VERSITA

Cent. Eur. J. Med. • 7(1) • 2012 • 34-37
DOI: 10.2478/s11536-011-0108-z

Central European Journal of **Medicine**

Somatostatine analogue in nonoperative treatment of posttraumatic pancreatic pseudocyst in a child: a case report

Case report

Vesna G Marjanovic[1*], Andjelka R Slavkovic[1], Miroslav P Stojanovic[2], Vladisav B Stefanovic[2], Goran T Marjanovic[2], Radmilo J Jankovic[2]

[1]*Clinic of Child Surgery Clinical Centre 18000 Nis, Serbia*

[2]*University School of Medicine, 18000 Nis, Serbia*

Received 2 November 2010; Accepted 26 September 2011

Abstract: Pancreatic pseudocyst is a complication of pancreatic trauma. We describe improved nonoperative treatment of patient with posttraumatic pancreatic pseudocyst with somatostatin analogue. A 9-year-old girl was admitted to our hospital after blunt abdominal trauma with handlebar. Three weeks after abdominal trauma, pancreatic pseudocyst developed. Nonoperative treatment of posttraumatic pancreatic pseudocyst (the largest dimensions 70 x 55 x 65 mm) with somatostatin analogue, octreotide acetate, was applied for the next 52 days. The patient was followed up for 24 months after the discontinuation of octreotide and there were no recurrence of pancreatic pseudocyst. Somatostatin analogue could be usefull in the nonoperative treatment of posttraumatic pancreatic pseudocysts in children.

Keywords: *Abdominal trauma • Acute pancreatitis • Pancreatic pseudocyst • Somatostatin analogue*

1. Introdution

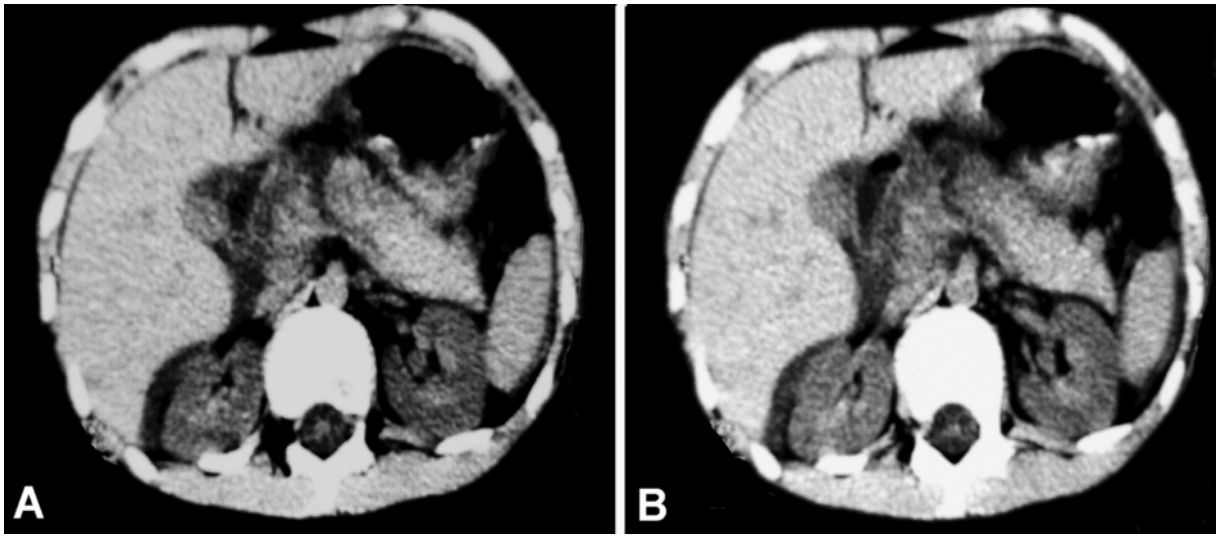
Pancreatic pseudocyst is a complication of pancreatic trauma. Pseudocysts develop in children after acute pancreatitis in 10 to 23% of patients. If the underlying case is trauma, incidence increases up to 65% [1]. Therapeutic options range from nonoperative management [1] via endoscopic or percutaneous [2] drainage to open surgical procedures such as cyst-enterostomy [3]. We report the successful nonoperative management of posttraumatic pancreatic pseudocyst with a somatostatin analogue and a good clinical outcome.

