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THE TREATMENT OF CHOLECYSTOCHOLEDOCHOLITHIASIS, COMBINED WITH JUXTAPAPILLARY DUODENAL DIVERTICULUM

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The retrospective study analysis of treatment outcomes of cholecystocholedocholithiasis, combined with juxtapapillary duodenal diverticulum (n=74), was carried out. The diagnostic and treatment algorithm was offered. It is recommended to include duodenoscopy to the complex of instrumental examination technics for patients over 50 years. When periampullary duodenal diverticulum doesn't extend to intramural part of common bile duct with the direction of papillotomy dissection, the common bile duct stones are removed in a duodenoscopy transpapillary way during a postoperative period. The presence of juxtapapillary duodenal diverticulum is an indication of conversion for open or laparoscopic choledocholithotomy.

KEY WORDS: cholecystolithiasis, choledocholithiasis, juxtapapillary duodenal diverticulum, laparoscopic cholecystectomy, transpapillary choledocholithoextraction

ЛІКУВАННЯ ХОЛЕЦИСТОХОЛЕДОХОЛІТІАЗУ, ПОЄДНАНОГО ІЗ ЮКСТАПАПІЛЯРНИМ ДУОДЕНАЛЬНИМ ДИВЕРТИКУЛОМ

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Проведено ретроспективне дослідження результатів лікування холецистохоледохолітіазу, поєданого з юкстапапілярним дуоденальним дивертикулом (n=74). Запропоновано діагностично-лікувальний алгоритм. Пацієнтам старше 50 років у комплекс інструментальних методів обстеження рекомендовано включення дуоденоскопії. При періампулярному дуоденальному дивертикулі без поширення на інтрамуральний відділ холедоха по напрямку папілотомного розрізу конкременти холедоха видаляються в післяопераційному періоді дуоденоскопічно транспапілярно. Наявність юкстапапілярного дуоденального дивертикулу є показанням до конверсії на відкриту чи лапароскопічну холедохолітотомію.

КЛЮЧОВІ СЛОВА: холецистолітіаз, холедохолітіаз, юкстапапілярний дуоденальний дивертикул, лапароскопічна холецистектомія, транспапілярна холедохолітоекстракція

ЛЕЧЕНИЕ ХОЛЕЦИСТОХОЛЕДОХОЛИТИАЗА, СОЧЕТАННОГО С ЮКСТАПАПИЛЯРНЫМ ДУОДЕНАЛЬНЫМ ДИВЕРТИКУЛОМ

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Проведено ретроспективное исследование результатов лечения холецистохоледохолитиаза, сочетанного с юкстапапиллярным дуоденальным дивертикулом (n=74). Предложен диагностико-лечебный алгоритм. Пациентам старше 50 лет в комплекс инструментальных методов обследования рекомендовано включение дуоденоскопии. При периапулярном дуоденальном дивертикуле без распространения на интрамуральный отдел холедоха по направлению папиллотомного разреза конкременты холедоха удаляются в послеоперационном периоде дуоденоскопически транспапиллярно. Наличие юкстапапиллярного дуоденального дивертикула служит показанием к конверсии на открытую или лапароскопическую холедохолитотомию.

КЛЮЧЕВЫЕ СЛОВА: холецистолитиаз, холедохолитиаз, юкстапапиллярный дуоденальный дивертикул, лапароскопическая холецистэктомия, транспапиллярная холедохолитоэкстракция

INTRODUCTION

In modern hospitals 84-95 % of patients are removed common bile duct stones with the aid of duodenoscopic transpapillary interventions [1, 2, 3].

The presence of duodenal diverticulum (DD) is one of the most important factors that prevent the endoscopic extraction of stones including contact lithotripsy [1, 4].

The patients with DD have duodenoscopy transpapillary interventions that are associated with the risk of complications which are developed at 2-6 % of cases (pancreatonecrosis, voluminous bleeding, dodecadactylon perforation into the retroperitoneal space with the development of phlegmona) and fatal outcomes (0,5-1,5 %) [1, 5]. The frequency of DD cases in population ranges from 12 to 25 % with a slight predominance among women [6, 7, 8].

