Urgent Whipple resection for solid pseudopapillary tumor of the pancreas

Stojoan Potrc, Rajko Kavalar, Matjaž Horvat, and Eldar Miša Gadžiev

1Department of Abdominal and General Surgery, Teaching Hospital Maribor, Ljubljanska 5, 2000 Maribor, Slovenia
2Department of Pathology, Teaching Hospital Maribor, Maribor, Slovenia

Abstract

We report a 14-year-old boy who was urgently transferred to our institution after blunt abdominal trauma. CT scan and repeated ultrasound examinations revealed a subhepatic mass, which slowly increased in size. Imaging features were not specific enough to permit a precise diagnosis. Because of the positive peritoneal signs and increased signs of circulatory instability, the decision was made to perform an urgent explorative laparotomy. The exploration revealed that the large haematoma-like bleeding mass was a tumor arising from the head of the pancreas, which ruptured on the surface. We performed a curative R0 Whipple resection. Histology of the resected specimen revealed a solid pseudopapillary tumor of the pancreas, an extremely rare tumor predominantly occurring in young and middle-aged women. It has a favorable prognosis if resected radically. The boy is well 30 months after the operation. To our knowledge, there are only two other descriptions of pancreatic solid pseudopapillary tumor in boys treated urgently by Whipple resection because of acute presentation after blunt abdominal trauma.

Key words Solid pseudopapillary tumor · Trauma · Cephalic duodenopancreatectomy

Introduction

Acute presentation of pancreatic tumor as a consequence of blunt abdominal trauma is exceptional. Solid pseudopapillary tumor of the pancreas (SPT) is a rare but distinctive and uncommon neoplasm, predominantly occurring in adolescent and young adult women, representing approximately 1%–2% of exocrine pancreatic tumors.1–5 The origin and biological features of the tumor are still unclear.6,7 We report a 14-year-old boy with SPT of the pancreas that presented acutely after an insignificant blunt abdominal trauma.

Case report

A 14-year-old boy was urgently transferred to our institution after blunt abdominal trauma in a football game 7h earlier. There was no medical history of any complaints or illness. On arrival, the patient was circulatorily stable but complaining of upper abdominal pain. The abdominal wall was asymmetrically elevated in the right upper abdominal region and tender on palpation. Hemoglobin levels, liver function tests, amylase and lipase levels, and the coagulogram were within normal ranges. Ultrasound (US), plain film X-ray of the abdomen, contrast examination of stomach and duodenum, and computed tomography (CT) were performed. We were unable to perform urgent endoscopic retrograde cholangiopancreatography (ERCP) in the early morning hours. Plain film and contrast X-rays of the abdomen showed no signs of free perforation from the alimentary tract. Contrast examination of stomach and duodenum showed disturbed passage of contrast and distension of the duodenal loop (Fig. 1). US examination within 1h after admission showed a subhepatic 8 × 8cm large mass. A peri- or intrapancreatic hematoma was suspected. There was a small amount of fluid in the subhepatic region. On CT examination it was clear that the mass seen on US originated from the pancreatic head. The presented mass seen on CT might be a hematoma and contused pancreatic tissue, but the imaging features were not specific enough to permit a precise diagnosis (Fig. 2). The integrity of the pancreatic duct remained unclear. After 2h we repeated the tests. Hemoglobin levels had dropped from 134 to 108g/l; the amylase and lipase levels were again within normal ranges.

The patient was transferred to the pediatric intensive care unit for further observation. Shortly after admission to pediatric intensive care unit the patient suffered immediate increase of abdominal pain with no improvement after administration of morphine-type analgesic...
Signs of peritoneal irritation became evident. His hemoglobin fell to 100 g/l and blood pressure fell from 120/80 to 90/60. Repeated US examination of the abdomen revealed increase of the mass to 10 × 10 cm, and the pancreatic duct could be followed from the pancreatic tail to the region of mesenteric vessels, where it seemed to be abruptly discontinued, and increased amounts of free fluid were seen in the abdominal cavity. There were several indications for explorative laparotomy: intractable pain and our incapability to exclude perforation of the alimentary tract, drop of hemoglobin and blood pressure values, increasing amount of free fluid in the abdominal cavity, increasing dimensions of the abdominal mass, and unclear observations concerning the pancreatic duct.

During the operation approximately 600 ml blood was evacuated. Exploration revealed a 12 × 12 cm large hematoma-like mass in the region of the pancreatic head as well as a 5 × 5 cm large hematoma in the mesentery of the jejunum extending from the mass in the pancreatic head. There were no other traumatic or pathological changes in the abdominal cavity. After control of bleeding, the hematoma-like mass was opened to evacuate it and accomplish hemostasis. When cutting the pseudocapsule of the mass in the pancreatic head filled with blood, we noticed it was a tumor arising from the head of the pancreas that had ruptured on its surface and bled. Further exploration revealed no clear-cut border between normal pancreatic parenchyma and tumor tissue, so we decided to perform Whipple resection to assure oncological principles of R0 resection as a tumor of these dimensions had a high probability to be malignant. The resected specimen showed a 9 × 6 × 5 cm large tumor in the region of the pancreatic head. The tumor was nonencapsulated but macroscopically well circumscribed. The cut surface was deep red-purple, hemorrhaged, partly solid and partly cystic, focally with a spongy appearance (Fig. 3).

The tumor was composed of small, uniform cells with eosinophilic, fine granular cytoplasm, and their round or oval nuclei were distally located. Characteristically, the tumor cells formed pseudopapillary or microcystic structures, but solid sheets were also present. Tumor cells were arranged around a thin fibrovascular core. There were large areas of fresh hemorrhage. Mitotic figures were very rare. On the periphery, the tumor had infiltrated surrounding pancreatic tissue (Fig. 4). The tumor cells were diffuse vimentin- and neuron-specific enolase (NSE) positive, and negative for neuroendocrine markers (chromogranin, synaptophysin) and cytokeratin markers of low molecular weight (CAM-5, -2). Focally, alpha-1-antitrypsin (AAT) was positive and some cells were also cytokeratin (CK116; Dako) positive (Fig. 5). The histological structure and indirect hemagglutination (IHC) immunoreactivity of the neoplastic cells were typical features of SPT of the pancreas.6–10

The postoperative course was uneventful. On the 16th postoperative day the patient was dismissed from the hospital.