

Gallstone Disease in Young Population: Incidence, Complications, Therapeutic Approach

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Rezumat

Litiază biliară la tineri: incidență, complicații, atitudine terapeutică

Obiectiv: Scopul acestui studiu este de a evidenția cât de frecventă este litiaza biliară și care este etiologia ei la persoanele tinere, precum și faptul că debutul la această categorie de vârstă a fost prin complicații: pancreatită acută, icter.

Material și metodă: Acest studiu retrospectiv a fost realizat în perioada ianuarie 2007 - februarie 2012 în cele două secții de chirurgie ale Spitalului Județean Pitești și a fost bazat pe analiza foilor de observație și a protocoalelor operatorii. În această perioadă s-au efectuat 1905 colecistectomii din care 1023 pe cale laparoscopică și 882 clasic.

Rezultate: Lotul selectat cuprinde 36 de pacienți cu vârste între 16 și 25 de ani. Colecistectomiile la 34 de pacienți s-au efectuat pe cale laparoscopică și numai la două pacienți pe cale clasică. 6 pacienți au prezentat icter postoperator. Sub tratament medicamentos la 3 pacienți icterul s-a remis într-un interval de 3-5 zile postoperator. La celelalte 3 pacienți s-a practicat endoscopie retrogradă de cale biliară principală la 4-5 zile postoperator.

Concluzii: Cei mai importanți factori de risc ai litiazei biliare sunt: vârsta, sexul feminin, sarcina și obezitatea. Complicații frecvente ale litiazei biliare la tineri sunt: litiaza coledociană și pancreatita acută.

Cuvinte cheie: litiaza biliară, vârsta, complicații

Abstract

Objective: The purpose of this study is to highlight the high incidence of gallstones and the etiology in young people, as well as the fact that the onset is associated with complications: i.e. acute pancreatitis, jaundice.

Material and Methods: This retrospective study was conducted between January 2007 and February 2012 on patients admitted to the two surgical wards of Pitesti District Hospital and was based on the analysis of observation charts and theatre records. A total of 1905 cholecystectomies were performed, 1023 laparoscopic and 882 classic, respectively.

Results: A total of 36 patients aged between 16 and 25 years were included in the study. Laparoscopic cholecystectomy was performed in 34 patients, only two patients being operated by the classical open approach. 6 patients developed post-operative jaundice, which resolved under medical treatment in 3 patients within 3-5 days. The remaining 3 patients underwent endoscopic retrograde cholangiopancreatography (ERCP) 4-5 days postoperatively.

Conclusions: The most important risk factors for gallstones are: age, female gender, pregnancy and obesity. Common complications of gallstones in young people are: duct stones and acute pancreatitis.

Key words: gallstone, age, complications

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Introduction

Gallstones is the most common biliary disease. Either single or multiple, they have various sizes and most commonly are found in obese women above 40 years old. Biliary gallstones occur in about 20% of adults. Each year about 2 million cholecystectomies are performed, 30% of gallstones are solved surgically, the rest are asymptomatic carriers or those who refuse surgery (1,2). Biliary disease caused by gallstones is common in all ages, but predominantly between 30 and 50 years, and is 4 times more common in women. Age is one of the most important risk factors. Female gender is a significant risk factor of gallstone disease, estrogen medication before and after menopause is another risk factor for gallstones.

Causes of biliary gallstones are:

- metabolic disturbances that alter the ratio of bile components with the precipitation of some of them;
- mechanical causes or by reducing contraction or obstructions of the cystic duct;

The combination of these factors lead to the appearance of gallbladder bile stones precursors. Biliary stasis and infection, secondary to insufficient vesicular discharge, promote gallstone formation.

Pregnancy is another factor that may promote biliary stasis and infection, and similarly a prolonged intake of contraceptives. (3,4,5)

Material and Methods

From January 2000 to February 2012 a total of 1905 cholecystectomies were performed on patients on the two surgical wards of Pitesti District Hospital, 1023 by laparoscopically and 882 classically. Out of the 36 patients aged between 16 and 25 years, 26 had symptoms of cholelithiasis in the first months post delivery, and the other 10 patients in previous pregnancies. Of note is that from the age of 16 to 25 years only females with symptoms of cholelithiasis were hospitalized and operated.

Cholecystectomy in 34 patients were performed by laparoscopy and only two classic. This retrospective study was based on the analysis of observation charts and theatre records. The aim was to highlight the most important risk factors for gallstone disease (age, female gender, pregnancy, obesity) and complications in this age group: common bile duct stones and acute pancreatitis.

The hospitalized patients were submitted to the following investigations:

- biochemical blood analysis (full blood count, blood glucose, transaminases, bilirubin, amilase)
- imaging: abdominal ultrasound scan, heart-lung radiography and in certain selected cases (episodes of jaundice) cholangio MRI.

