Acute pancreatitis complicated by infected pseudocyst in a child with pancreas divisum

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INTRODUCTION: Acute pancreatitis occurs less frequently in children than in adults, although it seems to be more common than has been considered in the past. There are several causes of pancreatitis in childhood: trauma, infections or structural gland anomalies as pancreas divisum.

CASE PRESENTATION: We report a case of non-traumatic severe acute pancreatitis in a 8-year-old girl with pancreas divisum, complicated by a rapid formation of a large infected pseudocyst which required a surgical internal drainage by a Roux-en-Y cystojejunostomy.

DISCUSSION: Pancreas divisum is the most common congenital anomaly of the pancreas with an incidence of 3-10% of population, and its role in causing acute or recurrent pancreatitis is still controversial. There are only sporadic observations of acute pancreatitis complicated by pseudocyst in children with pancreatic anomalies and its treatment is not standardized. Three different approaches have been described to treat a pancreatic pseudocyst: percutaneous, endoscopic or surgical drainage. We decided to perform a pseudocyst-jejunostomy because of the disease severity.

CONCLUSION: Even in the non-invasive era, the surgical approach to treat a large complicated pseudocysts in children still represents a safe and feasible approach in emergencies as acute abdomen, bleeding or sepsis. Complications of percutaneous and endoscopic drainages are avoided and long term results are excellent.

KEY WORDS: Acute pancreatitis, Pancreas divisum, Pancreatic pseudocyst

Introduction

Pancreatic disorders are relatively rare in children. Acute pancreatitis in childhood is caused by trauma, infections, drugs or structural anomalies, but it can be also idio pathic. Pancreas divisum is the most common congenital anomaly associated with acute and recurrent pancreatitis or chronic and recurrent abdominal pain, even if its role in the pathogenesis of these pancreatic diseases is not demonstrated. The development of non-traumatic severe acute pancreatitis complicated by a rapid formation of pseudocyst is reported in few works and its treatment is not standardized. Several approaches have been described for the treatment of pseudocysts: supportive medical care, percutaneous or endoscopic drainage, surgical intervention, ERCP with stent implantation, complete pseudocyst excision.
Case report

In September 2009 a 8-year-old girl presented with abdominal pain to the Department of Pediatrics of Sapienza University. She had no history of trauma, drugs usage, infection or systemic disease. Repeated blood tests showed high and progressively growing serum values of amylase (310-450 U/L) and lipase (484-620 U/L). Serology for pancreatitis-associated viruses (Coxakie, EBV, CMV) was negative. Ultrasound examinations revealed an increasing amount of intrabdominal free fluid in the peripancreatic area and along the paracolic gutters and showed a dishomogeneous pancreatic body. Magnetic Resonance Colangiopancreatography (MRCP) showed edema of the pancreatic body and tail with a peripancreatic fluid collection, 3 cm in maximum diameter (Fig. 1A) associated with pancreas divisum and dominant dorsal duct. A diagnosis of idiopathic acute pancreatitis was made: the patient was restricted for oral feeding and medical therapy was started with total parenteral nutrition, antibiotics (Imipenem), gabexate mesilate (Foy) and somatostatine in continuous intravenous infusion, with a partial clinical response. One week later, the patient developed fever, tachycardia, acute abdominal pain and nausea. Physical examination revealed abdominal defense and palpable mass in the upper abdominal quadrants. Laboratory tests showed high serum value of C-reactive protein (72 mg/L) and leukocytosis (WBC 14.200/cc3). A control MRCP showed a significant increase of the peripancreatic collection (from 3 to 10 cm in diameter) evolved in pseudocyst with a well defined membrane (Fig. 1B); ultrasonography showed hyperechoic material inside the cyst as for bleeding or suppuration. She underwent an emergency operation.

At laparotomy there was intra-peritoneal free fluid and the pseudocyst was immediately identified into the lesser sac, anteriorly to the pancreas that was edematous. After having visualized the dependent side of the cyst inferiorly to transverse mesocolon root (Fig. 2A), the cystic wall was opened at this level and the cavity was explored and completely drained: there were yellow-brownish material, partially solid, and intracystic septa which were divided (Fig. 2B). A jejunal loop was prepared at 30 cm from the Treitz and brought up to the pseudocyst to perform a Roux-en-Y pseudocyst-jejunostomy using a continuous double-layer suture in Vicryl 3-0 (Fig. 2C-D). A silastic drainage was placed close to the anastomosis.

The patient received total parenteral nutrition for three days after the operation and started to oral feeding at

Fig. 1: A), MRCP: the initial peripancreatic collection (3 cm in diameter, arrow) and the dorsal pancreatic duct (arrowheads) are shown. B), MRCP: seven days later a 10 cm pseudocyst was developed.

