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Post-Splenectomy Multiple Pancreatic Pseudocysts

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ABSTRACT

A patient was admitted for breathlessness associated with post-splenectomy multiple pseudocysts and succumbed after internal drainage of the pseudocyst. Although the occurrence of pseudocyst following splenectomy is uncommon, failure to identify and treat this condition at an early stage could result in fatal consequences. Imaging plays an important role in the diagnosis and management of pseudocyst occurring after splenectomy. The advent of interventional radiology has provided better treatment option for patients with solitary pancreatic pseudocysts with success rates similar to those with open surgery but with lower morbidity and mortality rates. However, its role in the management of multiple pseudocysts remains to be defined.

Keywords: splenectomy, multiple pancreatic pseudocysts, ultrasound, computerised tomography (CT), magnetic resonance imaging (MRI), interventional radiology.

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CASE REPORT

A 45-year-old Chinese lady presented with a ten-day history of breathlessness and upper abdominal discomfort. There was no history of trauma, fever or similar problem in the past. There was no appetite or weight loss. She was a nonsmoker and a tee-toiler. There was no previous medical illness. A splenectomy was performed for immune thrombocytopaenia two months previously with uneventful post-operative period. Physical examination revealed respiratory rate of 30/min with normal blood pressure and pulse. The breath sound was reduced over the left lung base. The abdomen examination showed tenderness in the left hypochondrium and a questionable mass lesion. The haematological and biochemical investigations were unremarkable. The serum amylase levels were repeatedly normal. An arterial blood gas test showed hypoxaemia with PO2 of 66 mmHg. Ultrasound was performed to investigate the abdominal mass followed by a computerised tomography (CT) to better delineate the mass.

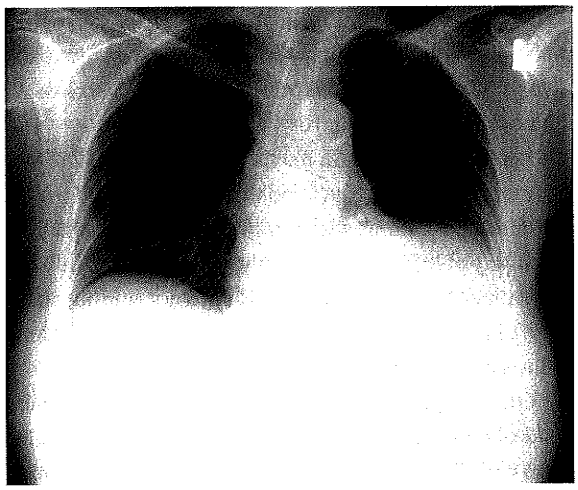

Fig. 1 Frontal chest radiograph.

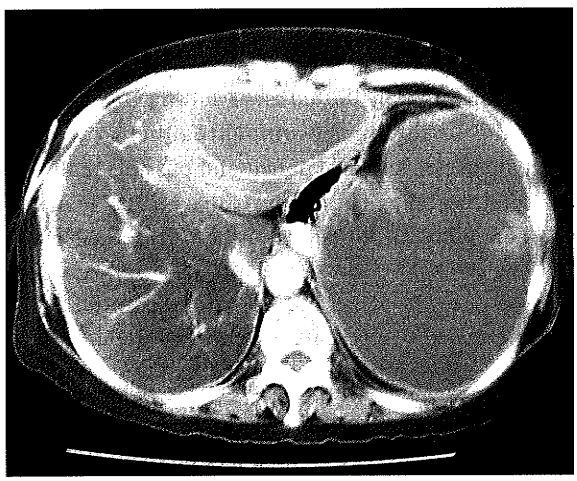

Fig. 2 Enhanced CT of the upper abdomen. Posterior wall of the stomach (P) is marked.

What do the chest radiograph (Fig. 1) and CT scan (Fig. 2) show? What is the diagnosis and what is the treatment for this condition?

IMAGE INTERPRETATION

The chest radiograph (Fig. 1) shows opacity in the left lower zone with obliteration of the left hemidiaghram. CT of the thorax confirmed consolidation of the

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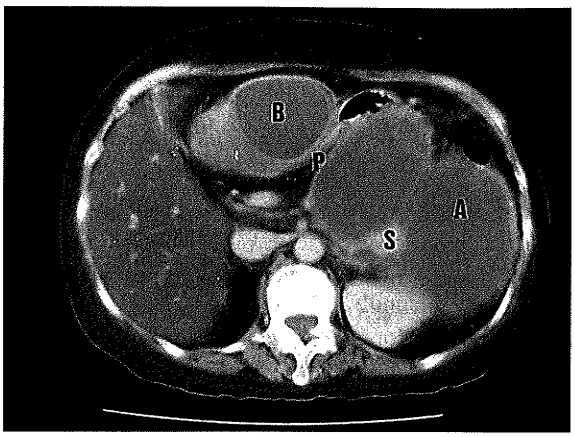

Fig. 3 Enhanced CT of the upper abdomen (10 mm caudal to Fig. 2). A large hypodense lesion (A), measuring 10x15 cm is visible in the left subphrenic space encasing the splenic vein (S) and indented the posterior wall of the stomach (P), while a smaller lesion (B) measuring 9x4 cm is evident in the epigastrium region.

lower lung base and absence of pleural effusion. Enhanced CT of the abdomen demonstrates two well-defined hypodense collections with a thin non enhancing rim capsule (Fig 2). The larger lesion, measuring 10x15 cm, is visible in the left subphrenic space encasing the splenic vein and indented the posterior wall of the stomach, while a smaller lesion measuring 9x4 cm is evident in the epigastrium region (Fig. 3). No normal looking pancreas is visualised and there is no ascites.

