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Pancreatic Injury in Children: A Case Report and Review of the Literature

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Abstract **Case Report**

Context Isolated traumatic injuries to the pancreas are extremely unusual and diagnosis may be difficult due to delay in presentation and subtlety of symptoms. Case report We describe a patient who presented 72 hours after sustaining blunt abdominal trauma and was found to have a complete pancreatic corporeal transection on computed tomography with no other injuries. The patient underwent clinical, biological and radological monitoring and he has recovered well. Pancreatic transection in the absence of associated injuries is rarely seen after blunt trauma but can result in devastating outcomes if left unrecognized. A high index of suspicion are critical.

Keywords: Pancreas; traumatic; Wounds and Injuries.

INTRODUCTION

Isolated injuries to the pancreas as a result of blunt trauma are rare. Because of its retroperitoneal location, signs and symptoms from this organ can be subtle making prompt diagnosis a challenge. While surgical intervention is often mandatory, postoperative sequelae are common, especially in the setting of diffuse inflammatory and hemorrhagic changes encountered with a delay in treatment [1]. We report the case of a patient who presented with a complete pancreatic corporeal transection seventy-two hours after injury. Despite extensive inflammation,he recovered well, highlighting the importance of early recognition and expeditious mana gement for this unusual problem.

CASE REPORT

A 11-year-old presented to the emergency room with worsening abdominal pain after sustaining a strong blow from an handelbars the 72 hours before. He deferred medical attention at the time but over the next 24 hours developed severe pain along with the inability to tolerate food or water. On presentation, the patient was afebrile with normal vital signs but on exam appeared in moderate distress. His abdomen was soft and mildly distended with diffuse tenderness, most prominent over the epigastrium, and localized rebound and guarding.

Ultrasound of abdomen demonstrated moderately abundant peritoneal effusion and pancréatic elargement.

Laboratory studies were significant for a lipase elevation2590 U/L, >3 times the upper limit of normal.

Computed tomography of abdomen and pelvis demonstrated a tow transection at the corporeal of the pancreas with large amounts of high attenuation free fluid and no other injuries (Figures 1 and 2) an extensive inflammatory changes in pancreas and peripancreatis fat which encompassed the entire omentum and lesser sac.

Treatment is largely supportive, often requiring ICU care in severe cases for respiratory and cardiovascular support and careful management of glucose, calcium, and fluid balance. The treatement include aggressive fluid resuscitation in the first 24 hours, no need for prophylactic antibiotics and enteral feeding strongly preferred over parenteral feeding, especially clinical and biological monitoring.

The patient's hospital course was uneventful and he was discharged home on day five, tolerating a diet.

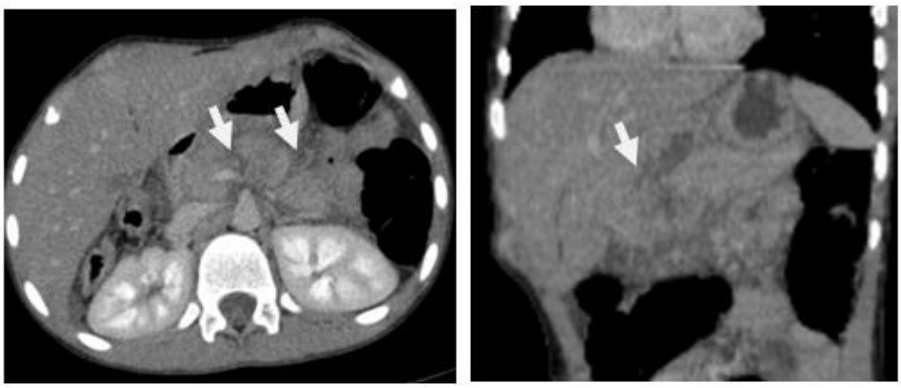

Figure 1: Contrast-enhanced CT scan of abdomen and pelvis demonstrating transection at the junction of the pancreatic neck and body (arrows)