DD most frequently diagnosed among people of 50-60 years old and with age this tendency increase [7, 8]. The DD detection depends on diagnostic techniques and is as follows: X-ray examination with barium meal - 0,016-6 %, endoscopic retrograde cholangiopancreatography (ERCPG) – 9-25 % [9, 10].

About 95 % DD is located on the inner (medial) side of the descending part of the duodenum [8, 9, 10, 11]. About 70-75 % of diverticula are within 2 cm of the major duodenal papilla (MDP) [8, 9, 12].

DD is classified into extraluminal, when the mucosa and submucosa layers protrude outwards through the duodenal wall's weaknesses, and intraluminal, which are formed entirely within the lumen and covered on both sides of the mucosa layer [8].

Extraluminal DD could be – ampullary, which include MDP or interstitial part of the common bile duct and periampullary localized within 2 cm from the MDP, but not involving it. Together ampullary and periampullary DD called juxtapapillary diverticulum [3, 8, 12].

Juxtapapillary DD are usually asymptomatic, but in some cases can lead to displacement / compression of the common bile duct's lumen or pancreatic duct causing cholestasis, jaundice, pancreatitis and concretions.

In 1934, the author defined the connection between the presence of juxtapapillary diverticulum and hepatobiliopancreatic diseases as a «papillary syndrome» or Lemmel syndrome [7].

Currently, if there is appropriate medical equipment the treatment of choledocholithiasis in patients with concomitant cholecystolithiasis is provided in two stages [2, 3, 7].

The first step is the removal of common bile duct stones in a duodenoscopic transpapillary way, the next one is laparoscopic cholecystectomy.

If choledocholithiasis is detected during laparoscopic cholecystectomy it is recommended to complete the operation by cholecystectomy, followed by the removal of common bile duct stones in a duodenoscopy transpapillary way in the early postoperative period [1, 3, 4, 6, 13].

There is an open question: after laparoscopic cholecystectomy the endoscopic removal of common bile duct stones becomes impossible because of the presence of juxtapapillary DD, which is propagate on the intramural part of common bile duct. During laparoscopic cholecystectomy the intraoperation cholangiography does not allow to visualize juxtapapillary DD, that's why the patient undergoes third surgery.

As a result, the risk of intra- and postoperative complications increases [3, 6].

The aim of the study was a retrospective outcome analysis of the removal of common bile duct stones with juxtapapillary DD in order to determine the optimal diagnostic and treatment program for patients with cholecystocholedocholithiasis.

The study was carried out according to integrated research work of the department of surgical diseases of the Kharkiv National University named after V.N. Karazin «The development of minimally invasive surgical procedures with low temperatures during the treatment of patients with cholelithiasis, gastric and duodenal ulcer», the registration number is 0100U005308.

SUBSTANCES AND METHODS

The retrospective analysis has been made to 276 patients with cholecystocholedocholithiasis. The patients were at hospital treatment in surgery department of the clinical railway hospital Kharkiv STGO «SR» in the period from 2007 to 2013. Juxtapapillary DD was identified at 74 patients (26,8 %) including 32 men and 42 women at the age of 54.2±6.7 years.

Ampullary DD which extend to intramural part of common bile duct with the direction of

papillotomy discession was identified at 6 patients (8,1 %), periampullary DD – at 11 patients (14,8 %), periampullary DD which is not extend to intramural part of common bile duct with the direction of papillotomy discession – at 57 patients (77,1 %).

Diagnostic program was composed of clinical and laboratory studies, ultrasound investigation, endoscopic examination of the upper gastrointestinal tract.

ERSP was carried out for patients with cholecystolithiasis, who had a suspected choledocholithiasis. The first step of choledocho- and cholecystolithiasis treatment policy was endoscopic choledocholitho-extraction; the second one was laparoscopic cholecystectomy. Open choledocholithotomy with cholecystectomy has been performed when the endoscopic removal of common bile duct stones became impossible. All transpapillary endoscopic interventions were ended by nasobiliary drain. Open interventions were ended by extrinsic drain of the common bile duct. Statistical processing of findings was made with the help of «Microsoft Office Excel 2007» and «Mathcad 14.0». The frequency of symptoms (%), universe mean value (M) of the patient's age and the standard deviation (sd) was evaluated with the help of Student t-test.

