2 cases) (13), Chifan M (14), Brezean I (3).

This condition is consequent to adhesions and inflammation of the gallbladder, facilitating the formation of a fistula with the small or large intestine (more frequently cholecystoduodenal fistula), and allowing the migration of gallstones. Clinical presentation includes abdominal pain and vomiting, absence of transit and physical examination reveals a distended abdomen and increased bowel sounds. This symptomatology subsides as the stone becomes disimpacted, and only recurs again as the stone progresses in the distal bowel lumen with intermittent symptoms. Hematemesis can also occur as a complication that is due to haemorrhage at the site of the biliary enteric fistula. Between symptom initiation and the time of the intervention 2-7 days pass, during which symptoms worsen.

To cause obstruction, the diameter of the gallstone should be 2.5 – 3 cm. Past history of cholelithiasis can be detected in 60-70% of cases (12). The incident of migration comes as a surprise, especially to elderly patients who have acquired a relative tolerance to biliary pain.

Sites of stone impaction are: the terminal ileum (50%-75%), the proximal ileum and jejunum (20%-40%), duodenum (10% - gastric outlet obstruction or Bouveret's syndrome) and colon (2). The diagnosis is usually made by Rigler's triad: pneumobilia (plain abdominal radiography or ultrasonography), intestinal obstruction, ectopic gallstone to which we add past history of cholelithiasis (2). The preoperative diagnosis of

gallstone ileus is made in about one-half of cases and must include the first two signs of the triad. Ultrasonography is useful to confirm the presence of cholelithiasis, or pneumobilia in the context of mechanical bowel obstruction (15). CT scan shows pneumobilia, cholecystoduodenal fistula and the level of gallstone impaction (16). Contrast substance enhanced transit, administered by naso-duodenal tube, reveals a fixed opaque mass, which adapts to the gallstone (3).

Gallstone ileus is an absolute surgical emergency. Short delay is necessary in order to balance the electrolyte. In literature there are cases cited in which gallstones are impacted in the duodenum or colon and can be removed by endoscopic approach (17). A spontaneous evacuation of the gallstone that produced intestinal obstruction is even more exceptional, only few reports being published up to date (18). Objectives of surgery are suppression of the obstacle, closure of fistula and cholecystectomy, but these goals depend on the overall condition of the patient. Surgical tactic depends, especially on the sick patient and less on the surgeon. The current approaches are: enterolithotomy, cholecystectomy and fistula repair (one-stage surgery), enterolithotomy with cholecystectomy performed later (two-stage surgery) and sole enterolithotomy (most reported surgical procedure) (2).

Treatment in one stage has a major weakness: extend operation time in an elderly patient with metabolic disorders and sepsis, in which an attempt to solve the bilio-enteric fistula requires a laborious dissection, and the duodenal suture is not performed safely. To treat associated angiocolitis, sometimes, external biliary drainage is necessary, transcystic or choledochal (3,4). Enterolithotomy alone is recommended in cases with associated comorbidities (19) and is based on the fact that the bilio-enteric fistula will close spontaneously (especially in cases with cystic duct patent) and 80-90% of residual gallstones in these patients will pass through a remaining fistula without consequence, recurrent gallstone ileus having been reported in less of 5% of patients (20). Shioi (21) describe a case of gallstone ileus displaying spontaneous closure of cholecystoduodenal fistula after enterolithotomy. In contrast the prevalence of recurrent cholecystitis has been high (17 to 33%) and there is an increase incidence of gallbladder carcinoma (22).

Reisner (23) in the review of 1,001 reported cases of gallstone ileus, shows a mortality rate of the one-stage procedure of 16.9% versus 11.7% for only enterolithotomy. They also found a mean interval between the onset of symptoms and surgery of 8.2 days, compared to 4.2 days in cases undergoing the single-stage procedure, delay due to the instability of the haemodynamic status and metabolic derangements. However, the presence of gallstones by palpation or imagistic by intraoperative ultrasonography of the gallbladder, common bile duct and in the small bowel are important in choosing treatment: one-stage or two-stage surgery.

In our case, the presence of gallstones in the gallbladder forced us to use the treatment in one stage, as the general condition of the patient was somewhat precarious (old age of the patient and associated comorbidities).

In recent years, open surgery has been the mainstay of

treatment, but some reports have been published on the efficacy of the totally laparoscopic approach in the management of gallstone ileus safely performed with all the advantages of minimally invasive surgery (24,25).

Conclusions

Although rarely encountered in surgical practice, gallstone ileus should be noted in the differential diagnosis of intestinal obstruction in patients with a past history of biliary disease, occlusive syndrome, pneumobilia and possibly ectopic gallstone.

The one-stage procedure should be recommended to stabilized patients, but in cases with associated comorbidities, only enterolithotomy represents a best option. Based on what we learned from our case, we recommend the one stage procedure when inflammatory phenomena allow treatment of cholecystoduodenal fistula, without unnecessary extension of surgery with increased morbidity and mortality.

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