For the selected group of 36 patients, the length of stay was short, about 3-4 days, except for the 6 patients who had postoperative jaundice. The abdominal USS showed the presence of gallstones, biliary stasis (extra and intrahepatic biliary dilatation), thickened wall of the gallbladder (more

than 3 mm in acute cholecystitis).

The abdominal USS is a noninvasive rapid imaging method that highlights the liver bile ducts and pancreas. This is the method of choice for detecting gallstones in the gallbladder. (6,7,8)

Results

Out of the 1905 patients operated between January 2007 and February 2012, 1513 were women and 392 male. The 36 patients selected were aged between 16 and 25 years. In this age group, only females were hospitalized and operated.

26 patients with biliary symptoms had surgery in the first months after delivery. Cholecystectomies performed on 34 patients were by laparoscopic approach, only 2 patients being operated in the classical way. 6 patients developed post-operative jaundice.

Jaundice remitted under medical treatment in 3 patients within 3-5 days postoperatively. The other 3 patients underwent ERCP at 4-5 days after surgery with removal of small stones (maneuvers performed by specialists from the departments of Gastroenterology and Surgery Floreasca Emergency Hospital and Sf. Ioan Hospital in Bucharest).

Most patients were hospitalized after repeated biliary colic, some of them who have given birth recently, described similar pain in the last months of pregnancy. Abdominal ultrasound diagnosis determined the diagnosis, viewing in all cases small stones in the gallbladder, sometimes dilatation of intrahepatic and extra bile ducts.

Discussions

Biliary lithiasis is defined as the presence of stones (larger than 3 mm) or sand-sludge (small particles) in the gallbladder or bile ducts. Biliary lithiasis may be asymptomatic or may be expressed by: biliary colic type pain, transient jaundice, fever. Biliary symptoms is most often caused by the presence of stones and less by the presence of biliary sand. Age is one of the most important risk factors for gallstones. Children of 16 years rarely develop gallstones while in adults its frequency will increase greatly during the reproductive period. Female gender is another important risk factor for gallstones, which is 2-3 times more frequent in women than in men. As a result of low levels of estrogen at menopause, the difference between the sexes in the incidence of gallstones, is significantly reduced. (9,10,11) Pregnancy and lactation are risk factors associated with gallstones. (12,13) Some epidemiological studies suggest that gallstone disease may also have a hereditary component but there are few data about genetic gallstones. Some genes may be indirectly linked to obesity, certain metabolic disorders, hypercholesteromy (14). 500 000 cholecystectomies are performed in the U.S. every year. Gallstone disease affects approximately 10% of the U.S. adult population. It has been proved that the incidence of gallstones increases with age. 20% of adults over 40 years and 30% of those over 70 have gallstones. Male / female ratio is 4/1 during reproductive period, while for the elderly proportion changes (almost equal).

Most frequent risk factors are: obesity, diabetes, estrogen hormones, pregnancy, hemolytic disease, cirrhosis. Most frequent clinical onset is in the epigastrium and right upper quadrant pain in 30-60 minutes after eating. Most common complications in the study group were bile duct stones, biliary ileus, acute pancreatitis of lithiasis etiology.

Ultrasound is the most widely used method of diagnosis, with 90-95% accuracy. Intraoperative laparoscopic ultrasonography has recently replaced cholangiography as a method of detecting choledocal stones.

The recommended treatment is minimally invasive: laparoscopic choledochal-colecisto approach, possibly associating ERCP. The study recommends that laparoscopic cholecystectomy in the first 3 days after onset of acute cholecystitis. (15) Another U.S. study focused on patients hospitalized with acute pancreatitis of lithiasis origin selected 172 patients with acute pancreatitis between November 1990 and June 1995. 144 patients underwent cholecystectomy (89 laparoscopic and 65 classic surgery), the first 3-5 days after admission in hospital, the amylase returned to normal. 33 patients (19.2%) underwent ERCP: 9 preoperatively to 12 postoperatively, and for the other 12 this method served as definitive treatment because of age or associated comorbidities. At the 24 intraoperative cholangiographies, 14 patients had gallstones. Gallstones were found in 32 patients (18.6%). There were 16 (8.6%) complications and 2 deaths (1.2%) 6 patients refused treatment. Not recorded any postoperative ERCP failure and no other patients required reintervention. Considering the low incidence of gallstones in acute pancreatitis of etiology lithiasis (18.6% in this group), the study does not recommend routine preoperative ERCP because of risks.

To old patients and associated comorbidities, ERCP may be the definitive treatment. Optimal treatment of acute pancreatitis, choledocal gallstones depends on technical, available local resources and patient preferences. (16,17) Nearly 10% of patients with symptomatic gallstones and associated bile duct stones.