DIAGNOSIS

Post-splenectomy multiple pancreatic pseudocysts

CLINICAL COURSE

Aspiration of the pseudocyst via cystgastrostomy yielded greenish fluid with raised amylase level at 980 U/L. Culture of the fluid revealed no organism. Histological examination of the cyst wall showed haemorrhagic and necrotic fibrocollagenous tissue with attached gastric mucosa. There was no evidence of malignancy. The patient developed multi-resistant klebsiella septicaemia, disseminated intravascular coagulopathy and acute renal failure following the laparotomy and subsequently died 3 days after surgery.

DISCUSSION

Owing to the advances in pancreatic imaging, cystic lesions of the pancreas are being recognised with increasing frequency. These lesions are best imaged by CT, where they are seen as well-circumscribed, round or oval encapsulated, low-density collections with a thin, nonenhancing rim or a fibrous capsule. A pancreatic pseudocyst is fluid-filled cystic structure without a true epithelial lining that is associated with the pancreas or pancreatic duct. The common causes are ethanol-related chronic pancreatitis, biliary and post-traumatic pancreatitis. In this patient who had no risk factors for pancreatitis, the splenectomy could have resulted in the formation of pseudocyst. The occurrence of a fluid collection in the left subphrenic space immediately after splenectomy is not common but not unexpected, as it can be associated with pancreatic injury[1]. The configuration, location and vascular supply of the tail of the pancreas explain this postoperative complication. The size of the pseudocyst depends on the degree of injury. Failure to diagnose this complication promptly may lead to the development of a subphrenic abscess or a pancreatic pseudocyst. The natural history of this problem has become clearer with the advent of ultrasound and CT. Ultrasound plays a major role in the evaluation of mass lesions in the postoperative period. Diagnostic pitfalls may occur in post-splenectomy cases when stomach and bowel loops settle into the splenic fossa and simulate mass lesions. While true masses such as subphrenic abscess and pancreatic pseudocysts are essentially unchanging in appearance or location when scanned in varying patient positions, pseudomasses of stomach or bowel loops often do change[2]. Ultrasound and CT are helpful in diagnosing pseudocysts as well as providing guidance for subsequent drainage[3]. Pseudocysts have to be differentiated from neoplastic or congenital pancreatic cystic lesions. A presumptive diagnosis of "pseudocyst", based upon CT appearance alone, will prove to be in error in as many as one-third of patients'[4]. Neoplastic cysts of the pancreas are particularly susceptible to this misdiagnosis, which can result in inappropriate drainage rather than resection. Using a combination of historical features and CT, the differential diagnosis between pseudocysts and cystic neoplasm can usually be made. In borderline cases, transcutaneous aspiration for cytology, and analysis of the cyst fluid for neoplastic markers may prove helpful. Final resolution of doubtful cases is achieved by biopsy of the cyst wall.

Multiple pseudocysts are reported to occur in 3% to 15% of patients with pancreatic pseudocyst[5-8]. Multiple pancreatic pseudocysts present a variety of diagnostic and therapeutic challenges. The clinical characteristics, the accuracy of imaging techniques and the optimum treatment of multiple pseudocysts have received little attention in the literature[5-8]. Elevated serum amylase levels did not consistently differentiate multiple from solitary pseudocyst[9]. Therefore, imaging studies appear to be the only method to identify patients with multiple pseudocysts preoperatively. Currently, CT is the imaging modality of choice for evaluation of suspected pseudocyst lesions and in pre-operative preparation of pseudocyst drainage. The overall

