



Isolated Pancreatic Injury in Case of Blunt Trauma Abdomen

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Abstract

A 25 year old man presented three days after an episode of blunt trauma abdomen (cycle handle injury) with complaint of abdominal pain and vomiting. At admission he had tachycardia, tenderness in epigastrium, and increase serum amylase. USG showed pancreatic swelling and free fluid in abdomen. CECT abdomen could not be performed. Exploratory laparotomy revealed pancreatic injury with slough. Capsulorrhaphy with drainage of lesser sac was done. Postoperatively he did not relieved, then CECT abdomen done on 8th postoperative day showed transaction of pancreas at neck. Relaparotomy with necrosectomy with drainage was done on next day. Distal pancreatectomy could not be performed due to edema. Patient was discharged with drain in situ draining 400 ml of clear fluid and again operated 2 months later. Distal pancreatectomy with splenectomy was done, patient was discharged uneventfully.

Key Words

Pancreatic Injury, Abdomenal Trauma

Introduction

Isolated pancreatic injury due to blunt trauma abdomen are rare (<1% of total abdominal injuries). Patient usually presents late and having minimal symptoms and signs. But if clinical suspicion is high it can be diagnosed by typical history of trauma and investigations. CECT abdomen is gold standard and should always be done before operation if other injuries have been ruled out and patient's condition permits. Treatment is surgical. We present this case due to typical mode of trauma (a trivial looking trauma can cause such a major injury), late presentation, minimal signs and role of CT scan, as without preoperative CECT abdomen it is very difficult to recognise even major pancreatic or ductal injury intraoperatively.

Case Report

A 25 year old man presented in surgical emergency 3 days after blunt trauma abdomen with chief complaints of increased abdominal pain since trauma with a few episodes of vomiting. Mode of trauma was slippage of bicycle and its handle was struck into his epigastrium. On examination he was conscious, oriented with

tachycardia and increased respiratory rate. Chest was bilaterally clear and in abdomen there was no external mark of injury, it only showed marked tenderness in epigastrium. His Hb was 10.7 g% and TLC was 14000/mm³, serum amylase was 1565 IU/l, X-ray abdomen showed no free gas under diaphragm. USG abdomen showed pancreatic swelling and free fluid in abdomen. CECT abdomen could not be performed due to some technical reason. During next 24 hours patient had increase in pulse rate and signs of diffused peritonitis became apparent. So exploratory was done on 4th day (2nd day of admission) after trauma, which showed injury in the pancreas at level of neck and no ductal injury was appreciated intraoperatively. Other viscera were normal and about 1 litre of free fluid was present in peritoneal cavity. Peritoneal lavage with capsulorrhaphy and drainage of lesser sac was done. Postoperatively patient was not relieved, he had progressive abdominal distension, vomiting and draining 1000-1200 ml of fluid from drain daily. CECT done on 8th postop day which showed pancreatic transaction at junction of head and

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body, peripancreatic fluid collection, portal vein thrombosis with mild splenomegaly (Fig. 1).

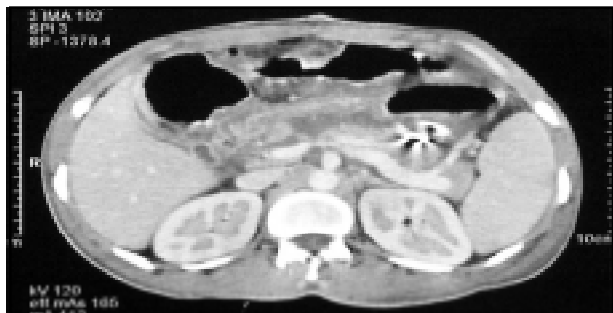


Fig 1

Relaparotomy was done on next day (9th postop day) which showed acute inflamed pancreas with massive vascular adhesions and fat necrosis around it. Peritoneal lavage with debridement of all necrotic fatty tissue with drainage of lesser sac was done. Intention was distal pancreatectomy which could not be performed. Postoperative course was uneventful and patient was discharged on 20th postoperative day with a drain in situ which was draining 400-500 ml of fluid daily.

Patient readmitted after 2 months with clinical diagnosis of high output simple pancreatic fistula which was draining about 400 ml of clear fluid daily. Repeat CT showed atrophy and fatty replacement of body and tail of pancreas, dilated MPD in body and tail region, loculated collection in lesser sac with splenomegaly (Fig. 2). Third surgery was done which showed dense adhesion around pancreas with splenomegaly. Distal pancreatectomy, splenectomy and drainage of lesser sac was done. Postoperative course was remarkably uneventful. Drain stopped draining any fluid on 3rd postoperative day and patient discharged on 6th postoperative day. On follow up he was asymptomatic.



