Massive chylous ascites and transected pancreas secondary to child abuse: successful non-surgical management

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Abstract. A case of massive chylous ascites associated with transection of the pancreas secondary to occult child abuse is presented. Computed tomography and ultrasound demonstrated exquisitely the location and extent of the clinically occult pancreatic injury. Also demonstrated was the complete resolution of the chylous ascites and the resolving and later completely resolved pancreatic injury following non-operative conservative treatment with total parenteral nutrition.

Case report

A 2-year-old black boy presented to the emergency room with progressive abdominal swelling first noted by his foster mother 4 days earlier. On physical examination his abdomen was protuberant but non-tender with an abdominal girth of 55 cm and normal bowel sounds. An abdominal ultrasound (Fig.1) demonstrated massive amounts of free intraperitoneal fluid and a cystic mass 3 x 3½ cm arising from the juncture of the head and body of the pancreas consistent with a pseudocyst. A computerized tomogram (CT) scan (Fig.2), performed the same day, also showed the massive free fluid within the abdomen and pelvis; the pancreas was transected at the neck with separation of the head and uncinate process from the body and tail. The main pancreatic duct within the body and tail was not dilated. Within the lesser sac was a large (4 x 4 cm) fluid collection which indented the posterior wall of the stomach and was posteriorly contiguous with the fracture site. This did not demonstrate a definite wall or capsule and was consistent with a pancreatic fluid collection or early pseudocyst. A skeletal survey revealed a healing metacarpal fracture. Laboratory values included: serum amylase 85 U/l (normal 30-110), serum lipase 435 U/l (normal 22-208), albumin 3.3 g/dl (normal 3.9-5.0), serum cholesterol 122 mg/dl (normal 120-200), triglyceride 186 mg/dl (normal 40-160), Hb 9.4 g/dl, Hct 29.8 %. A paracentesis performed the next day revealed milky fluid consistent with chyle. Laboratory analysis of the fluid revealed: 3900 WBC/mm³ (77 % lymphocytes, 22 % monocytes, 1 % polycytes), triglycerides 2305 mg/dl, protein 3.9 g/dl, amylase 314 U/l.

The chylous ascites was presumed to be traumatic in origin. Because of the child’s stable clinical status, the absence of peritoneal irritation, minimal symptoms, and the assumption that the pancreatic injury was not recent, it was decided to attempt a course of conservative management to treat the chylous ascites prior to any surgical intervention for the pancreatic injury. The child was given nothing by mouth and started on total parenteral nutrition (TPN) with somatostatin added to decrease secretory function of the gastrointestinal tract. During the initial 2 weeks of TPN, ascitic accumulation sufficient to cause tachypnea and respiratory distress necessitated paracentesis every 4 days with removal of 1400 ml of chylous fluid on each of four occasions. However, over the subsequent 4 weeks the ascites gradually decreased and disappeared. The TPN was stopped after a total of 7 weeks and the child was gradually advanced to a regular diet which was tolerated well. The serum lipase (151 U/l) and amylase (53 U/l) were normal. An abdominal ultrasound performed 6 weeks after admission showed complete resolution of the ascites and a marked decrease in the size of the pseudocyst to 0.7 cm. A follow-up abdominal CT (Fig.3) done 8 weeks after admission also showed complete resolution of the ascites with no distinct pseudocyst seen. However, the pancreatic duct was prominent and the continuity of the pancreatic head to body was not clear. An ERCP was contemplated but since the child was tolerating a full regular oral diet and was asymptomatic this was deferred. The child has been followed clinically for over 1 year and remains asymptomatic with normal growth and development. A follow-up abdominal ultrasound done 16 months after initial presentation shows a normal pancreas with clear continuity of the head to the body of the pancreas and no dilatation of the pancreatic duct.

Discussion

Chylous ascites is rare in infants and children. The more common known etiologies of this uncommon entity are congenital abnormalities of the lymphatic system, including stenosis or atresia of the lymphatic vessels, bands associated with malrotation of the midgut causing constriction of the root of the mesentery and obstruction of the mesenteric lymphatics, and chylous cysts of the small bowel mesentery [1]. Other possible causes are enlarged retroperitoneal lymph nodes due to tuberculosis, neoplasm or mesenteric adenitis producing obstruction of mesenteric lymphatic vessels. Trauma to the lymphatics during the course of an operative procedure or damage from blunt trauma can also result in chylous ascites [2]. The latter cause is felt to be the most rare.
The case we report is unusual in that transection of the pancreas at the juncture of the head and body is clearly demonstrated concurrently with massive chylous ascites. Presumably disruption of the intestinal trunk of lymphatics at the root of the mesentery produced the chyle leak into the peritoneal cavity. There was no history of blunt trauma, but the finding of the pancreatic injury undoubtedly meant the child had suffered an unacknowledged blow to the abdomen.

The child had lived with his natural mother until 6 months prior to admission. At that time he was removed from her care by court order because of her drug use and addiction. He was first placed with his natural mother's sister but removed from her after home visits questioned the adequacy of the home. He was placed with his foster mother 3 months prior to admission. Approximately 10 days after being placed in the foster home the child was seen in an emergency room with a black eye and a lump on the forehead. A younger sibling of this child was also placed in the same foster home about the same time and was taken to an emergency room a month after placement with a fractured humerus. However, despite extensive investigation, the child protection services were unable to determine with any certainty where and when the abuse had occurred to the child we report. Upon discharge from the hospital the child was placed in a new foster home.

The child was treated with TPN and all enteral feeds were withheld. This non-operative conservative management is described in the literature with good results. Dillard et al. [3] reported an 8-month-old infant with numerous stigmata of child abuse syndrome and chylous ascites treated with TPN for 3½ weeks; the ascites resolved and a standard mixed diet and formula were introduced gradually without difficulty. Besson et al. [4] reported a 5-year-old girl with numerous bruises all over her body and septic chylous ascites. The ascites disappeared after 9 weeks of TPN, but for the initial 5 weeks the abdominal circumference had remained unchanged. The authors ascribed the slow response to the large amount of ascites; this time frame is similar to that in the present case. Viswanathan et al. [5] described a 16-month-old girl admitted with a distended abdomen and an old ecchymosis noted on the left abdominal wall. Infected chylous fluid was found on paracentesis. Eleven days of attempted dietary management with medium chain triglycerides and a low-fat, high-protein diet failed. TPN was begun and all oral alimentation stopped; 20 days later the abdominal distention was gone and TPN was discontinued. The child was discharged on a normal oral diet without recurrent ascites.

The basal flow rate of chyle through the thoracic duct is 1 ml/kg per hour and as high as 200 ml/kg per hour after a fatty meal [5]. The reasoning behind the TPN management in traumatic chylous ascites is to put the gut at rest and reduce enteric intestinal lymph flow so that the disrupted lymphatic vessels can heal and the chyle leak seal. The nutrition of the child is maintained by the TPN during this time.

The pancreatic transection and pseudocyst demonstrated in our patient was also managed conservatively. This is not the usual practice. Gorenstein et al. [6] reported 21 children with blunt injuries to the pancreas, dividing the patients into those brought to their hospital within 24 h after injury and those brought more