Intestinal duplications are the rare anatomic anomalies that usually present in childhood. Of these, duodenal duplications are among the uncommon. The clinical manifestations are numerous and are determined by the type, site and size of the duplication. Patients usually present with obstructive symptoms, pain, vomiting or bleeding but pancreatitis may occur as well. The etiology of intestinal duplications is unknown, although several theories have been postulated. They can be observed anywhere along the alimentary tract, and they are located most often in the ileum and least often in the duodenum. The lesions can be cystic or tubular, communicating or non-communicating, but the most common type is cystic and non-communicating. Treatment is mainly surgical and total excision, if possible, is the procedure of choice. We report a case of a pediatric patient with the duodenal duplication cyst diagnosed by endoscopic retrograde cholangiopancreatography (ERCP).

Key words: children, endoscopic retrograde cholangiopancreatography, intestinal duplications, pancreatitis
Case

A 8-year-old girl with acute recurrent pancreatitis, 5 years history of the acute abdominal pain and several episodes of vomiting, hospitalized in the surgical department due to the pancreatitis, was admitted to the gastroenterology department for further diagnosis. On admission physical examination reported no disorders or marks of infection. The liver enzymes were insignificantly increased. Abdominal computed tomography imaging was obtained and showed the pancreatic cyst (about 3 cm in diameter) located in the head of the pancreas with inflammatory process, biliary ducts remained without pathological changes. ERCP examination performed in general anesthesia established diagnosis of duodenal duplication. The sphincterotomy was performed. The endoscopic resection of duplication, although considered, was finally given up. The general condition of the patient remained well, although she reported periodically the mild abdominal pain and the laboratory tests showed the constant, mildly elevated serum amylase. According to these observations and non-specific symptoms she was administered protective diet and referred to liver scintigraphy. After surgical consultation, the girl was referred to the second ERCP, during which the resection of the cyst was performed. While setting endoscope into duodenum the duplication was caught using the snare and removed along with the remaining fragment beside duodenal papilla. Both pieces were restored in order to take histopathological examination which confirmed the intestinal duplication. The stent was removed out of pancreatic duct. There was no need for draining nevertheless the stent Zimmon 3 Fr 5 cm was set in order to keep the proper passage of the duct. Follow-up ERCP revealed the healing of the postoperative wound covered with normal mucosa and proper pancreatic duct. Moreover the separate ostium of biliary ducts located on the upper border of resection was identified. At present there are no indications neither for stenting nor for other procedures.

The girl was discharged from hospital in good general condition without any postoperative complications. Last follow-up examination of upper gastrointestinal tracts did not reveal any disturbing signs. Pancreatic tests were proper. The patient is under constant observation of the gastroenterology clinic.

Discussion

Duplications of the gastrointestinal system can be observed anywhere along the alimentary tract, and they are located most often in the ileum and least often in the duodenum. Duodenal duplications can be cystic or tubular, communicating or non-communicating, but the most common type is cystic and non-communicating. These are generally located at the medial border of the first and second parts of the duodenum and extend to the anterior or posterior side. Duodenal duplication observed in our case was cystic and located in the second part of the duodenum with the opening of duodenal papilla in the lateral side of the lesion. Duplications are usually discovered during infancy and childhood. Only about 33% of the cases are reported in adults above 20 years of age. Our patient was 7 when diagnosis was established but she has been presenting with the symptoms since the age of 2.5.

A variety of clinical manifestations have been reported that are determined by the type, site and size of the duplication. Generally, patients present with a palpable mass in the abdomen, signs of intestinal obstruction, or abdominal pain. Bleeding or perforation caused by peptic ulcer, jaundice, and pancreatitis caused by biliary obstruction may also be the manifestations. In the reported case the most com-

---

**Fig. 1** ERCP 1 sphincterothomy, stent of duodenal ducts
mon symptoms were pancreatitis, acute abdominal pain and vomiting episodes. Neither obstructive jaundice nor gastrointestinal bleeding were noted. Numerous congenital defects including double gallbladder, ileal and gastric duplications or vertebral abnormalities can be associated. Cancers have appeared in duplications found elsewhere in the gastrointestinal tract, but none have been reported in duodenal duplications. Those do not apply to our patient.

Accurate diagnosis of duodenal duplication is by histological examination, although radiological methods, magnetic resonance imaging (MRI) and gastroduodenoscopy are helpful. Duodenal duplication is differentiated from other cystic lesions by the „gut signature” of its wall observed by abdominal or endoscopic US. Gut signature refers to the layered pattern of the wall, with the hyperechoic inner layer representing the submucosa and the hypoechoic outer layer representing the smooth muscle. CT is valuable in identifying the type, location and the size of the duplication cyst. [2, 7, 8, 10] In our case, CT images made us think of the cyst in the head of pancreas which turned out to be neither sufficient nor correct. It was just ERCP that detected the duodenal duplication, lately confirmed by histological examination. After sphincterotomy and surgical consultation the total resection of duplication was performed during second ERCP. The procedure was successful and the patient was discharged from hospital without any complications.

In conclusion, duodenal duplication should be considered in the differential diagnosis of a patient who presents with abdominal symptoms when cystic structures neighboring the duodenum are demonstrated by radiology. In this case, ERCP was of great value not only in establishing diagnosis but also in treatment.

References