Surgical Treatment of Patients with Postcholecystectomy Syndrome

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Abstract. The problem of postcholecystectomy syndrome (PES) is becoming more and more urgent due to the increase in cholelithiasis (GI). This disease affects every fifth woman and every tenth man of the globe. As a result, GI is observed in a quarter of the population over 60 years old and in a third – after 70 years in the world, in 10-15% of the inhabitants of Western Europe.

A retrospective analysis of the 5-year experience of the Department of Hospital Surgery Semey Medical University was conducted from 2015-2020, based on the observation of 17 people who were re-hospitalized with the diagnosis of "postcholecystectomy syndrome" and the presence in the anamnesis of previously undergone cholecystectomy of both mini-invasive and traditional methods of surgical treatment.

As a result of the clinical examination, 35.3% (n=6) of patients were diagnosed with various disorders of the physiological cardia function (cardia insufficiency, reflux esophagitis, hiatal hernia). A residual or "forgotten" stone was found in 5.8% (n=1) of patients. Recurrent or "newly formed" stones in extrahepatic bile ducts were observed in 47% (n=8) of patients.

Key words: postcholecystectomy syndrome, calculus, choledocholithiasis, obstructive jaundice, sphincter of Oddi

Introduction

In Kazakhstan and Ukraine, the incidence of GI increased by 44.6% from 1997 to 2003 and reaches 93.4 per 100 thousand adults and adolescents, and the prevalence – by 67.1% and 550.9 per 100 thousand, respectively (Dadvani et al., 2018; Filippov & Skirda, 2015). Indeed, Academician V. H. Vasilenko was absolutely right, when back in 1969 said: "In recent decades, a whole cloud of cholesterol gallstones has been coming at us. Housing and communal services are becoming more frequent all over the world at an unprecedented rate." Until now, the main method of treating GI is cholecystectomy. Every year, 2.5 million cholecystectomies are performed in the world, that is, in terms of the frequency of performance – this surgical intervention is second only to appendectomy (Ilchenko, 2014).

Dadvani et al. (2000) believe that "timely planned cholecystectomy performed according to indications in a highly qualified surgical hospital leads to complete recovery and complete restoration of working capacity and quality of life in most patients". In 80% of patients, the results of cholecystectomy are favorable. In the same monograph, it is indicated that with planned cholecystectomy in patients with uncomplicated calculous cholecystitis and in the absence of severe concomitant diseases, the mortality rate is 0.18—0.50%. The results are somewhat worse in the elderly and old people who suffer from GI for a long time, in the presence of its complications and concomitant diseases. In such patients, the mortality rate after cholecystectomy reaches 3-5%. With cholecystectomy in patients with acute calculous cholecystitis, the mortality rate reaches 6-10%, with destructive forms of acute cholecystitis in elderly and senile patients – 20%. The rate of GI relapses for 5 years after cholecystectomy is about 10% (Filippov & Skirda, 2015). Due to the satisfactory results of cholecystectomy when performed as planned without "aggravating circumstances" (elderly and senile age, a long history of GI, acute calculous cholecystitis, mechanical jaundice, etc.), surgeons often believe

that the removal of the gallbladder (GI) solved the problem of GI, and the patient does not need treatment (Suzdaltsev, Zolotukhin, & Arkhipov, 2014).

