BILIARY CAUSES OF THE POSTCHOLECYSTECTOMY SYNDROME AND THERAPEUTIC APPROACHES

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Abstract

Postcholecystectomy syndrome (PCS) is a set of symptoms, particularly in the digestive field that do not disappear after surgical removal of the gallbladder, on the contrary, they worsen.

Objectives: The objective of this paper is to highlight the biliary pathology of the PCS for cases hospitalized in surgical wards of a county clinical emergency hospital and the therapeutic ways of solving the generating cause.

Material and method: In the present study clinical observation sheets of the patients hospitalized in surgical wards, from January 2010 to October 2015 with the diagnosis of postcholecystectomy syndrome have been examined.

Results: 221 patients, accounting for 67.42% of females. Clinical examinations and laboratory examinations showed the presence of a postoperative angiocolitis, in a share of 92.30%. Of the 221 cases admitted to surgery with PCS, the biliary causes was 14%, in 190 of the cases, the treatment was by drugs (85.97%). In the other 31 cases it was used an endoscopic and/or surgical intervention.

Conclusions: Angiocholitis in postcholecystectomy generate changes in interhepatic and extra hepatic bile ducts which are translated by imaging, by their expansion, with or without parietal modifications, with or without obstruction lesions of the distal bile duct. The main therapeutic approach in PCS is noninvasive, by drugs.

Keywords: postcholecystectomy syndrome, angiocholitis, endoscopic sphincterotomy

Introduction

Post cholecystectomy syndrome (PCS) is defined as the recurence of similar symptoms occuring before surgery.

These symptoms are represented especially by pain localized in the right upper abdominal quadrant, dyspeptic phenomena and the presence or absence of jaundice [1]. Frequently, PCS syndrome, occurs when cholecystectomy was performed in the absence of a rigorous indication (i.e. a patient with dyspeptic manifestations in the absence of gallstones). The PCS affects approximately 10-15% of the patients with surgical history of cholecystectomy; classical or laparoscopic. It does not reflect objectively the causes of patients' symptoms with cholecystectomy in history, as cholecystectomy causes some functional disorders of the bile ducts, in after cholecystectomy 0.21% of the cases. Most of the sufferings for operated bile have another cause.

The PCS is usually a temporary diagnosis. An organic or functional diagnosis is established for most patients after clinical investigations, and rigorous laboratory investigations. A complete preoperative assessment is important in order to reduce as much as possible, the occurrence of PCS [2,3,4]. Furthermore the patients smust be warned of the possibility of such symptoms for the immediate or delayed postoperative period [2,3,4].

Females are more likely to develop the PCS, also, in analogy with the higher incidence ofgallstones. The PCS high prevalence for women is caused by the activity of estrogens, especially during childbearing age (young age, pregnancy status, treatment with oral contraceptives) [5].

The objective of this paper is to highlight the biliary pathology of the PCS for cases hospitalized in surgical wards of a county clinical emergency hospital and therapeutic ways of solving the generating cause.

Material and Methods

The hospitalized patients' clinical observation sheets between January 2010 and October 2015, with the diagnosis of PCS, in Oradea County Hospital Surgery I and II wards were included.

The research was conducted using as criteria, the selection of cases by sex, age and the diagnose framing, historical data, methods of clinical investigation, imaging and laboratory methods, association of cholecystectomy with other interventions performed to bile ducts, therapeutic conduct non-invasive versus invasive.

The anamnesis revealed a previous history of cholecystectomy, patients' subjective complaints - the presence of the painful syndrome in the right upper quadrant, of dyspeptic syndrome, of jaundice syndrome.

Useful laboratory examinations for establishing the diagnosis: biliary-retention samples of serum bilirubin, bile pigments in the urine alkaline phosphatase; hepatic cytolysis tests: transaminases, serum iron, lactico dehydrogenises; cellular-albumin hypo function tests, serum pseudo cholinesterase, clotting factors; exploration of hepatic function in lipid metabolism.