RESULTS AND DISCUSSION

The removal of common bile duct stones in a duodenoscopy transpapillary way was made for 47 patients (63,5 %) as a first step (table1.). The next step was laparoscopic cholecystectomy. The presence of periampullary DD was diagnosed in the preoperative diagnostic stage.

For 10 patients (13,5 %) the presence of choledocholithiasis was diagnosed during laparoscopic cholecystectomy with the help of intraoperation cholangiography, that's why the removal of common bile duct stones in a duodenoscopic transpapillary way was made in the early postoperative period.

These patients also had cholecystocholedocholithiasis, combined with periampullary DD which is not extend to intramural part of common bile duct with the direction of papillotomy discession. For 17 patients (23 %) the removal of common bile duct stones became impossible because of the presence in 6 cases (8,1 %) of ampullary and in 11 cases (14,9 %) of periampullary DD which was extending to intramural part of common bile duct with the direction of papillotomy discession.

For 9 of them (12,2 %) the complete diagnosis was determined in the preoperative stage, therefore open intervention with choledocholithotomy was carried out immediately.

For 8 patients (10,8 %) the presence of choledocholithiasis was diagnosed during intraoperation cholangiography with laparoscopic cholecystectomy. For these patients there was planned the removal of common bile duct stones in a duodenoscopic transpapillary way in the early postoperative period.

However the presence of periampullary DD which extend to intramural part of common bile duct with the direction of papillotomy discession didn't allow to carry out planned intervention and forced to subject patients to open surgery with choledocholithotomy.

Table
Patient allocation with cholecystocholedocholithiasis according to surgical measures (%)

Type of surgical measure	Localization and extension to the major duodenal papilla		
	Ampullary DD	Periampullary DD which extend to intramural part of common bile duct	Periampullary DD which is not extend to intramural part of common bile duct
Endoscopic retrograde choledocholithoextraction with performing laparoscopic cholecystectomy at the first stage	-	-	63,5
Laparoscopic cholecystectomy with performing endoscopic retrograde choledocholithoextraction at the second stage	-	-	13,5
Open cholecystectomy with choledocholithotomy	8,1	4,1	-
Open choledocholithotomy after laparoscopic cholecystectomy	-	10,8	-

The most difficult seemed to be the tactic to remove common bile duct stones which were identified for the first time at intraoperation cholangiography during laparoscopic cholecystectomy.

The reason why these patients had difficulties in preoperative diagnosis of choledocholithiasis may be associated with asymptomatic choledocholithiasis and insufficient diagnostic efficiency of used methods.

So, the sensitivity and specificity of percutaneous ultrasound investigation is 22-55 % and

80-95 %, respectively; endoscopic ultrasound examination – 89-94 % and 94-95 %, respectively; ERSP – 89-93 % and 96-100 %, respectively; computerized tomography – 65-88 % and 73-97 %, respectively; nuclear magnetic resonance imaging – 89-97 % and 95-97 %, respectively [11, 12].

The following diagnostic and treatment algorithm of case management with cholecystocholedocholithiasis was offered according to findings (fig. 1).