2. Case Report

A 9-year old girl sustained a handlebar injury causing blunt upper abdominal trauma. After 36 hours, she developed intensive abdominal pain, vomiting and tenderness. Laboratory examination revealed leukocytosis 20,000 mm^3 (reference range: 4,500-10,500 mm^3) with neutrophilia (85.5%), increased C-reactive protein 170 mg/L (CRP, reference range: 0-5 mg/L), serum amylase 1,589-3,345 U/L (reference range: 28-100 U/L) and urine amylase 24,530 U/L (reference range: 0-490 U/L). The transabdominal ultrasound (US) and computed tomography (CT) scan on the same day revealed a laceration and partial rupture of the pancreatic body with abundant peripancreatic fluid in the peritoneal cavity and evidence laceration of liver and stomach (Figure 1). The diagnosis of pancreatic laceration with ductal injury was classified as a grade 3 according to the classification described by Booth and Flint [4]. Due to injury of abdominal organs, surgery was performed. Suture of the stomach and liver were done, as well as lavage and drainage of peritoneal cavity. Throughout the following 2 weeks, intravenous

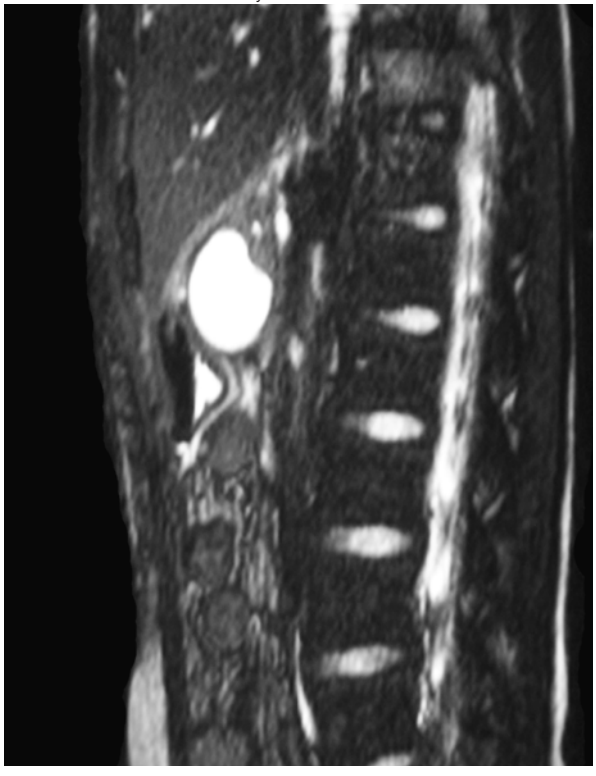
* *E-mail: prof.marjanovic@gmail.com*

Figure 1 (A, B). The abdominal CT scan showed the partial rupture of the pancreatic body on admission of patient.



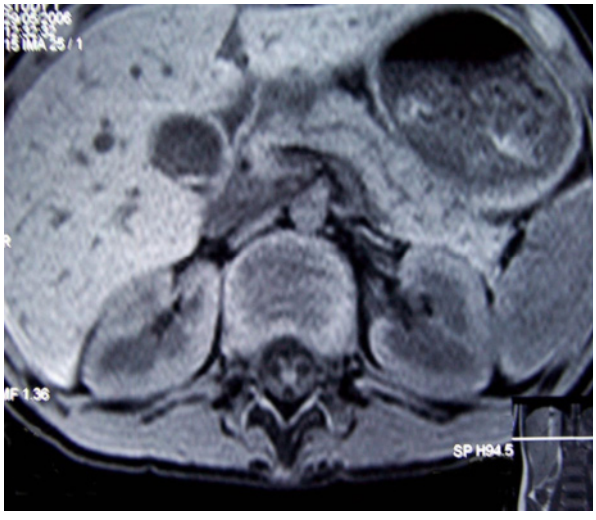
fluids, analgetics, antibiotics, spasmolitics, H_2 blokators, parenteral and enteral nutrition were administered. Two weeks after surgery, level of serum amylase was normal (96 U/L). Abdominal ultrasound (US) showed no intraabdominal fluid accumulation and abdominal drain was extracted. Oral food intake had been started.