Other laboratory tests very helpful for establishing a positive diagnosis were: mesenchymal hyperactivity tests (electrophoresis tests dysproteinemia, immunoelectrophoresis), immunoassay, erythrocyte sedimentation rate, changes in blood counts, blood urea.

Erythrocyte sedimentation rate is higher in jaundice with cholangitis and the neoplasic ones.

Blood count changes; this anemia suggests neoplastic etiology or hemolytic in pre-hepatic jaundice and cirrhosis. Hyperleukocytosis is present in biliary ducts lithiasis in angiocolitis and liver cancer; it is unusual in acute hepatitis.

Blood Urea is important in case of mechanical jaundice; nitrogen retention associated with obstructive jaundice syndrome has a poor prognosis, preceding hepatic-renal failure.

The methods used in the diagnosis of PCS were cholangiography, ultrasonography, computed tomography of the abdomen, colangio RMN, upper gastrointestinal endoscopy, duodenal gastro esophageal barium swallow.

Therapeutic options for PCS consisted of noninvasive medicinal methods and imaging methods or invasive surgical methods [6].

If the bile sufferings have an organic substrate, then it is performed a surgical intervention (example digestive biliary fistula, long cystic blunt) or endoscopic sphincterotomy (common bile duct lithiasis, stenosis, sclerosis oddities) [6].

Results

Between January 2010 and October 2015, 221 patients were hospitalized with a diagnosis of PCS in the two surgical clinical sections of the county hospital. There were 149 female patients (67.42%) and 72 male patients (32.57%). The age distribution was as follows: In the age group of 45-54 years were 28 cases (12.66%) in the group of 55-64 years were 66 cases (29.86%) in the group of 65-74 years 65 cases (29.41%) and in the 75-84 years group, 55 cases (24.88%).

Biliary pathology of postcholecystectomy syndrome

In 47 cases out of 221 hospitalized cases, the imaging investigations revealed intrahepatic and/or extra hepatic biliary ducts dilatation.

In 31 cases (14%) the extra hepatic biliary ducts dilatation was highlighted, with or without the association of obstructive modifications, duct stones or oddian stenoses.

Of these 31 cases with extrahepatic biliary tract dilatation in 15 cases, imaging examination revealed the presence of duct stones, as the cause of the PCS.

In 3 cases, the imaging revealed the presence of odditis sclerotic, and in 3 cases oddian stenosis.

In 4 cases, PCS resulted from iatrogenic injuries of the main bile ducts after laparoscopic cholecystectomy.

There were also angiocolitis after surgery for Klatskin biliary tumor (1 case), ampulla of Vater carcinoma (2 cases) and cholangiocarcinoma of the hepatic hilum (1 case).

The presence of angiocholitis was also reported in 1 patient after bile duct-digestive tract anastomoses (anastomoses, coledoco-jejuno anastomosys, duodenal, jejunal, hepatic, on Y a la Roux) and 1 patient with intrahepatic biliary tract lithiasis (Table I).

The treatment of PCS can be done by medication, endoscopy or surgery. Of the 221 cases hospitalized in surgical wards with postcholecystectomy syndrome in 190 cases, the treatment was by medication. In the other 31 cases it was endoscopic and/or surgical.

In eight cases, it was a surgical procedure (Table II) and in another 23 cases retrograde endoscopic colecistopancreatography with sphincterotomy and extraction of stones was performed.

Table I. Biliary causes in 31 cases of postcholecystectomy syndrome

Patology	Cases	
	Number	%
Bile duct lithiasis	15	6.78
Sclerosis Odditis	3	1.35
Oddiene stenosis	3	1.35
Iatrogenic biliary lesions	4	1.80
Roux-en-Y anastomosis stenosis	1	0.45
Klatskin bile ducts tumor	1	0.45
Ampulla of Vater carcinoma	2	0.90
Hepatic hilum cholangiocarcinoma	1	0.45
Intrahepatic biliary tract lithiasis	1	0.45

In two of the 8 cases after surgery, because of the persistence of biliary cause that generated the postcholecystectomy syndrome, endoscopic sphincterotomy was performed. In the first case, for a bile tract fistula, and in the second case for installing a duct stent (lower duct diverticulum)

Discussion

The biliary causes of PCS with the highest representation in the study are: choledocal stones, oddian stenosis and tumor pathology.