accuracy of CT in the diagnosis of solitary pancreatic pseudocyst has been reported to range from 88 to 94%[10]. However, it underestimated the number of pseudocysts in as many as 20% of patients with multiple pseudocysts[7,9,11]. Unrecognised multiple pseudocysts may contribute to failures found with nonsurgical methods of drainage. The accuracy of CT may be lower in complicated cases of pancreatic disease due to large amounts of inflammation or when very thin walls of cyst oppose each other making differentiation difficult. Demonstration of pancreatic fluid collections prior to intervention with magnetic resonance imaging (MRI), has recently been described[12]. A collection was defined as "not drainable" on the basis of the depiction of solid necrotic debris more than 1 cm in diameter. Statistically significant differences between sensitivity and specific values, respectively, were found for the prediction of actual drainability: MRI, 100% and 100%; CT, 25% and 100%; US, 88% and 54%. These findings suggest that predrainage MRI should be performed in patients with subacute pancreatic collections to avoid infectious complications from unrecognised necrotic debris that cannot be removed with the use of standard pseudocyst drainage techniques. Generally, a pancreatic pseudocyst can be observed for a period of weeks or months in an effort to allow for spontaneous resolution. Half or more of pseudocysts resolve spontaneously without complication. Pseudocyst size greater than 5 cm, the presence of multilocular or debris-filled pseudocyst, and chronicity are all factors that are associated with a lower probability of spontaneous resolution. Indications for drainage include increasing size, infection, gastrointestinal obstruction, haemorrhage, spontaneous rupture and failure to resolve. In the case of solitary pseudocyst, simple aspiration is performed if the aspirate is sterile. Catheter drainage is recommended if the aspirate is infected and open surgical drainage is necessary when complications develop[13]. Percutaneous drainage was uniformly unsuccessful as definitive therapy for multiple pseudocysts and should be used as a temporizing measure. Its role as an adjunct to operative therapy remains to be defined[9]. Internal drainage is the gold standard for the elective therapy of multiple pancreatic pseudocysts[5,6,14]. The type of internal drainage procedure depends on the location of the pseudocyst and whether or not there is associated pancreatic injury. Cystogastrostomy is the simplest and safest alternative if the pseudocyst is adjacent to the posterior wall of the stomach. The mortality rate with internal drainage ranges from 3 to 7% and the recurrence rates are low (5%)[15].

CONCLUSION

Apart from emphasising the importance of imaging in the management of multiple pancreatic pseudocysts, this case has highlighted four additional important points. Firstly, the importance of an explicit operative care following splenectomy as injuries to the tail of the pancreas (due to its close proximity to the spleen) often lead to subphrenic abscess or rarely pancreatic pseudocyst. Secondly, pancreatic pseudocyst should be carefully looked for in a patient who develops abdominal mass following splenectomy, thus a close follow-up is crucial among high risk cases as failure to diagnose this complication may lead to fatal outcome. Thirdly, the possibility of multiplicity and the nature of the cyst collections should be carefully investigated by CT scan or MRI in each patient with pseudocyst disease which influences the treatment modality employed. In addition splenectomy is not without risk and therefore should only be performed with justified indications.

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REFERENCES

1. Balthazar EJ, Megibow A, Rothberg M, Lefleur RS. CT evaluation of pancreatic injury following splenectomy. Gastrointes Radiol 1985; 10:139-44.
2. Lee TG, Forsberg FG, Kochler PR. Post-splenectomy: true mass and pseudomass ultrasound diagnosis. Radiology 1980; 134: 707-11.
3. Winsett MZ, Kumar R, Balahandran S, Bedi DG, Gallagher P, Fagan CJ. Pseudocyst following splenectomy: impact of CT and ultrasound on its diagnosis and management. Gastrointes Radiol 1988; 13: 177-9.
4. Lumsden A, Bradley EL. Pseudocyst or cystic neoplasm? Differential diagnosis and initial management of cystic pancreatic lesions. Hepatogastroenterology 1989; 36: 462-6.
5. Imrie CW, Buist LJ, Sheare MG. Importance of cause in the outcome of pancreatic pseudocysts. Am J Surg 1988; 16-62.
6. Mullins RJ, Malangoni MA, Bergamin TM, et al. Controversies in the management of pancreatic pseudocysts. Am J Surg 1988; 155: 165-72.
7. Bradley EL, Austin H. Multiple pancreatic pseudocysts: the principle of internal cystocystostomy in surgical management. Surgery 1982; 92:111-6.
8. Goulet RJ, Goodman J, Schaffer R, et al. Multiple pancreatic pseudocyst disease. Ann Surg 1984; 199: 6-13.
9. Fedorak IJ, Rao R, Prinz RA. The clinical challenge of multiple pancreatic pseudocysts. Am J Surg 1994; 168: 22-7.
10. Lee JKT, Stanly RJ, Melson G, Savel S. Pancreatic imaging by ultrasound and computed tomography. Radiol Clin North Am 1979; 16: 105-17
11. Kressel HY, Margulis AR, Gooding GW, et al. CT scanning and ultrasound in the evaluation of pancreatic pseudocysts: a preliminary comparison. Radiology 1978; 126: 153-7.
12. Morgan DE, Baron TH, Smith JK, Robbin ML, Kenney PJ. Pancreatic fluid collections prior to intervention: evaluation with MR imaging compared with CT and US. Radiology 1997; 203:773-8.
13. Poaston GJ, Williamson RCN. Surgical management of acute pancreatitis. Br J Surg 1990; 77: 5-12.
14. Ephgraave K, Hunt JL. Presentation of pancreatic pseudocysts: implications for timing of surgical intervention. Am J Surg 1986; 151:749-53.
15. Parvlosky M, Perejaslov A, Chooklin S, Dovgan Y. Current management of pancreatic pseudocysts. Hepatogastroenterology 1998; 45:846-8.