Fig. 2: A), Intraoperative view of the pseudocyst, inferiorly to the root of the transverse mesocolon. B), The pseudocyst is opened on the dependent side and drained. C), Posterior layer of the pseudocyst-jejunostomy is performed by a continuous suture with Vycril 3/0. D), The pseudocyst-jejunostomy is completed.
the fourth day. Serum amylase and lipase has result-
ed in values in the normal range and amylase and lipase values in the drainage fluid has become nega-
tive from the third postoperative day. A control ultra-
sonography performed on the seventh postoperative
day revealed no collection or free fluid into the
abdominal cavity, showing a well-drained pseudocyst.
The histological examination of the cystic wall
revealed inflammatory infiltration associated to fibro-
sis. The microbiological testing of the intracystic mate-
rial was positive for Escherichia coli. The patient was
discharged on the ninth day. Repeated abdominal
ultrasonography and blood tests did not show any
signs of acute or recurrent pancreatitis during two year
follow-up.

Discussion

Different approaches to acute pancreatitis in patients
with pancreas divisum have been described: medical
therapy, surgical sphincteroplasty, endoscopic sphinc-
terotomy of minor papilla or dorsal duct cannulation
by ERCP. However there are only sporadic observa-
tions of acute pancreatitis complicated by pseudo-
cyst in children with pancreatic anomalies. Small
and asymptomatic pseudocysts can be treated only by
medical care while invasive drainage is recommended
for symptomatic or complicated pseudocysts (infection
or bleeding). Our patient was initially treated with
conservative medical care but the unexpected worsen-
ing of clinical conditions (acute abdomen) due to the
rapid formation of an infected pseudocyst, required
immediate interventional procedures. In these cases
three different approaches have been described: 1) percutaneous drainage is a simple and mini-invasive
procedure but it is not indicated for cysts containing
bloody or infected material and it is at risk of devel-
oping a pancreatic fistula or can dislocate in not com-
pliant patients as children; 2) endoscopic drainage
(transpapillary by ERCP or transmural through the
stomach or duodenum) is becoming the preferred
approach for large pseudocysts in children but do not
ensure a complete drainage because of the high den-
sity content, it can be particularly complex in case of
pancreas divisum and can be associated to bleeding,
absces formation, peritonitis and visceral injuries,
especially when performed in not referral centers by
not skilled endoscopists; 3) the surgical approach, con-
sisting in an internal drainage between the cyst and
a visceral organ (cysto-jejunostomy, cysto-duodenosto-
my or cysto-gastrostomy), is indicated in case of com-
plicated pseudocysts, when acute abdomen occurs or
when other drainage procedures failed. We decided to
perform a Roux-en-Y cystojejunostomy because the
patient developed an acute abdomen likely sustained
by a pseudocyst suppuration. In this cases the open-
ing on the cyst should be done in the most depen-
dent side in order to maximize the chances of a com-
plete drainage; the cystic internal septa should be
divided and the cyst totally emptied. We also per-
formed a continuous double-layer suture between the
cystic wall and the jejunal loop to minimize the risk
of anastomotic leakage. In this case we also put a dual
component of fibrin mesh (TachoSil®) around the cys-
to-jejunostomy.

Conclusion

In conclusion surgical internal drainage of large com-
plicated pseudoysts in children represents a safe and
feasible approach in emergencies as acute abdomen,
bleeding or sepsis. Complications of percutaneous and
endoscopic drainages are avoided, there are no stents
to be removed and good long term results.

Riassunto

La pancreatite acuta è una patologia rara in età pedia-
trica rispetto a quella adulta, dalla quale differisce sia
per eziologia che per decorso clinico. Essa infatti è cau-
sata generalmente da traumi, farmaci o anomalie con-
genite di cui il pancreas divisum rappresenta la forma
più comune, non essendo tuttavia stato dimostrato uno
stretto nesso causale con esso. Ancor più rara è
l’evoluzione, nel bambino, della pancreatite acuta nel-
le sue forme più avanzate quali l’accesso o la pseudo-
cistici.

Presentiamo il caso di una pancreatite acuta severa in
una bambina di 8 anni con un pancreas divisum, com-
plicata in breve tempo dalla formazione di un’enorme
pseudoctosi infiammatoria che si è rapidamente ascesua-
lizzata dando luogo ad un quadro settico e addominale
acuto che ne ha richiesto l’immediato intervento di dren-
aggio mediante il confezionamento di una pseudocisto-
digastrostomia su ansa ad Y sec. Roux.

La gestione della pancreatite acuta nel bambino non è
ancora stata standardizzata così come il trattamento
delle sue complicanze. Da quanto si evince dalla let-
teratura la terapia dovrebbe sempre essere di tipo medi-
cio-intensivo, riservando le metodiche invasive alle sue
complicanze quali l’ascessualizzazione, l’emorragia o la
formazione di pseudocistici. In considerazione dell’alto
tasso di complicanze (fistola, emorragia, drenaggio
incompleto) associato alle metodiche non-chirurgiche
di drenaggio della pseudocistici, quali la via percutanea
e quella endoscopica, le quali non devono prescindere
da una solida esperienza da parte del radiologo inter-
ventista e dell’endoscopista, abbiamo optato per la via
chirurgica la quale ha permesso di risolvere rapidi-
mente la sintomatologia clinica della paziente e lo sta-
to settico.
References