In cases with postcholecystectomy cholangitis, most commonly an inflammatory syndrome with leukocytosis and neutrophils, and/or bilioexcretory syndrome, and/or hepatocytolisis syndrome, cholestasis. Imaging argumentation of the changes of intra and extra hepatic biliary tract is absent most of the times.

Angiocholitis from PCS produce changes of the intrahepatic and extra hepatic bile ducts which are shown by imaging as their dilatation, with or without parietal modifications, with or without obstructive lesions of the distal common bile duct, with a share of 21.26%.

The prevalence of PCS due to biliary causes is higher for patients with primary cholecystectomy surgery and other surgery, biliary-coledocolitotomies, sfincteroplasties, biliary-digestive anastomoses.

The main therapeutic approach for PCS is noninvasive, by drugs, accounting for 85.9%. Pharmacologic treatment consists of antibiotics, antispasmodics, analgesics, proton pump inhibitors, prokinetics, hepatoprotective, bile acid substituents (ursodeoxycholic acid), pancreatic enzymes; in oddian dyskinesia - nifedipin, nitroglycerin, amyl nitrite.

Endoscopic retrograde cholangiopancreatography is the modern therapeutic method that by sphincterotomy / sfincteroplasty allows both removal of common bile duct stones and papillary dyskinesia problems solving;

Table II. Surgical approach – techniques

Share of different surgical techniques used	Number of cases
Anastomosis dilatation and biliary transit restoration, after the stenosis of Roux-en-Y hepatico-jejunostomy	1
Transduodenal papilosfincterotomy for oddian stenosis	1
Duodenal choledocal anastomosis for iatrogenic injury of bile, with bile leak in the line of Kehr drainage tube	2
Roux-en-Y hepatico-jejunostomy, for CBP lesion	1
Coledocotomy extraction of gallstones and coledoco- duodenal anastomosis, Florken type	1
Intrahepatic biliary drainage with Kehr tube for bile leak and bile tract fistula laparoscopic postcholecystectomy (latere, ERCP guidance)	1
Lavage and laparoscopic drainage in Morrison space; persistent perihepatic collection with externalization on the drain tube 500 ml bile/24 h; it is advisable to perform ERCP, sphincterotomy by installing a duct stent	1

in the present study, 23 sphincterotomies / endoscopic sfincteroplasties were carried out (10.40%).

Choledocholitotomy associated with duodenal choledo-duodenal anastomosis or duodenal Roux-en-Y hepatico-jejunostomy is chosen as a surgical approach when there is a marked dilatation of the main biliary tract, gritted biliary duct stones, stretched stenosis, stenosis of a biliary-digestive anastomosis and oddian restenosis after sphincterotomy.

The statistical data above demonstrates a high prevalence of the PCS to female patients hospitalized in surgical clinical wards (67.42%). They are more likely to develop the postcholecystectomy syndrome, also in analogy with higher incidence of gallstones. This increased prevalence is due to the estrogen hormone during childbearing age (young age, state of pregnancy, oral contraceptives)

Estrogens increase the cholesterol content in the bile and trigger the cholesterol uptake stimulus by hepatic cells. Consequently it is installed the classic cholestasis "early estrogen" the ratio of cholesterol and phospholipids increases; hepatic bile secretion volume decreases [5]. As an effect, increase of the cholesterol synthesis and cholesterin secretion, decrease of the bile acids and cholesterin ratio occur. Thus, female gender, pregnancy status and oral contraceptives are considered risk factors for the formation of cholesterol gallstones [5].

Of the 221 cases admitted to surgery, with PCS, in 204 cases (92.30%), clinical and laboratory examinations showed the presence of postoperative angiocholitis. These inflammatory processes produce intrahepatic and extra hepatic changes to the bile ducts which are translated by imaging, by their expansion, with or without parietal modifications, with or without obstructive lesions of the distal common bile duct.