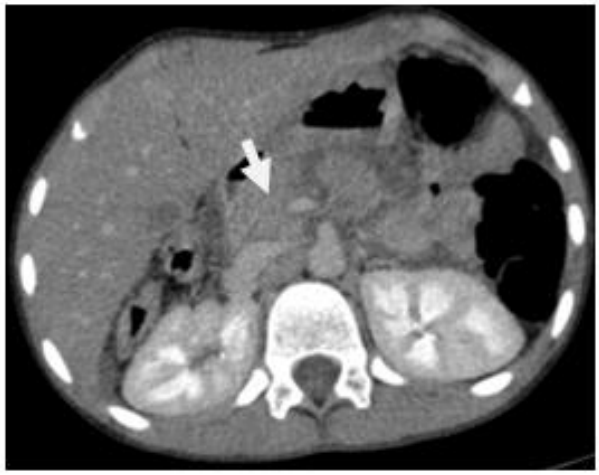

Figure 2: Large amount of high attenuation fluid in the lesser sac and around the pancreas consistent with hemorrhagic reaction (arrows)

DISCUSSION

Injuries to the pancreas are rare, occurring in approximately 5% of patients with blunt abdominal trauma and 2-6% of patients with penetrating wounds [2]. Regardless of mechanism, isolated injury is a particularly unusual phenomenon as the pancreas sits in close proximity to multiple susceptible structures. Blunt trauma most often results from a direct blow to the epigastrium, as in this patient, causing the corporeal of the pancreas to be crushed against the spine, just to the left of the portal vein and superior mesenteric vessels. Because of its retroperitoneal location, initial signs and symptoms may be subtle which can lead to delayed or missed diagnosis.

Helical contrast-enhanced CT scan is the initial imaging study of choice for detection of pancreatic injury in a stable patient. Reported sensitivity and specificity rates are as high as 80%, with suspicious findings including peripancreatic hematoma, fluid in the lesser sac or retroperitoneum, and thickening of the anterior Gerota's fascia [2, 3]. ERCP is indicated in the case of an equivocal CT to confirm continuity of the main pancreatic duct or for the placement of stents in carefully selected patients.

While small contusions may be amenable to observation, most injuries require operative exploration, especially in the setting of peritonitis or hemodynamic instability. Management is dictated by three factors: anatomic location of the injury, status of the major duct, and degree of parenchymal damage. External drainage alone is recommended for minor lacerations as well as injuries to the pancreatic head when the ampulla is preserved. If there is ampullary disruption with extensive devitalization, a pancreaticoduodenectomy is usually necessary [4].

Injuries to the neck, body, or tail with ductal disruption or transection of more than half the width of the pancreas, as in this case, are most commonly treated with distal pancreatectomy [2, 4]. While some authors recommend an attempt at splenic preservation in stable patients [5, 6], others find this task too time-consuming with no proven benefit in the adult trauma setting [3, 7, 8]. In addition, the extensive inflammation encountered in cases of delayed treatment, such as we describe, makes this even more difficult and is a commonly cited reason for performing splenectomy [1, 2, 5].

Preservation of the pancreatic tail, either by primary duct repair or distal pancreaticojejunostomy, has also been described [9, 10]. This is most appropriate for patients with injury to the right of the mesenteric vessels, where complete resection can lead to endocrine compromise in up to 50% of patients [2].

Management of the pancreatic stump after distal resection is controversial. Numerous techniques are described in the literature including duct ligation, handsewn or stapled closure, ultrasonic dissection, meshes and omental patches, as well as biologic glues and other sealants. No method has proven superior for preventing postoperative fistulas or leaks [11, 12, 13]. Roux-en-Y pancreaticoenterostomy is another option but many believe the complexity of this procedure as well as reportedly higher leak rates make this unsuitable for traumatic injury [1, 3].

