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Case Report

A Case of Zipper Effect in Endoscopic Papillosphincterotomy

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This article discusses a rare complication that occurred during endoscopic papillosphincterotomy for choledocholithiasis - electrosurgical effect or zipper effect. The experience of early surgical treatment of complications of endoscopic papillosphincterotomy with zipper effect is given.

Introduction

A long w ith traditional or laparoscopic choledocholithotomy, endoscopic retrograde cholangiopancreatography with endoscopic papillosphincterotomy is now widely used. It significantly reduces the amount of surgical aggression on the patient's body and, most importantly, at the same time allows to eliminate not only the consequence - the presence of stones in the choledochus, but also the main cause of choledocholithiasis - the pathology of the major duodenal papilla.

Endoscopic papillosphincterotomy is a minimally invasive operation that eliminates the pathology of the major duodenal papilla and the ductal structures opening into it (choledochus and main pancreatic duct). Endoscopic papillosphincterotomy is performed using a duodenoscope, an electrosurgical unit and a sphincterotomy.

The essence of endoscopic papillosphincterotomy in choledocholithiasis is that the patient under intravenous anesthesia, the endoscope is carried out till the Vater papilla, which expands through an incision to a certain level, then through the Vater papilla the stone, "stuck" in the common bile duct is removed into the lumen of the duodenum. If a stone is found, a papillosphincterotomy (dissection of the Vater papilla) is performed to create conditions for the free extraction of the stone from the lumen of the common bile duct.

Despite its relative safety (in comparison with surgery), and undoubted role in many clinical circumstances, biliary sphincterotomy is the most dangerous procedure routinely performed by endoscopists [1]. One of the serious complications of endoscopic papillosphincterotomy is retroduodenal perforation, the severity of which can vary from mild, eliminated only by conservative methods, to severe, which requires urgent surgery.

Stapfer et al.3 classified perforations into four types, based on severity and anatomical location. Stapfer's classification includes the following: 1. Type I: lateral or medial duodenal wall perforation 2. Type II: perivaterian injury 3. Type III: bile or pancreatic duct injury 4. Type IV: presence of retroperitoneal air alone [2]. Early diagnosis of perforation is crucial and determines the rate of morbidity and mortality [3].

Perforation is one of the most feared complications of endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic sphincterotomy. The incidence of ERCP-related perforations is low (0.39%) with an associated mortality of 7.8%. Endoscopic sphincterotomy is responsible for 41% of perforations and endoscope manipulations for 26%. [4].

There is little evidence in the available scientific literature about the risk factors leading to perforation during endoscopic papillosphincterotomy. We give an example, a case from practice is

considered as an electrosurgical factor, called the “zipper” effect, or the “lightning” effect [5].

In the present case, endoscopic papillosphincterotomy was selected for the choice of treatment to remove gallstones from the common choledochus.

Figure 1. X-ray of the Chest.

Clinical case

The case history f-003u No. 87 of the patient K.A. was analyzed. Age 51. Conducted general blood tests, general urinalysis, biochemical blood tests, instrumental research methods.

The patient was admitted with complaints of dull and nagging pain in the epigastrium, increased pain when eating, slight yellowness of the sclera, dark urine.

From the anamnesis: according to the patient, pain in the right hypochondrium has been bothering for several years.

Local Status

On examination, the tongue is moist, slightly coated with white coating. On palpation in the upper right quadrant and epigastrium, moderate pain is noted. Pathological formations are not palpable. There are no peritoneal phenomena. The liver and spleen are not palpable. Stool of normal consistency and color. Urination is free, urine is dark yellow.

General blood tests

Hb-137.0 g/l; erythrocytes-5.2*1012\l; leukocyte- 6.1*109/l; stab neutrophils-1%; segmented neutrophils

- 46%; myelocytes-0%; metamyelocytes-0%; eosinophils-1% basophils-0%; lymphocytes-48%; monocytes-5%; platelets - 211*109\l; thrombocrit-0.206%; hematocrit-42%; erythrocyte sedimentation rate-5 mm/h; blood clotting time 3 min 43 sec 03 end 4 min 31 sec; RW-negative; HIV (HIV) - negative; HBsAg - negative; HCVAg-negative; blood gr.-B (III) Rh-negative;

General urinalysis

Quantity-40 ml; yellow color; transparency-muddy; urobilinogen-negative; bilirubin-++; ketone bodies

- negative; protein-negative; nitrite-negative; glucose- negative; relative density-1025; leukocyte-3-1-3 in p\sp; er-1-2-1 in p\sp; cylinders - negative; salts are negative; bacteria –+1; mushrooms are negative.