In 47 cases out of 221 hospitalized cases, imaging investigations conducted revealed dilated inter and/or extra hepatic biliary tract. Small stones can cross the papilla but during bile gorge crossing they can create a barrier with consecutive expansion of main bile ducts; all imaging examination will show a dilated bile but uninhibited (bile passage). This extra hepatic biliary tract swelling may be associated with intrahepatic biliary tract ectasia. Angiocholytis infections may have as an imaging expression, an abnormal highlighting of bile ducts, after the thickening of their walls [7].

Postcholecystectomy sclerosing angiocholytis have as a consequence, multiple stenoses of bile ducts intra- and/or extra hepatic and usually lead to biliary cirrhosis. In terms of imaging, stenosis may have a multifocal distribution, causing stenosis and consecutive dilatations with different intensities, depending on the location in question [7].

In 31 cases, the extra hepatic biliary tract dilatation with or without association of obstructive changes-gallstones or oddian stenosis was highlighted.

The biliary causes of PCS include: intrahepatic biliary tract lithiasis, choledocal lithiasis, biliary tract tumors and large duodenal papilla tumors, long stump cystic duct stenosis, residual oddian stenosis, large duodenal papilla stenosis, oddian dyskinesia, biliary-digestive anastomosis stenosis (anastomosis coledoco-duodenal and biliary-jejunal inoperable), cystic dilatation of the inter and extra hepatic biliary tract [8].

Of the 31 cases with extra hepatic biliary tract dilatation, in 15 cases, imaging examination revealed the presence of duct stones, as the cause of the PCS.

Biliary stasis will favor infection. The inflammatory infiltrate in the common bile duct, will favor inclavated calculus, affecting the functionality of Oddi sphincter. Consequently, oddian stenosis occurs.

Of the total hospitalized cases with PCS, in 3 cases, the imaging revealed the presence of sclerotic odditis and in other 3 cases, oddian stenosis.

Causes related to the surgical procedure itself are also described, an inadequate surgical technique with extra hepatic biliary tract iatrogenic lesions. In 4 cases, postcholecystectomy angiocholytis were consecutive to iatrogenic injuries of bile tracts after laparoscopic cholecystectomy.

Ampullary enclaved calculi or repeated passage of micro calculi or achiness by oddian narrow pass cause bouts of acute pancreatitis [8]. In the baseline study frequent cases in which postcholecystectomy cholangitis and choledocal stones were associated with acute pancreatitis were reported. Spasm and posttraumatic edema causes the increased intrapancreatic pressure, added by biliary-pancreatic reflux with potentially infected bile.

Besides the pancreatic activity, the choledocal obstruction will also affect the hepatic activity.

The degree of liver damage depends on the speed of installation, extent, duration of the obstruction and the presence or absence of infection. In obstructive jaundice due to bile duct stones, the liver volume increases, the surface is granular in old obstructions, with the possibility of parenchymal fibrosis.

The research data revealed an association in some cases of angiocholitis and duct stones with satellite hepatitis.

The extra biliary causes of the PCS are: diseases of the liver and pancreas, duodenal disease, reflux esophagitis, peptic ulcer, hiatus hernia, etc.

The prevalence of PCS by biliary causes is higher for patients who were associated with primary cholecystectomy surgery other surgical interventions, on biliary-coledocolitotomies, sfincteroplasty, biliary-digestive anastomoses.

A cholangitis after biliary-digestive anastomosis (coledocojejunoanastomosys duodenal Roux-en-Y hepatico-jejunostomy), was found in 10 cases out of the 221 hospitalized cases with PCS. Also, statistics showed 3 cases of cholangitis after sphincterotomy/transduodenal sphincteroplasty. There were also 4 patients with cholangitis post endoscopic sphincterotomy. The literature describes a rate of approximately 1% of endoscopic retrograde cholangiopancreatography subsequent to angiocholytes [9,10,11].