However, unfortunately, this is far from the case. According to various authors, after cholecystectomy, complaints of a "gastroenterological" nature are observed in 5-40%, 3-48% and even in 74.3% of patients (Lazebnik, Kopaneva, & Ilova, 2014). After cholecystectomy, less than half of patients (46%) report an improvement in well-being. The absence of changes in well-being is indicated by 25%, deterioration – by 29%, and about a third of patients complain about the resumption of attacks of abdominal pain. After cholecystectomy, the quality of life of patients decreases (Yagmur, 2004; Chernenko, 2014), although some researchers hold the opposite opinion. But the speed of recovery after surgery depends on the variant of cholecystectomy (traditional, laparoscopic or mini-access cholecystectomy). After cholecystectomy, 2-12% of patients become disabled every year. The term "PES" was proposed by Malli Guy (France) in 1926. Ideas about the pathogenesis of disorders after cholecystectomy and the causes of pain after removal of the pancreas have changed for about 100 years. At first, the main cause of PES was considered to be the adhesive process after the operation, then-in fact, the absence of ZHP and the associated violation of bile flow, then-technical errors during the operation (in this regard, separate ligation of the cystic duct and artery was recommended, great importance was attached to the need for the formation of a short stump of the duct) (Vetshev & Shpachenko, 2014; Ipatov, Sergieni, & Voitchak, 2018). The concept of "PES" is still extremely vague due to different views on the principle position: what states should be included in this concept? Most clinicians consider the term "PES" to be unfortunate and even inappropriate, since it does not reflect the essence of suffering, the causes of occurrence and the essence of the pathological processes observed in patients after cholecystectomy. However, historically, due to its simplicity and capacity, the term has been widely used in clinical practice. A number of authors distinguish between true PHES, as a result of tactical and technical errors during surgery and unresolved diseases of the bile ducts, and false, developing as a result of pathological conditions that do not relate to the bile ducts (sputnik syndrome). ICD 10 PCES has the heading K91. 5. In accordance with the views of various authors on what pathological conditions should be included in the concept of "PCES", there are also various classifications of it: O. S. Radbil (1960), A. I. Khazanov (2002), P. Ya. Grigoriev and co-authors (2004) (Burkov, 2019; Grigoriev et al., 2019). The most complete, detailed, though cumbersome, classification of O. S. Radbil, which we present below in comparison with the diagnoses and ciphers corresponding to ICD 10 (quoted by Lazebnik, Kopaneva, & Ilova, 2014). In a broad sense, PES is a collective term that combines a group of diseases and conditions that are directly or indirectly related to the operation itself, as well as those that have arisen or progressed after it. In this sense, the PES should include: symptoms caused by surgical intervention; symptoms that are not related to surgical intervention; new diseases that appeared after the operation, but are not related to it; late surgery; continuation of existing symptoms; new complaints; the result of surgical errors; complaints related to an incorrect diagnosis before the operation, etc. The following factors are considered to be the reasons contributing to the development of PES (Eisenburg, 2018; Khazanov, 2012): late surgery (migration of a stone into the bile duct, acute cholecystitis, secondary biliary cirrhosis, etc.); incomplete examination before and during the operation (stones and strictures of the bile duct, papillostenosis, incomplete volume of the operation); technical errors (damage to the ducts, narrow choledochodenoanastomosis, incorrect installation of drains, etc.); failure to comply with recommendations for the prevention of PES (excessive body weight, hypodynamia, improper diet, etc.). Based on these reasons, it is necessary to add the presence of undiagnosed or diagnosed, but insufficiently evaluated and not taken into account during surgical intervention, diseases and pathological conditions of the liver, pancreas, duodenum, other organs and systems (even such as hemolytic anemia, osteochondrosis, kidney diseases,

etc.). The statistically significant risk factors for the development of PES in patients with acute cholecystitis include: age over 60 years, the duration of hospitalization for more than 3 days from the onset of the attack, acute transient-obturation cholecystitis, expansion of the volume of surgery, pathomorphological changes in the removed ventricle by the type of chronic recurrent cholecystitis. Knowledge of the causes and risk factors in the development of PES allows you to temporarily predict and correct this pathological condition. Elderly and senile age are considered to be a particularly significant risk factor for PHES. This is primarily due to the fact that in old age the number of patients with atherosclerosis, emphysema of the lungs, chronic obstructive bronchitis, diabetes mellitus, obesity, etc. increases significantly. All this indicates that with cholelithiasis, surgical treatment should be resorted to more often. This, in particular, will significantly reduce the occurrence in old age of such complications of cholelithiasis as acute cholecystitis, empyema of the gastrointestinal tract, bile fistulas, as well as reduce the possibility of developing PCP and secondary pancreatitis (Valenkevich et al., 2012).

