



ESWL as an Alternative Management of Pancreatic Lithiasis – Case Report

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Abstract

Introduction: Pancreatic lithiasis is a condition rarely seen in the pediatric population, most often in patients suffering from chronic pancreatitis. Small deposits, that cause obstruction, are treated with endoscopy (endoscopic retrograde pancreatography with sphincterotomy and stenting). The larger deposits, however, must be treated otherwise. For patients with anatomical anomalies, surgery must be performed. Patients already operated on or with no coexisting anomalies may benefit from less invasive treatment.

ESWL (Extracorporeal Shock Wave Lithotripsy) is a method dedicated to treat urolithiasis, but since 1989 it is used for the management of pancreatic stones in the adult population with good effects.

Objective: The aim of this paper is to present a case report of a 13-year-old patient with pancreatic lithiasis on the basis of genetic mutation and chronic pancreatitis, treated with a combination of endoscopic procedures followed by ESWL of the pancreas.

Materials and Methods: After a proper imagining, ERCP followed by ESWL were performed. Under general anesthesia, the patient was placed in a supine position with the right side raised by about 15 degrees. Using the power of 10% to 40%, the frequency of 1 Hz, and 1,500 pulses, a very good disintegration of the deposits was obtained.

No complications were observed.

Conclusion: ESWL with combination of endoscopic procedures is an effective and small invasive way of treating pancreatic stones and may be used in children.

Introduction

Chronic Pancreatitis (CP) is mainly seen in adult patients (42-73:100,000) rather than children [1]. However, morbidity has risen even 15 times in the last 30 years [2].

The main risk factor for pancreatitis in the adult population is alcohol [1]. It is but very uncommon in children. The main etiological factors in the pediatric population are genetic mutations, autoimmune disorders, and congenital abnormalities [3].

The primary symptom of CP is pain. It is most often located in the epigastric region, dull, and of varying severity. As it often occurs after eating, weight loss is seen in some patients due to fear of eating. In addition, pancreatic exocrine and endocrine insufficiency develops over time.

Pancreatic lithiasis is one of the pathognomonic symptoms of CP. Deposits cause obstruction, dilatation, and an increase in pressure in the pancreatic ducts, thus increasing pain and aggravating the course of the disease.

In the case of deposits smaller than 5 mm, the first-line therapy is Endoscopic Retrograde Cholangiopancreatography (ERCP) with sphincterotomy and pancreatic duct stenting [1,4].

The recommended method for treating stones bigger than 5 mm in the adult population is Extracorporeal Shock Wave Lithotripsy (ESWL) with the disintegration of deposits to smaller than 3 mm, followed by ERCP [1,5-7].

The aim of this work is to describe a case of 13-year-old patient with pancreatic lithiasis, who underwent a combination of those two mentioned procedures.

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Case Presentation

A 13-year-old boy was diagnosed with CP in the age of 9. Genetic research revealed mutations in the SPINK and CTRCT genes. In the age of 10 the patient underwent laparoscopic decompression of the pancreatic tail cyst using the Roux-Y method. Since then, the patient has been under the constant care of the Department of Gastroenterology, Hepatology, Eating Disorders and Pediatrics. He periodically reported mild pain in the epigastrium. The follow up ultrasound 3 years after surgery had shown a small pancreas with numerous calcifications. The pancreatic duct was widened almost throughout its entire course to 4 mm to 7 mm, and in its lumen, 2 deposits of about 6 mm long were visible.

The patient underwent an Endoscopic Retrograde Pancreatography (ERCP). During the procedure a typical ampulla of Vater was found. After insertion of a pancreatic catheter fluoroscopy was performed. In the head of pancreas, the pancreatic duct was 6 to 8 wide and despite repeated attempts, the contrast could not pass through two shadows blocking the lumen of the duct. A sphincterotomy was performed.

The patient was qualified for ESWL.

Prior to the procedure a Computer Tomography (CT) to rule out any coexisting anatomical anomalies was performed. There were none, but the pancreas was small with residual parenchyma and numerous calcifications. The duct of Wirsung was 8 mm wide with a 6 mm stone in the tail and an agglomeration of stones 11 mm in the head.