The PCS treatment may be performed by medication, surgical or endoscopic procedures.

Of the 221 cases hospitalized in surgical wards with PCS in 190 cases, the treatment was by medication. In the other 31 cases it was endoscopic and/or surgical.

Endoscopic retrograde cholangiopancreatography, useful diagnostic method is also the therapeutic methods that by sphincterotomy/sfincteroplasty allows both removal of common bile duct stones and solving of papillary dyskinesia [12].

The therapeutic approach by endoscopic sphincterotomy is a modern method, which replaced with a very high success rate, the surgery of PCS [13,14]. Endoscopic sphincterotomy is an effective therapeutic method that allows the extraction of residual or recurrent stones in the common bile duct that do not exceed 1.5 cm in diameter.

The surgical treatment performed for choledocal postcholecystectomy may be represented by choledocolitotomy and Kehr drainage, for residual calculi, with mobile and moderate expansion of bile duct [11,12].

If the choledochal lithiasis is complicated by the enclavation of calculus in the papilla of Vater or by a residual oddian a choledocolitotomy stenosis and sphincterotomy/oddian sfincteroplasty and external biliary Kehr drainage is performed.

Choledocolithotomy associated with coledoco-duodenal anastomosis or duodenal Roux-en-Y hepatico-jejunostomy is chosen as surgical approach when there is a marked dilatation of the main biliary tract, gritted biliary duct stones, stretched stenosis, stenosis of a biliary-digestive anastomosis and restenosis after oddian sphincterotomy [11,12].

Intrahepatic biliary tract lithiasis raises difficulties to surgical approach; to eliminate the calculi it is necessary to perform a duodenal anastomosis or duodenal Roux-en-Y hepatico-jejunostomy. In two of the 8 cases, after surgery, because of the persistence of biliary cause that generated the PCS, an endoscopic sphincterotomy was performed. In the first case for a bile fistula and in the second case for installing a duct stent (lower duct diverticulum). The endoscopic treatment consisted of sphincterotomy by retrograde endoscopic cholecistopancreatography, extraction of stones and depending on the case, installing a duct stent.

When the symptoms are the result of Oddi sphincter dyskinesia, initially a pharmacological treatment represented by nitroglycerin, nifedipine, anticholinergics, amyl nitrite is administered [15,16,17,18]. This treatment continues for a period of 2-3 months. If there is no obvious clinical improvement endoscopic sphincterotomy or surgical sfincteroplasty will be performed. Alternatively, symptomatic antispasmodics or analgesics for the relief of pain complaints can be used.

The dyspeptic symptoms are treated with substituents for billiary acids (ursodeoxycholic acid) or pancreatic enzyme extracts [19,20]. Mild cases of angiocholitis respond well to parenteral administration of ampicillin or cephalosporin in doses of 1 gram every 4-6 hours or 2 g every 6 hours. Last generations penicillins with very broad spectrum of action (mezlocillin, piperacillin) have good biliary excretion are being used frequently.

In severe cases of cholangitis, with an accentuated inflammatory syndrome with hyperleukocytosis a microbial treatment by the combination of several antibiotics like gentamicin, ampicillin, clindamycin etc, may be initiated.

Conservative drug treatment like proton pump inhibitors, antibiotics, prokinetics, hepatoprotective, antispasmodic, analgesic, ursodeoxycholic acid, kreon, etc is used, depending on the symptoms, the generating cause and possibly other associated digestive disorders. Pharmacological treatment has increased efficiency for patients who have a non-biliary etiology of the.

Outpatient, to avoid repeated postcholecystectomy angiocholitis flashes it is important to initiate a hepatic and gastric sparing regimen, avoiding the consumption of fats, spices and alcohol.

Conclusions

Angiocholitis postcholecystectomy generate changes in the intrahepatic and extra hepatic bile ducts which are shown by imaging as their dilatation, with or without parietal modifications, with or without obstructive lesions of the distal bile duct. The main therapeutic approach in PCS is noninvasive, by drugs.

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