Biochemical blood tests - total protein-76.7 g/l;

glucose-3.93 mmol/l; total bilirubin-68.2 mmol/l; direct-18.23 mmol/l, indirect-50.0 mmol/l; from 05/13/22

- total bilirubin - 78.1 mmol / l; direct-19.20 mmol/l; indirect-58.9 mmol/l; dated 05/14/22, total bilirubin - 83.1 mmol / l; direct-34.9 mmol/l; indirect - 48.1 mmol / l; dated 17.05.22 ALT-29 U\L;

AST-54 U\L; creatinine-60.5 mmol/l; urea-7.59 mmol/l; diastase-437 U\L; from 17.05.22.

Ultrasound conclusion

Cholelithiasis. Chronic calculous cholecystitis. Choledocholithiasis.

ECG, cardiologist's consultation - no special deviations.

X-ray of the chest from 05/13/2022 - No focal infiltrative changes were detected in the lungs.

Fibroesophagogastroduodenoscopy from 04/27/2022

- Catarrhal gastritis.

With endoscopic retrograde cholangiopancreatography dated May 16, 2022 and contrasting, the choledochus is filled in isolation. Intra- and extrahepatic biliary ducts without ectasia, the width of the common bile duct is about 6-7 mm. There is an indistinct shadow of small valve stones 5-6 mm in size, freely interspersed in the lumen of the choledochus. The gallbladder and Wirsung duct were not contrasted. Considering the valve calculi of the extra- and intrahepatic ducts, it was decided to perform endoscopic papillosphincterotomy. Due to the increased peristalsis of the duodenum, it was not possible to perform endoscopic papillosphincterotomy and the procedure was stopped at the diagnostic stage. The evacuation of the contrast agent from the biliary ducts into the lumen of the duodenum was timely.

Conclusion, Cholelithiasis. Calculous cholecystitis. Valve stones of common bile duct.

After endoscopic retrograde cholangiopancreatoscopy, antispasmodic, fermentostatic, infusion, antibiotic therapy and bleeding prevention were performed.

A day later, on May 18, 2022, a second endoscopic retrograde cholangiopancreatoscopy + endoscopic papillosphincterotomy was performed. In this case, the supply of serial pulses by an electrosurgical generator (ERBE ICC 80, Cut 35 W, Coag 40 W) during endoscopic papillosphincterotomy did not give the expected result, with the next current supply after a preliminary increase in cutting power (Cut) by 10 W, an uncontrolled lightning incision was obtained, the so-called lightning effect, with dissection of the intramural section of the common bile duct up to 18-19 mm. There was no bleeding, no bile output was detected. But the phenomena of pain began in the following hours, which led to alertness about biliary peritonitis. For this reason, a diagnostic laparoscopy was performed, as a result of which bile was found in the subhepatic region of about 60.0 ml and tissue imbibition with bile of the retroduodenal zone. Due to the technical difficulty of laparoscopic revision, conversion was performed and laparotomy was performed. During laparotomy with the help of an electric suction, bile was aspirated, cholecystectomy was performed from the bottom, drainage of the choledochus was performed. Sanitation and drainage of the subhepatic and retroperitoneal region. A nasogastric tube was inserted into the duodenum. Permanent decompression of the common bile duct with the left drainage in the choledochus and continuous aspiration of the contents of the duodenum with a nasogastric tube led to a rapid rehabilitation.

In our case, endoscopic papillosphincterotomy (EPST) was performed as a minimally invasive operation to eliminate the pathology of the major duodenal papilla and the ductal structures opening into it (choledochus and main pancreatic duct). The resulting electrosurgical effect of lightning led to damage to the walls of the common bile duct. From the damaged walls of the choledochus, bile entered the subhepatic region, which gave a picture of biliary peritonitis. Timely diagnosis and urgent treatment of biliary peritonitis led to the elimination of endoscopic papillosphincterotomy complications.

Only 1 case of the lightning effect was found in the literature; the author considered it as an electrosurgical effect, which requires further research. The complication in the form of a lightning effect is very rare, there is little data in the literature, it is considered as an electrosurgical effect.

In c oncl usi on, c urre nt l y, e ndosc opi c retrograde cholangiopancreatoscopy + endoscopic papillosphincterotomy are minimally invasive interventions performed in the pathology of the digestive system and remain the method of choice for such diseases.

Before the operation, it is necessary to take into account possible complications in the form of a lightning effect, the serviceability of the device, as well as the general condition of the body. It must always be remembered that patients should be made aware of the possible expected complications.

Thus, it can be summarized that the risk of developing the lightning effect during EPST is possible and requires further study.

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