Final qualification was obtained after an ultrasound in the day of ESWL. As previously the pancreatic duct was wide and an agglomeration of stones 16 mm in diameter next to the ampulla of Vater and a 9 mm distally was seen.

The procedure was performed under general anesthesia. The patient was placed in a supine position with the right side raised by about 15 degrees.

The procedure was performed with a lithotripter that uses electroconductive technology. The deposits were located using ultrasound. As the producer of the device does not recommend exceeding the dose of 1,500 pulses per treatment, it was decided



Figure 1: Computed tomography - frontal section. Numerous deposits in the pancreas (white arrow) and the dilated duct of Wirsung (measured).

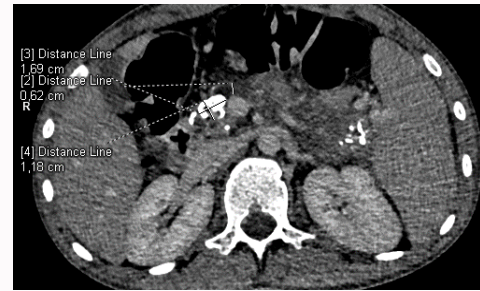


Figure 2: Computed tomography - cross section. The largest of the deposits 1.18 cm x 0.62 cm in diameter is marked, as well as dilated Wirsung duct.



Figure 3: Ultrasound in the day of ESWL - pancreas with a dilated duct of Wirsung (star) and the presence of a deposit in the head of the pancreas (white arrow).

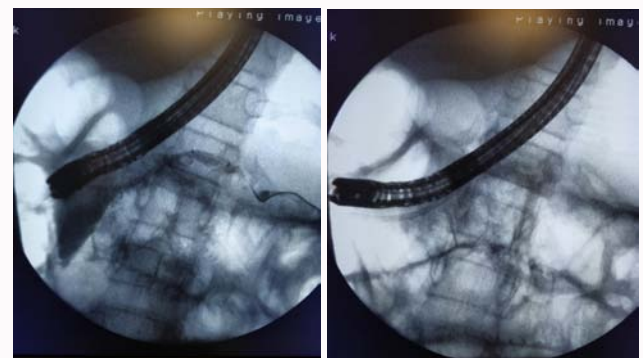


Figure 4: ERCP - visible stricture of the Wirsung's duct in the distal part.

that the deposits located closer, to the Vater's ampule would be disintegrated first. Using the power of 10% to 40%, the frequency of 1 Hz and 1,500 pulses, a very good disintegration of the deposits was obtained.

The postoperative course was uneventful, the patient did not report any pain, and no increase in alpha amylase was observed in the laboratory tests. In the control ultrasound performed the day after the procedure, a group of deposits in the area of the Vater's ampule 25 mm x 12 mm x 15 mm in size was seen. It was clearly larger than in the pretreatment examination and with less marked contours.

The patient was sent to the Department of Pediatric Gastroenterology, where another ERCP was performed.

During ERCP only small residual deposits in the head of pancreas

were seen. There was a stricture in the distal part of the pancreatic duct, that was widened with a Balloon catheter. An outflow of small deposits was observed.

The original plan was to perform another ESWL after 2 to 3 weeks, however, after the imaging it was decided that there were no indications for this any longer.

Discussion

Chronic pancreatitis and pancreatic lithiasis are very rare among children and require multi specialist care. Due to the development of technology and skills, ERCP treatments are performed more and more often and with better results [4]. In patients with large deposits, without anatomical defects of the bile ducts, the ESWL preceding the ERCP procedure is an effective solution. Studies on numerous adult patients, had shown high effectiveness in relief of pain and stone clearance after P-ESWL (Pancreatic ESWL) [8,9] and it has become a first-line treatment therapy for patients with large pancreatic calculi and pain [7]. However, the literature for pediatric P ESWL is still very limited [10,11].

A possible complication of P ESWL is bleeding, acute pancreatitis (ACE), gastric perforation and sometimes sepsis. These complication rate in adults ranges about 6.7% [12]. There is no data on pediatric population.

Previously an ineffective ERCP in patients with pancreatic stones determined the need for major surgery. ESWL is an alternative that should be considered in these patients.

However, for patients with large deposits and anatomical abnormalities in the pancreatic duct, surgery is still the first line treatment [7].

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