Case Report

Isolated pancreatic injury following blunt abdominal trauma in a child

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Abstract

Pancreatic injury following blunt abdominal trauma is rare as compared to other visceral organs. Isolated injury to the pancreas is even more rare. The clinical presentation is subtle resulting in delayed treatment with high morbidity and mortality. A three-year-old female child presented with vomiting 18h following a motor vehicle accident. She was hemodynamically stable with no external signs of injury. Investigations revealed hyperamylasemia and isolated grade III pancreatic injury. Laparotomy with distal pancreatic resection and splenectomy was done. A high degree of clinical suspicion with due consideration to the mechanism of injury is the key to good outcome in these patients. Major ductal injury is the critical issue in the management and a number of therapeutic choices are available specific to the location of the insult.

Key words: Child, main pancreatic duct, pancreas/injuries, preschool

Introduction

Pancreatic injuries usually results from penetrating trauma. Injuries following blunt abdominal trauma are less common and are frequently associated with other visceral organ injuries. Clinical presentation may be misleading in isolated injuries resulting in delayed diagnosis with resultant high morbidity and mortality.

Case Report

We report a case of a three-year-old female child who presented with the history of being hit (from behind) by a car while playing at the rear end of another stationary car. The patient presented with two episodes of vomiting 18h postinjury. There were no other significant complaints. On examination, the patient was fully conscious and oriented with a pulse-rate of 94 per minute and blood pressure of 100/70 mm Hg. There was pallor. No external marks of injury were seen anywhere on the body. Per-abdominal examination revealed minimal tenderness in the epigastric and umbilical region. Skiagrams of chest and abdomen were normal. Ultra-sonography revealed minimal free fluid in the pelvis with mesenteric thickening. In view of persistent tenderness, serum amylase estimation done and contrast enhanced computerised tomography (CECT) of abdomen was performed. The serum amylase was raised (2378 IU/L for a normal value of 5-40 IU/L). The CECT revealed almost complete transection of distal part of body of pancreas with moderate hemoperitoneum. Immediate exploratory laparotomy revealed more than 90% transection of the body of the pancreas at the junction of medial 2/3rd and lateral 1/3rd with major ductal injury (Grade III injury) [Figure 1]. There were no other associated visceral injuries. Distal pancreatectomy with splenectomy was performed. Surgery was supplemented with medical therapy in the form of antibiotics (ceftriaxone, amikacin and metrogyl), analgesics and H2 blockers for stress ulcer prophylaxis. She was given meningococcal, pneumococcal and Hemophilus influenzae type b vaccine in immediate post-operative period. Enteral nutrition was started on the fourth post-operative day. The patient

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Figure 1: Grade III pancreatic injury in the patient (shown with marker)

made an uneventful recovery and was discharged on 10th post-operative day.

Discussion

Pancreatic injuries are uncommon injuries constituting less than 10% of all abdominal injuries.[1,2] Most of these (70-75%) are caused by penetrating injuries and are associated with injuries to other viscera like spleen, duodenum, liver, kidney, inferior vena cava, aorta or portal vein.[1] Isolated pancreatic injuries are extremely rare.

Pancreatic injuries in blunt abdominal trauma are caused due to crushing of the pancreas between the vertebral column and another surface.[1] These represent a major diagnostic challenge. Retroperitoneal location of pancreas combined with reduced secretion and inactivity of pancreatic enzymes following injury may account for paucity of early physical signs.[3] This carries significant morbidity and mortality due to delay in diagnosis and treatment.[4] Early deaths are from hemorrhage and late deaths are from infection.[1] Diagnosis requires high degree of suspicion.[1,4] Usually the initial complaints are vague and nonspecific. The patient presents with mid-epigastric or back-pain six to 24h after the injury. Physical signs include mid-epigastric tenderness in the early and frank peritonitis in late presentation.[1] Serum hyperamylasemia is neither sensitive nor specific.[1,2] Ultrasonography is moderately sensitive in expert hands with a reported sensitivity of 44%.[5] Diagnosis is usually made by abdominal CT scan which has a reported sensitivity up to 68%.[6] Complete or more than 50% pancreatic transection on CT is usually associated with major ductal injury which mandates early surgery.[7] Endoscopic retrograde cholangiopancreatography (ERCP)/ magnetic resonance cholangiopancreatography (MRCP) can be used to diagnose pancreatic ductal injuries in hemodynamically stable patients. Identification of injury to major pancreatic duct is a critical issue in intra-operative management of these injuries.[1,8]

Pancreatic injuries are graded as minor and major contusions and lacerations without ductal injury (Grade I and II), distal transection with major ductal injury (Grade III), proximal transection with major ductal injury (Grade IV) and major pancreatic head disruption (Grade V) [Figure 2]. Treatment of grade I and II injuries includes either conservative treatment especially in pediatric patients or wide drainage. Grade III injuries are best treated with distal pancreatectomy with or without splenectomy. A variety of procedures are described for grade IV and V injuries ranging from Roux en Y pancreatico-jejunostomy, pancreatico-gastrostomy, pyloric exclusion, duodenal diverticulization and pancreatico-duodenectomy.[1,4,8] Recently stenting of the injured pancreatic duct with endoscopic retrograde pancreatography (ERP) has been shown to be effective.[9]

Complications after pancreatic injuries include pancreatic fistula, pancreatic or intraabdominal abscess, pancreatitis and pseudocyst. These complications may present at variable periods following pancreatic injuries ranging from days to years. Majority of complications

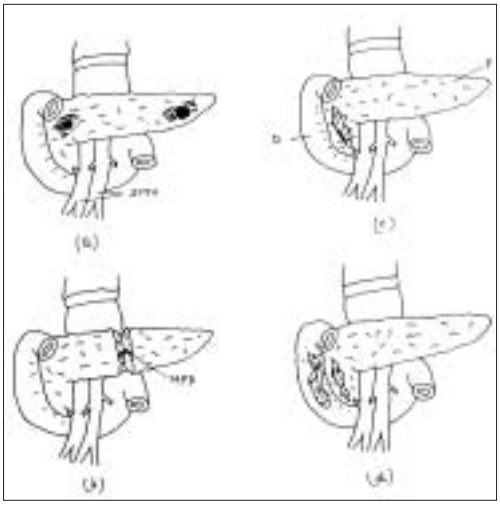

Figure 2: Diagrammatic representation of grades of pancreatic injuries (a) Grade I, II (b) Grade III (c) Grade IV (d) Grade V {SMV-Superior mesenteric vessels, P-pancreas, D-duodenum}

related to pancreatic injuries are self limiting or treatable but development of sepsis and multisystem organ failure results in most of the late deaths. Post-operative hemorrhage requiring blood transfusion may develop following inadequate external drainage after pancreatic debridement or development of intra-abdominal infection.[10] This usually requires re-operation for control. Exocrine and endocrine insufficiency is unusual complications after pancreatic trauma.

Morbidity and mortality from pancreatic injuries are high. As clinical presentation usually is subtle a high index of suspicion is required when the patient has suffered from force vector in antero-posterior direction of abdominal cavity. An optimal strategy consisting of CT abdomen and serial serum amylase estimation supplemented with ERP should be planned to make timely diagnosis.

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