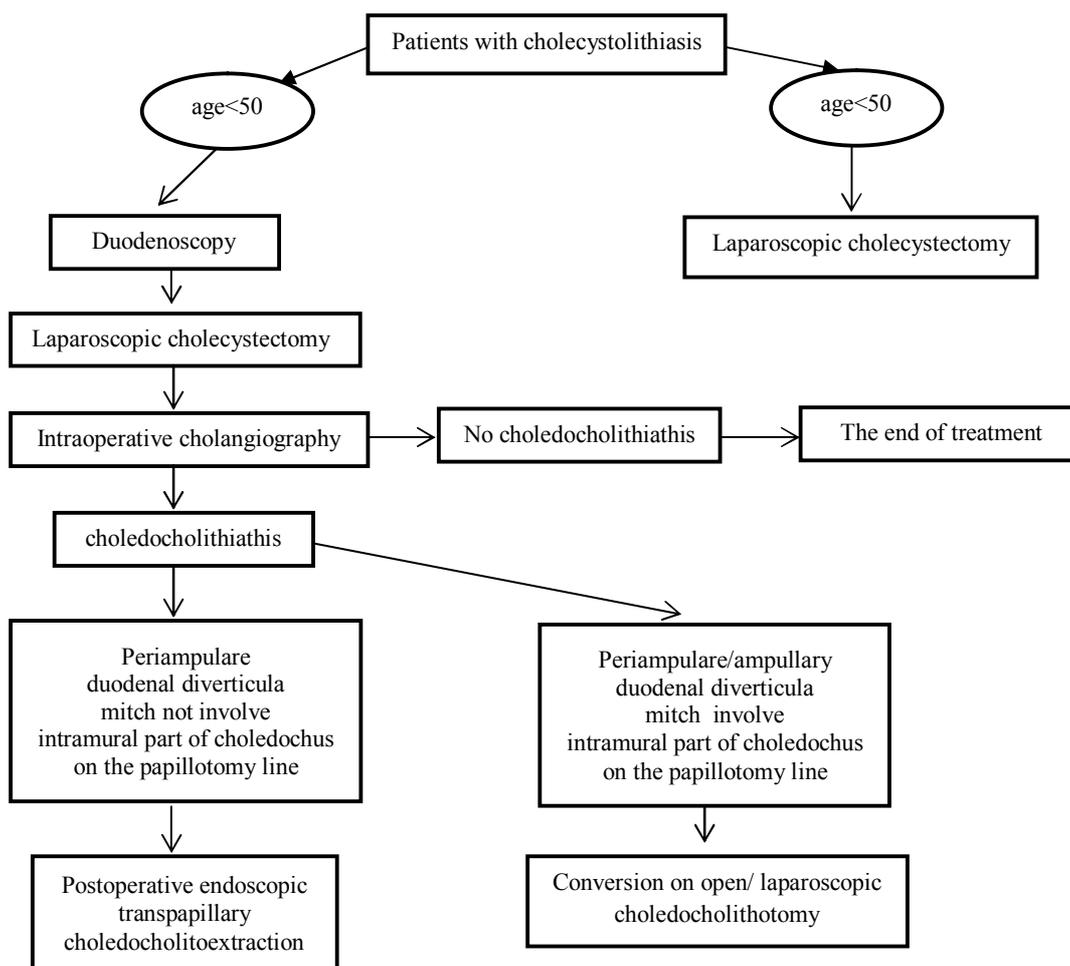


Fig. 1. Diagnostic and treatment algorithm of case management with cholecystocholedocholithiasis.

Patients over 50 years with a diagnosis of cholecystolithiasis in which the frequency of juxtapapillary DD reaches 25 % [7, 8] it is recommended to include duodenoscopy with MDP visualization which allows to reveal juxtapapillary DD in 100 % of cases. There are no studies at literary sources proposing to perform duodenoscopy in preoperative diagnostic stage.

Information which was obtained with the help of duodenoscopy about availability, location and structure of juxtapapillary DD allows to determine optimal treatment policy in case of intraoperative detection of choledocholithiasis. In case of identifying periampullary DD which is not extend to intramural part of common bile duct with the direction of papillotomy discission, common bile duct stones are

removed in a duodenoscopic transpapillary way in the early postoperative period.

The presence of ampullary or periampullary DD which extend to intramural part of common bile duct with the direction of papillotomy discission is an indication of conversion for open or laparoscopic choledocholithotomy. In addition, in case of presence of juxtapapillary DD it is necessary to consider a question about the formation of biliodigestive anastomosis as DD can cause choledocholithiasis, that is confirmed by Kang S.K., van Basten J.P. [14, 15].

CONCLUSIONS:

1. In order to identify juxtapapillary DD and optimal treatment policy for patients with cholecystolithiasis it is required to perform duodenoscopy with MDP visualization.

2. Conversion for open or laparoscopic choledocholithotomy is indicated in case of intraoperative detection of choledocholithiasis combined with juxtapapillary DD which extend to intramural part of common bile duct.
3. Choledocholithiasis combined with juxtapapillary DD without extending to intramural part of common bile duct with the direction of papillotomy discission doesn't preclude the implementation of a complete endoscopic papillosphincterotomy.

FURTHER RESEARCH PERSPECTIVES

The findings show the strategy generations' prospects of the case management with cholecystocholedocholithiasis, combined with juxtapapillary DD.

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