It should be borne in mind that the pathogenesis of PCP also includes the persistence of symptoms of the disease that were before cholecystectomy. These are primary or secondary diseases in relation to the gastrointestinal tract, that is, they are its cause or, conversely, the result, the consequence formed before the operation. An example of a condition that is primary to GI and certainly does not resolve after cholecystectomy is lipid distress syndrome. Its pathogenesis is centered on hyper and dyslipidemia, which are realized in a number of organ lesions: atherosclerosis, cholesterol of the gastrointestinal tract, GI, steatohepatosis and steatohepatitis, fatty degeneration of the pancreas, lipogenic pancreatitis, etc. (Savelyev, 2015). All these diseases persist and continue to progress after cholecystectomy, because the center of pathogenesis—hyper and dyslipidemia—is kept intact in patients (Matsegora, 2014). If the patient developed a metabolic syndrome before surgery (and its pathogenesis intersects with the pathogenesis of lipid distress syndrome), then after cholecystectomy, its manifestations persist, in particular, a violation of carbohydrate metabolism (Sysoeva, 2014).

Material and Methods

A retrospective analysis of the 5-year experience of the Department of Hospital Surgery Semey Medical University was conducted from 2015-2020, based on the observation of 17 people who were re-hospitalized with the diagnosis of "postcholecystectomy syndrome" and the presence in the anamnesis of previously undergone cholecystectomy of both mini-invasive and traditional methods of surgical treatment. Out of the total number of patients studied, 41,2% (n=7) applied in the first 4 years after the operation, and 58,8 (n=10) patients applied after 4 years.

Among the patients with postcholecystectomy syndrome, 76.5% (n=13) were women and 23.5% (n=4) were men. The age of the studied patients ranges from 33 to 71 years, the average age was 39.8 years (Me=36; Q1=33; Q3=69). Patients of working age were 13 (76.5%).

The main tasks of the patient's re-admission to the hospital were to find out as accurately as possible the localization and nature of the morphological changes underlying the disease, to assess the degree of functional changes in the digestive system, as well as to address the need for interventional correction of disorders found in the biliary tract system.

The basis for a comprehensive assessment of the gastrointestinal tract as a whole was a comprehensive clinical and functional examination of patients who complain of pain attacks that have persisted and occurred after cholecystectomy, with their localization in the epigastric region or right hypochondrium, as well as their combination. The complex of examinations included mandatory implementation of the following methods of examination: X-ray and endoscopic examinations of the esophagus, stomach and duodenum; ultrasound examination of the liver, extrahepatic bile ducts and the ductal system of the pancreas. In recent years, we

have widely included computer tomography in the research program of this group of patients. However, it should be noted that computed tomography, as well as ultrasound, diagnosing the existing hypertension in the intrahepatic and extrahepatic ducts and the presence of tumors and concretions in them do not allow us to reliably judge the presence of benign narrowing of the BDS, and even more so to conduct a differential diagnosis between organic stenosis and dysfunctional disorders of the sphincter of Oddi.

The biochemical blood test, along with the standard parameters, included the determination of total cholesterol (CH), high-density lipoproteins (HDL), and low-density lipoproteins (LDL) as well as determining the level of Bilirubin in the blood.

The received data was processed using the IBM ® SPSS software platform.

Results

During the hospitalization of patients, the following blood test data were obtained: the average white blood cell count in the peripheral blood was elevated 11.2 x 109(Q1=8, Q3=14).

In a biochemical blood test, the average total bilirubin was 223.7 mmol / L (Q1=216.9, Q3=231.3).

As a result of the clinical examination, 35.3% (n=6) of patients were diagnosed with various disorders of the physiological cardia function (cardia insufficiency, reflux esophagitis, hiatal hernia). A residual or "forgotten" stone was found in 5.8% (n=1) of patients. Recurrent or "newly formed" stones in extrahepatic bile ducts were observed in 47% (n=8) of patients. The term "newly formed" was applied only to those patients who had undergone a cholecystectomy and X-ray documented revision of the bile duct system, which excluded the presence of concretions in it during the first surgical intervention.

Repeated reconstructive operations on the bile ducts were performed in 23.5 (n=4) patients. In the presence of an extended stricture in the distal part of the choledochus of more than 2.5 cm in 35.2 (n=6) patients, various variants of choledochodenoanastomoses (CDA) were applied: according to Yurash – Vinogradov in 11.8 (n=2) cases and by draining the hepaticocholedochus according to Vishnevsky.

In addition, in 17.6% (n=3) of patients, an excess cystic duct stump left during primary cholecystectomy was resected, and in 5.8 (n=1) patients, a choledochoejunoanastomosis was performed.

The average duration of treatment is 9.3±1.3 bed-days.