Fig 2

Discussion

Isolated pancreatic injuries are rare. They are fewer than 2% of all patients with abdominal trauma. Penetrating injuries are three to four times more common than blunt injuries(1). Pancreatic injuries are usually associated with injuries to adjacent organ and major vascular structure. Mortality from penetrating trauma due to stab is 5-10% and from gun shot is about 50% and due to blunt trauma it is about 15-50%. Mostly death is result from the hemorrhage from nearby vascular structures(2). Second most common cause of death is delayed mortality from intra-abdominal sepsis.

Modes of isolated injury of pancreas in blunt trauma abdomen are - steering wheel injury (vertebra column act as a fulcrum), seat belt injury, cycle handle injury and direct blow in the epigastrium.

Pancreatic injury associated with injury to solid organ as liver, spleen or hollow viscera may present with signs of obvious hypovolemia or peritonitis requiring surgical

Classification (based on CECT abdomen)

Grade	am em	
d	Hematoma	dddttd
	eddtdd	eddedtdttd
d	Hematoma	addtdttd
	eddtdd	addtdtdttd
d	eddtdd	tdedtdttd
d	eddtdd	ddadtdtd
d	eddtdd	ddtdtd

exploration. In contrast patients of isolated pancreatic injury usually present late and difficult to diagnose. Typical mode of trauma is the clue and high index of suspicion is required to diagnose the pancreatic injury(3). They present with mild epigastric pain and abdominal tenderness with otherwise unimpressive physical finding. Increased hematocrit and TLC and absent psoas shadow in plain x-ray abdomen are non-specific findings. Serum amylase is increased in 90% case of pancreatic trauma but may increase in 50% cases of trauma not associated with pancreatic injury. CECT abdomen is the gold standard and should be done in the all cases of suspected isolated pancreatic trauma. But sometimes it cannot differentiate between grade II and grade III injury when there is minor ductal injury or it can miss a minor pancreatic injury when done early (within 4-6 hours of



trauma) (4). ERCP is an invasive procedure and helps to differentiate between grade II and grade III injury and it is not available everywhere in emergency, but if pancreatic ductal injury is suspected, ERCP is valuable in providing a definitive diagnosis thereby directing treatment because pancreatic ductal injury is a major determinant of complications and outcome(5).

Differentiation between grade II and grade III injuries is most difficult. It can be done preoperatively by ERCP(5) or CECT abdomen (in cases of pancreatic fracture). Intraoperatively, findings that suggest ductal injury are early local fat necrosis, anatomical location of injury that encompasses the normal location of duct (near upper border) and continued accumulation of clear fluid in the area of injury. Duct cannulation can be done either through ampulla, by small duodenotomy or but it creates another wound in the area of injury or through distal duct by splenectomy with resection of tail.

After initial resuscitation, patient can be managed by conservative management if there is only pancreatic injury (other injuries excluded) with stable vital signs and can be observed by lab investigations like hematocrit, TLC, DLC, serial serum amylase and CECT abdomen. The aims of operative management are - to control hemorrhage, treatment of other associated injuries, debridement of non-viable tissues, preservation of maximal viable tissues and adequate drainage of exocrine pancreas(6).

Grade I injuries can be managed by lavage and external drainage only. Grade II injuries - cautious debridement of devitalised tissue, capsulorrhaphy and external drainage. Grade III injuries - distal pancreatectomy with or without splenectomy, pancreatic duct stenting, Roux-en-Y pancreaticojejunostomy to distal pancreatic remnant (not recommended now a days due to having two additional anastomosis, so chances of leakage are more). If we cannot differentiate between grade II and grade III injuries by preoperative workup or intraoperatively but the suspicion is high assuming an pancreatic ductal injury, distal pancreatectomy with or without splenectomy should be done(7).

Grade-IV & V injuries are usually associated with duodenal injuries and can be managed by - serosal patch repair of duodenal wall with pancreatic head drainage, duodenal decompression with triple-tube intubation,

duodenal diverticulization or pancreaticoduodenectomy.

Mortality related factors are - management of associated injury, condition of the patient before operation, length of operation, overall blood loss and experience of the surgeon. Patient requiring delayed surgical intervention after an unsuccessful period of observation or a subsequent operation due to undetected ductal injury demonstrated a higher rate of pancreatic specific mortality and morbidity(8).

In complications such as fistula formation, abscess pseudocyst, secondary hemorrhage, pancreatitis, biliary fistula and exocrine or endocrine insufficiency can be managed with individual approach(9).

Isolated pancreatic injuries are rare in blunt trauma abdomen, patient usually present late, can be diagnosed if suspicion is high, mode of trauma and CECT abdomen. If one cannot diagnose the exact grade of injury preoperatively or intraoperatively, conservative surgery is the best option but in appropriately selected patients, pancreatic resection can be performed with good results(10).

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