Pancreatic Transection: An Unusual Youth Soccer Injury

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PANCREATIC INJURIES occur in 2–12% of all cases of abdominal trauma.1,2 The morbidity stemming from these injuries is quite significant, and reported mortality rates range from 16–20%.3 Typically, injuries to the pancreas in children occur in motor vehicle or handlebar accidents; however, several case reports exist regarding blunt abdominal trauma leading to pancreatic injury in soccer players.1-3 With over 200 million registered players, soccer is now the most popular sport world-wide and, quite often, the athletic trainer is the first person to evaluate the injured athlete. Therefore, recognition of pancreatic injury in the differential diagnosis of blunt abdominal trauma is important for the athletic trainer. This report reviews a case of pancreatic traumatic injury to a teen-aged competitive soccer player and discusses pancreatic trauma and concerns that may be faced by athletic trainers in dealing with this type of injury.

History

A sixteen year-old female goalie was struck in the abdomen by an opposing player’s knee while defending a shot. The patient complained of immediate epigastric pain and was unable to return to the game (Figure 1). She was transported to the nearest emergency room where she was diagnosed with abdominal wall trauma and was discharged home that evening. The pain continued to increase and was associated with nausea and vomiting. The patient returned to an emergency room in her home town where
an abdominal CT scan and magnetic resonance cholangiopancreatography (MRCP) revealed a proximal pancreatic injury, but the duct was not well visualized (Figure 2). She was then transferred by ambulance to a trauma center for surgical evaluation.

The areas labeled A show the lighter stippled appearance of edematous and injured head/body pancreas. The areas labeled B show the normal appearance of pancreatic tissue on enhanced CT.

Exam Findings and Further Tests
Physical examination revealed a mildly distended abdomen and moderate tenderness to palpation in the epigastrium and left upper quadrant. Bowel sounds were present and no guarding or rebound tenderness was noted. An abnormal laboratory serum test included an elevated WBC (17,200), a minimally elevated aspartate aminotransferase (42 IU/L), generally abbreviated AST, and an elevated amylase (725 IU/L; Figure 3). AST and amylase are found in abundance in the pancreas and are absorbed in the serum when the pancreas is injured or inflamed, thus assisting in a diagnosis.

<table>
<thead>
<tr>
<th>Normal</th>
<th>Findings</th>
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<tbody>
<tr>
<td>White Blood Cell</td>
<td>4300-10,800 mm³</td>
</tr>
<tr>
<td>Aspartate (AST)</td>
<td>0-35 IU/L</td>
</tr>
<tr>
<td>Amylase</td>
<td>60-180 IU/L</td>
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Treatment
Due to inability to define ductal anatomy and the obvious proximal pancreatic injury, the patient was taken to surgery for exploratory laparoscopy that same night. Laparoscopy revealed a partial transection of the junction of the head and body of the pancreas, but due to edema, the duct was still not well visualized. Therefore, a laparotomy was performed. The transected portion of the pancreas was repaired and two large drains were inserted. Her postoperative course was complicated by superficial wound infection, pancreatic pseudocyst, and an abdominal wound abscess requiring operative irrigation and debridement.

Resolution/ Case Outcome
The patient was unable to complete the season in which the injury occurred. She underwent two additional surgeries, one due to infection and a second due to a fistula. Activity was restricted until she recovered from the infection and surgeries. She was then allowed to progress to full activity without restrictions. She was able to compete the next season, her senior year, without another incidence of injury or illness.

Discussion
Most injuries seen by an athletic trainer will be orthopedic in nature; however, studies have demonstrated that 10% of all abdominal injuries result from sport-related accidents. Davis et al. reported that 7% of sport-related injuries requiring hospitalization involved the abdomen. To our knowledge only three other case reports have documented pancreatic injury due to athletic trauma.

Although relatively uncommon, pediatric patients sustaining pancreatic injuries have mortality rates reported to be as high as 8–10%. Pancreatic injuries carry significant morbidity with associated injuries often found in major vessels, liver, spleen, and duodenum. Children, due to their flat diaphragms and high costal margins, can have isolated pancreatic injuries more frequently than adults do. Poorly developed abdominal musculature and relatively thin abdominal walls further leave the pediatric pancreas unprotected. Takishima et al. have reported that isolated pancreatic injury occurred at a rate of 62.5% in pediatric patients with blunt abdominal trauma, whereas adults had injury rates of only 15.3%.

The difficulty with pancreatic injuries is that the diagnosis is not always easily made. Hypotension, tachycardia, and/or other vital sign abnormalities are often absent. Thus, normal vital signs could lead the athletic trainer into a false sense that the athlete’s injury is benign. Furthermore, pain with intra-abdominal injuries is often a muscle spasm and diffuse in nature. This is especially true with pancreatic injuries where the pain is typically nondescript and difficult to localize. In fact, the retroperitoneal location of the pancreas can often be the cause of minimal abdominal tenderness.

Figure 2 Abdominal CT scan and magnetic resonance cholangiopancreatography (MRCP).