According to the results of the study, the most common complications: bile discharge into the abdominal cavity from choledochoduodenoanastomoses (CDA) was observed in 5.8 (n=1) cases, as well as acute pancreatitis, which was observed in 11.8 (n=2) cases. There were no fatalities.

Conclusion

In conclusion, summarizing our experience, it should be noted that the increase in the number of performed cholecystectomies (open) leads to an increase in the number of patients with true PCP due to choledocholithiasis. In 5.9 (n=1) patients, residual choledocholithiasis was detected within a year after the initial operation, which is associated with an underestimation of the anamnesis data (transient jaundice), errors in ultrasound diagnostics, and the non-use of more informative instrumental methods of examination, such as MRI, in doubtful cases. In our opinion, preference should be given to operations that ensure the outflow of bile through the zone of the large duodenal papilla.

References

Burkov, S. G. (2019). On the consequences of cholecystectomy or postcholecystectomy syndrome. *Consilium Medicum, 1*, 24-28.

Chernenko, V. (2014). Postcholecystectomy syndrome: Modern state of the problem. *Medicines of Ukraine, 4*, 19-22.

Dadvani, S. A., Vetshev, P. S., Shulutko, A. M., & Prudkov, M. I. (2018). *Cholelithiasis*. Moscow: Vidar Publ.

Eisenburg, J. (2018). *Cholestasis. Guiding Symptom in Liver Disease: Patogenesis and Clinical Pictures.* Munich, Germany: Falk Foundation.

Filippov, Yu. A., & Skirda I. Yu. (2015). Epidemiological features of diseases of the digestive system and gastroenterological service in Ukraine: Achievements, problems and ways of their solution. *Gastroenterology, 36*, 9-17.

Grigoriev, P. Ya., Yakovenko, E. P., Agafonova, N. G. et al. (2019). Postcholecystectomy syndrome: Diagnostics and treatment. *Lech. doctor, 4*, 34-38.

Ilchenko, A. A. (2014). *Cholelithiasis*. Moscow: Ana harsis.

Ipatov, A.V., Sergieni, A.V., & Voitchak, T. G. (2018). Epidemiology of disability due to diseases of the digestive system in Ukraine. *Gastroenterology, 35*, 21-27.

Khazanov, A. I. (2012). Postcholecystectomy syndrome. In A.V. Kalinin & A. I. Khazanov (Eds.), *Clinical Lectures on Gastroenterology and Hepatology* (Vol. 3, pp. 309-325). Moscow: State Institute for Improving Doctors of the Ministry of Defense of the Russian Federation, the N. N. Burdenko Main Military Clinical Hospital of the Russian Federation.

Lazebnik, L. B., Kopaneva, M. I., & Ilova, T. B. (2014). The need for medical assistance after surgical interventions on the stomach and gallbladder (review of literature and own observations). *Ter. arch., 2*, 83-87.

Matsegora, N. A. (2014). Influence of low-intensity laser radiation on the dynamics of indicators of lipid peroxidation in patients with postcholecystectomy conditions. *Kurortol. and physio., 3*, 41-44.

Savelyev, V. S. (2015). *Lipid distress syndrome: Methods. Recommendations*. Moscow: Max Press Publ.

Suzdaltsev, I. V., Zolotukhin, T. F., & Arkhipov, O. I. (2014). *Postcholecystectomy Syndrome: Causes, Risk Factors, Modern Methods of Diagnosis and Treatment*. Moscow: ANMI Publ.

Sysoeva, I. A. (2014). Indicators of carbohydrate metabolism and correction of their disorders under the influence of therapeutic and rehabilitation therapy in the conditions of the Berdyansk resort in patients with cholelithiasis after cholecystectomy. *Kurortol. and physio., 3*, 44-47.

Valenkevich, L. N., Filina, G. V., Bobkova, O. P. et al. Postcholecystectomy syndrome in patients of old and old age. *Wedge. gerontol., 12*, 19-21.

Vetshev, P. S., & Shpachenko, F. A. (2014). Cholecystectomy and quality of life of operated patients. *Med. pomoshch., 5*, 30-35.

Yagmur, V. B. (2004). On the causes of digestive disorders in patients who have undergone cholecystectomy. *Mezhdunar. med. zhurn., 3*, 65-68.