Postoperative complications occur in approximately 20-40% of patients but are generally self-limited and readily treatable [3]. The most common infectious complication is intra-abdominal abscess which mainly occurs in higher grade injuries and nearly always resolves with percutaneous drainage. Other potential sequelae include pancreatic fistula, pseudocyst, and, rarely, posttraumatic pancreatitis [2]. The integrity of the main pancreatic duct is the most important determinant of outcome. However, the timing of diagnosis and management are also significant as any delay can be associated with a higher risk of mortality and a nearly six-fold increase in postoperative morbidity according to one report [10].

However, the treatment varies according to the type of lesion, ranging from simple monitoring- as it did in this case- and a surgical setting to the exceptional cephalic duodeno-pancreatectomy. In the absence of a root canal lesion and associated lesion, non-operative treatment is indicated.

CONCLUSION

Pancreatic injury is uncommon and usually difficult to diagnose. Because of the subtlety of the ultrasound findings, computed tomography is the preferred method for evaluating suspected pancreatic trauma; however, pancreatic duct injury may not be detected on computed tomography scan except when there is through and through laceration. In select situations, including minor injuries, a conservative approach may be successful.

REFERENCES

1. Lin, B. C., Chen, R. J., Fang, J. F., Hsu, Y. P., Kao, Y. C., & Kao, J. L. (2004). Management of blunt major pancreatic injury. *Journal of Trauma and Acute Care Surgery*, *56*(4), 774-778.
2. Rickard, M. J., Brohi, K., & Bautz, P. C. (2005). Pancreatic and duodenal injuries: keep it simple. *ANZ journal of surgery*, *75*(7), 581-586.
3. Degiannis, E., Glapa, M., Loukogeorgakis, S. P., & Smith, M. D. (2008). Management of pancreatic trauma. *Injury*, *39*(1), 21-29.
4. Krige, J. E. J., Beningfield, S. J., Nicol, A. J., & Navsaria, P. (2005). The management of complex pancreatic injuries. *South African Journal of Surgery*, *43*(3), 92-102.
5. Knaebel, H. P., Diener, M. K., Wente, M. N., Büchler, M. W., & Seiler, C. M. (2005). Systematic review and meta-analysis of technique for closure of the pancreatic remnant after distal pancreatectomy. *Journal of British Surgery*, *92*(5), 539-546.
6. Kolar, I. (2005). One early and three delayed distal pancreatectomies without splenectomy and with preservation of the splenic vessels after traumatic transection of the distal pancreas in children. *European journal of pediatric surgery*, *15*(02), 132-136.
7. Kimura, W., Inoue, T., Futakawa, N., Shinkai, H., Han, I., & Muto, T. (1996). Spleen-preserving distal pancreatectomy with conservation of the splenic artery and vein. *Surgery*, *120*(5), 885-890.
8. El-Boghdadly, S., Al-Yousef, Z., & Al Bedah, K. (2000). Pancreatic injury: an audit and a practical approach. *Annals of The Royal College of Surgeons of England*, *82*(4), 258-262.
9. Aucar, J. A., & Losanoff, J. E. (2004). Primary repair of blunt pancreatic transection. *Injury*, *35*(1), 29-34.
10. Bridoux, V., Khalil, H., Foulatier, O., Mezghani, J., Tapon, E., & Scotte, M. (2007). Conservative surgical treatment after complete pancreatic neck rupture. *Journal de chirurgie*, *144*(2), 153-155.
11. Zhou, W., Lv, R., Wang, X., Mou, Y., Cai, X., & Herr, I. (2010). Stapler vs suture closure of pancreatic remnant after distal pancreatectomy: a meta-analysis. *The American Journal of Surgery*, *200*(4), 529-536.
12. Subramanian, A., Dente, C. J., & Feliciano, D. V. (2007). The management of pancreatic trauma in the modern era. *Surgical Clinics of North America*, *87*(6), 1515-1532.
13. Knaebel, H. P., Diener, M. K., Wente, M. N., Büchler, M. W., & Seiler, C. M. (2005). Systematic review and meta-analysis of technique for closure of the pancreatic remnant after distal pancreatectomy. *Journal of British Surgery*, *92*(5), 539-546.