Figure 2. Magnetic resonance showing pancreatic pseudocyst in the pancreatic body and closed percutaneous pancreatic fistula on 10th day of octreotide treatment.



Tree weeks after surgery, patient developed abdominal pain, fever and vomiting. Also, levels of serum amylase (249 U/L) and urine amylase (2,117 U/L) were increased again. Magnetic resonance (MR) showed development of pancreatic pseudocyst with percutaneous pancreatic fistula. Nonoperative treatment was continued with analgesics, antiemetics, low fat diet and somatostatin analogue, octreotide acetate, in subcutaneous dose of 100 μg/day. On the 10th day of octreotide treatment, MR showed that drainage from percutaneous pancreatic fistula stopped (Figure 2). On the 20th day of octreotide treatment, abdominal US showed pseudocyst in the pancreatic body increased in size reaching the largest dimensions 70 x 55 x 65 mm. Nonoperative treatment was continued by increasing the daily dose of octreotide acetate to 150 μg/day. On the

Figure 3. Magnetic resonance showing resolution of pancreatic pseudocyst on the 38th day of octreotide treatment.



30th day of octreotide treatment, abdominal US showed regression of pancreatic pseudocyst size (12 mm). The patients pancreatic enzyme levels were normalized and on the abdominal MR taken 38th days of the treatment the pseudocyst in the body of pancreas disappeared (Figure 3). Dosage of octreotide was gradually decreased every week. 52nd day of the octreotide treatment, the patient discharged from the hospital in good condition and octreotide discontintinued. During the therapy with octreotide no side effects were recorded. The patient has been followed up for 24 months after the discontinuation of octreotide, but there were no signs of recurrence of pancreatic pseudocyst.

3. Discussion

Handlebar injuries are common mechanism and result in a pattern of isolated pancreatic injury and pancreatic duct injury, often complicated by pseudocyst development [5]. Pseudocysts are caused by pancreatic ductal disruption following increased pancreatic ductal pressure, either due as a result of pancreatic necrosis following an attack of acute pancreatitis. Mattix et al. had found the high incidence of pancreatic pseudocyst with mortality rate ranging from 10-25% [6]. The diagnosis of pancreatic pseudocysts should be suspected in the setting of traumatic pancreatitis. Pancreatic pseudocysts may have no specific symptoms or may be associated with persistent abdominal pain, anorexia, nausea, vomiting after a case of pancreatitis. Rarely, patients present with jaundice, fever or pleural effusion. Our patient had marked abdominal pain, fever and vomiting. Laboratory evaluations have limited utility. Amylase and lipase levels are often elevated, but may be within reference ranges. In our patient, levels of serum amylase and urine amylase were increased. Frequently, diagnosis of pancreatic pseudocyst is made on cross-sectional imaging. CT scan is the investigation of choice which demonstrates the presence of thick walled, cystic lesion in abdomen. MR scan has been shown to be useful in demonstrating the fistulous tract extending to pancreas [7]. In our patient, MR scan showed of pancreatic pseudocyst with percutaneous pancreatic fistula.