Positive diagnosis of gallstones is supported by the following criteria:

- clinical: colicky pain in the epigastric and right upper quadrant with radiation in the back, jaundice, passenger fever;
- biological: change in laboratory tests (bilirubin, transaminase and amylase increase);
- imaging: ultrasound hepato-biliary highlighting choledocal stones and bile duct size. A very useful method in the diagnosis preoperatively is colangio RMN. TMR Cholangiopancreatography shows vascular and biliary abnormalities, specifies etiologic diagnosis of mechanical jaundice and has the advantage of being performed to those who can not perform ERCP. It has a very high diagnostic sensitivity, similar to that of ERCP and ecoendoscopy. (18)

Prognostic factors suggesting bile duct stones are: jaundice or recent acute pancreatitis, changes in liver function tests, biliary dilatation in abdominal ultrasound.

Age, increased bilirubin, positive imaging (dilated bile duct, presence of stones in the bile duct) are important predictive factors choledocal stones. Combination of the three factors is likely to exist 94% in patients with this type of cholelithiasis. (19)

Angiolitis risk and complications that occur secondarily to biliary infection, requires any treatment of bile duct lithiasis. The principle of treatment is extraction of stones from bile duct and gallbladder removal (if cholecystectomy was not performed previously).

Possibilities of treatment of bile duct stones are: endoscopic sphincterotomy, sometimes a single treatment, traditional surgery, laparoscopic surgery, combination therapy: endoscopic sphincterotomy and laparoscopic surgery. Cuschieri's study which compares the results of laparoscopic treatment of primary biliary stones with endoscopic sphincterotomy and combined treatment of laparoscopic cholecystectomy shows a similar success rate. (20,21)

Endoscopic sphincterotomy is a simple, inexpensively indicated:

- in high-risk cases (elderly patients, debilitated);
- patients with serious complications of common bile duct stones (angiolitis sepsis, severe acute pancreatitis) CBP-retained stones.

Caution regarding endoscopic sphincterotomy in the young because of the risk of duodeno-pancreatic reflux in bile ducts is recommended.

Classic surgery is practiced by some surgeons, being a reference method, but with a tendency to be replaced by laparoscopic treatment that has extended much lately. Laparoscopic surgery can make desobstruction transcystic or through choledotomy, the operation being finalized by: choledocography on KEHR tube, transcystic drainage with primary suture of choledotomy, internal drainage with primary suture prosthesis.

Primary choledocography risk without drainage is not biliary fistula. The most common practical option to treat bile duct stones is endoscopic sphincterotomy, laparoscopic cholecystectomy association. Laparoscopic treatment of CBP gallstone is fully effective and less expensive but requires high tools and technical. Performing an endoscopic ultrasonography in selected cases of patients with suspected common bile duct stones by ERCP relieve unnecessary suffering and their complications: acute pancreatitis and late oddiene stenosis after 10 years (22,23).

"Rendezvous" technique in the stones laparoendoscopic approach consists in laparoscopic cholecystectomy association, intraoperative cholangiography and endoscopic sphincterotomy on transcystic guide wire, if CBP is occupied by stones. Good results obtained through this method for quite large and multiple choledocal stones with a very good rate of discharge of the common bile duct and morbidity less than 10%, makes them one of the best combination therapy in patients with bile duct stones discovered at intraoperative cholangiography. Early endoscopic sphincterotomy for the treatment of retained choledocal stones is a safe and effective way, representing an alternative to conventional surgery after cholecystectomy. The

main advantage of this method is a shorter hospital stay, since it is not necessary to wait for maturation KEHR tube (as it happens in open surgery).

Elements at risk for failure in the classic treatment stones CBP results are:

- duct diameter less than 5 mm in which the introduction of KEHR tube is difficult and has risks of late stenosis;
- blocked stones in distal common bile duct (difficult to extract by simply choledocotomy, sometimes requiring transduodenal sphincterotomy).

Endoscopy has the following elements of risk:

- size, number, location and nature of the stones;
- presence of diverticula, stenosis, congenital anomalies, such interventions Billroth II;
- clotting disorders.

Sometimes several ERCP sessions are necessary to solve stones CBP. (24,25) If choledocal stones are found at intraoperative cholangiography in patients with normal-sized duct, and when there are necessary resources and trained specialists it is preferred to perform laparoscopic transcystic extraction, choledocotomy being difficult and with risk of stenosis. (26)

Conclusions

Sex ratio is clearly favorable to the young and adult females, while to the elderly this difference in the incidence of gallstones is to be reduced significantly. In the group of selected patients the onset of symptoms was associated with complications: acute pancreatitis or jaundice. Gallstones in these cases were small, most often in the caliber of the cystic duct, which allowed the occurrence of pancreatitis and mechanical jaundice.

The therapeutic approach recommended in complicated cases of acute pancreatitis and jaundice is timing and rebalancing of the medication until normal biological aspect and imaging (ultrasound and if necessary RMN colangio) is obtained, followed by laparoscopic cholecystectomy which can be associated with intraoperative cholangiography (especially if cystic bile duct aspect suggest that). The usual treatment for the postoperative mechanical jaundice (not responding to medical treatment) is the endoscopy: endoscopic retrograde bile and papillosphincterotomy with the extraction of retained stones. In this age group, pregnancy is the main risk factor leading to gallstones.

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