The ideal management of pancreatic pseudocysts in children are controversial and depends upon the exact location, underlying aetiology, ductal anatomy, size of the pseudocyst and expertise available. Initial management consists of supportive care. Persistent symptoms and the development of complications warrant invasive intervention. Surgery was considered in symptomatic patients and if there are associated complications such as infection, obstruction, rupture, or hemorrhage. Some authors described, that endoscopic drainage and surgical resection should be applied for patients with large pancreatic pseudocysts more than 5 cm, but the timing of surgical treatment should be carefully determined by the thickness of the cyst wall, because the risk of complication is high [2]. Several studies have indicated that the size of the cyst and the length of time the cyst has been present are poor predictors of potential for pseudocyst resolution or complications, but in general, larger cysts are more likely to become symptomatic or cause complications [8]. However, some patients with larger collections do well; therefore, size of the pseudocyst alone is not an indication for drainage [9]. Conservative management was used in patients with good overall conditions, controlled clinical symptoms and because the complication rate are low. Most pseudocysts resolve with supportive medical care. Intravenous fluids, analgesics and antiemetics are routinely given. For patients that can tolerate oral intake, low fat diet is recommended. In our patient, nonoperative treatment of pancreatic pseudocyst was continued with analgesics, antiemetics, low fat diet and somatostatin analogue, octreotide acetate. The rationale of using octreotide as a therapy for pancreatic pseudocyst is that it will decrease pancreatic secretions and aid in pseudocyst resolution [10]. Yasuda et al. had found that somatostatin or its analogues have been used in nonoperative treatment of pancreatic pseudocyst, but this usually requires prolonged therapy [11]. Somatostatin affect the exocrine function both directly, by reducing the secretion of digestive enzymes and indirectly, by inhibiting secretin and cholecystokinin production. Octreotide is a somatostatin analog that possesses the same pharmacological properties as somatostatin, and recent studies reported clinical efficacy of somatostatin analogues in the conservative treatment of pediatric pancreatic pseudocyst, that is refractory to other conservative treatment modalities [10]. In experimental and acute pancreatitis, somatostatin and octreotide were effective in preventing complications of pancreatic operations and in the therapy of fistulas and pseudocysts [12]. No consensus has been reached in regards to use and the appropriate dosage of somatostatin analogues [10]. We described the nonoperative treatment of pancreatic pseudocyst with somatostatine analogue, octreotide acetate. In our patient, treatment with octreotide acetate for a 52 days resulted in significant reduction of the pancreatic secretions, closing persistent drainage from fistula, regression of pancreatic pseudocyst and pseudocyst resolution. Nonoperative treatment of pancreatic pseudocyst with a high dose octreotide for a long period, had a good

clinical outcome in our patient without side effects and has been followed up for two years, without any complications (no recurrence of pancreatic pseudocyst).

This report confirms the efficacy and tolerability of octreotide in the nonoperative treatment of pancreatic pseudocyst in a child. Further data are required regarding the use of octreotide in this setting, as well as to identify the potential clinical risks and benefits of high-dose octreotide.

ACKNOWLEDGMENTS

This work was supported by a grant, No 145004, from the Ministry of Science of Serbia

References

[1] Mulligan C, Howell C, Hatley R, Martindale R, Clark J. Conservative management of pediatric pancreatic pseudocyst using octreotide acetate. Am Surg 1995;61:206-209

[2] Chen KH, Hsu HM, Hsu GC, Chen TW, Hsieh CB, Liu YC, et al. Therapeutic strategies for pancreatic pseudocysts: experience in Taiwan. Hepatogastroenterology 2008;55:1470-1474

[3] Baca I, Schulz C, Gotzen V. Technique of laparoscopic pancreatocysto-jejunostomy. Zentralbl Chir 1998;23:183-187

[4] Booth FV, Flint LM. Pancreatoduodenal trauma. In Border Jed. Blunt Multiple Trauma. New York, NY, Marcel Dekker; 1990:497-509

[5] Arkovitz MS, Johnson N, Garcia VF. Pancreatic trauma in children: mechanisms of injury. J Trauma 1997;42:49-53

[6] Mattix KD, Tataria M, Holmes J, Kristoffersen K, Brown R, Groner J, et al. Pediatric pancreatic trauma: predictors of nonoperative menagement failure and associated outcomes. J Pediatr Surg 2007;42:340-344

[7] Habashi S, Draganov PV. Pancreatic pseudocyst. World J Gastroenterol 2009; 15:38-47.

[8] Yeo CJ, Bastidas JA, Lynch-Nyhan A, Fishman EK, Zinner MJ, Cameron JL. The natural history of pancreatic pseudocysts documented by computed tomography. Surg Gynecol Obstet 1990;170:411-417

[9] Cheruvu CV, Clarke MG, Prentice M, Eyre-Brook IA. Conservative treatment as an option in the management of pancreatic pseudocyst. Ann R Coll Surg Engl 2003;85:313-316

[10] Suga H, Tsuruta O, Okabe Y, Saitoh F, Noda T, Yoshida H, et al. A Case of mediastinal pancreatic pseudocyst successfully treated with somatostatin analogue. Kurume Med J 2005;52:161-164

[11] Yasuda H, Ino Y, Igarashi H, Arita Y, Nakamuta M, Sumii T, et al. A case of pancreatic pleural effusion and mediastinal pancreatic pseudocyst: management by a somatostatin analogue octreotide. Pancreas 1999;19:410-412

[12] Németh AM. Somatostatin in the treatment of pancreatic diseases. Orv Hetil 2002; 143:1099-1108