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CASE REPORT

Successful Resolution of a Mediastinal Pseudocyst and Pancreatic Pleural Effusion by Endoscopic Nasopancreatic Drainage

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ABSTRACT

Context A mediastinal pseudocyst is an unusual complication of acute and chronic pancreatitis. The ideal form of management is controversial, and various successful therapeutic interventions including surgical resection, internal or external drainage, and non-operative radiological drainage techniques have been described. Successful resolution of a mediastinal pseudocyst with endoscopic transpapillary stent placement has been described in fewer than five cases.

Case report We report a case of chronic pancreatitis with complete pancreas divisum together with a mediastinal pseudocyst and pancreatic pleural effusion in which magnetic resonance imaging and endoscopic retrograde pancreatography demonstrated communication of the abdominal pseudocyst with the posterior mediastinum through the diaphragmatic hiatus. This case was successfully treated with endoscopic transpapillary nasopancreatic drain placement alone.

Conclusion A communicating mediastinal pseudocyst can be successfully treated by endoscopic transpapillary nasopancreatic drainage alone.

INTRODUCTION

Extra abdominal localization of pancreatic pseudocysts is infrequent and the mediastinum is a rare site for pancreatic pseudocysts [1, 2, 3, 4, 5, 6, 7, 8]. Approximately 50 cases have been reported in the literature with the majority occurring as a complication of alcoholic pancreatitis [1, 2, 3, 4, 5, 6, 7, 8]. The successful resolution of a mediastinal pseudocyst with endoscopic transpapillary stent placement alone or in conjunction with somatostatin or percutaneous drainage has been reported in fewer than five patients [7, 8].
We report a case of chronic pancreatitis with complete pancreas divisum in a non-alcoholic male which was complicated by abdominal and mediastinal pseudocysts and pancreatic pleural effusion. Magnetic resonance imaging (MRI) of the abdomen demonstrated communication of the abdominal pseudocyst with the posterior mediastinum through the diaphragmatic hiatus. The patient was successfully treated with transpapillary nasopancreatic drain placement alone.

CASE REPORT

A 28-year-old male had had pancreatic pain for 2 years and breathlessness for 15 days.

Figure 1. Contrast enhanced computerized tomography of the abdomen reveals abdominal pseudocyst.

There was no history of alcohol ingestion. Hemoglobin, total and differential leukocyte count, liver function tests, renal function tests, serum electrolytes and amylase level were normal. A chest radiograph revealed left sided pleural effusion. Contrast enhanced computerized tomography (CECT) of the chest and abdomen demonstrated abdominal and mediastinal pseudocysts and bilateral pleural effusion (Figures 1 and 2). Diagnostic thoracentesis revealed an exudative pleural fluid with an amylase level of 8,624 IU/L (reference range: 0-160 IU/L). A MRI of the abdomen demonstrated communication of the abdominal pseudocyst with the posterior mediastinum through the diaphragmatic hiatus (Figure 3).

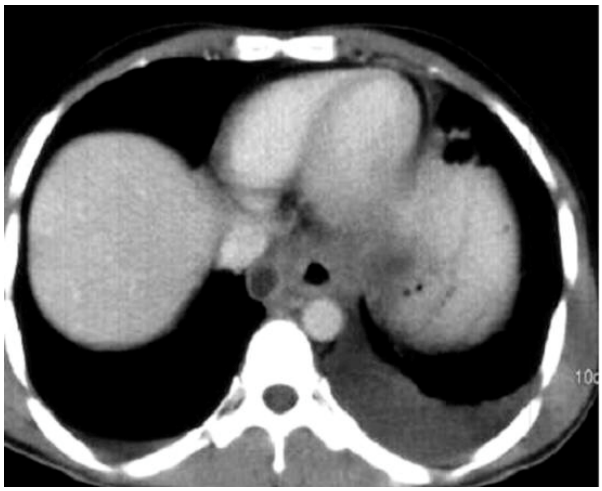

Figure 2. Contrast enhanced computerized tomography of the chest reveals a mediastinal pseudocyst with bilateral pleural effusion (L>R).

Figure 3. Magnetic resonance imaging of the abdomen shows a track through which the abdominal pseudocyst communicates with the posterior mediastinum through the diaphragmatic hiatus. Left sided pleural effusion is also seen.

Informed consent was obtained and endoscopic retrograde pancreatography was performed which revealed evidence of complete pancreas divisum. A guide-wire assisted minor papilla cannulation was performed using a 0.035-inch Jag guide wire (Boston Scientific Corporation, Watertown, MA). The dorsal duct was dilated and there was rupture of the pancreatic duct at the mid-body with the contrast tracking into the mediastinum (Figure 4). A 5-Fr nasopancreatic drain (NPD) was placed across the rupture.

Following this, the patient's symptoms gradually resolved. Repeat chest and abdomen CECT performed after 4 weeks revealed the complete resolution of both abdominal and mediastinal pseudocysts and of the bilateral pleural effusion (Figures 5 and 6). The pancreatogram obtained through the NPD after 4 weeks demonstrated healing of ductal rupture and the NPD was removed. After 1 year of follow-up, the patient is symptom free.

Figure 4. An endoscopic retrograde pancreatogram shows ductal rupture at the body level with the contrast tracking towards the mediastinum. A guide wire has been negotiated across the rupture.

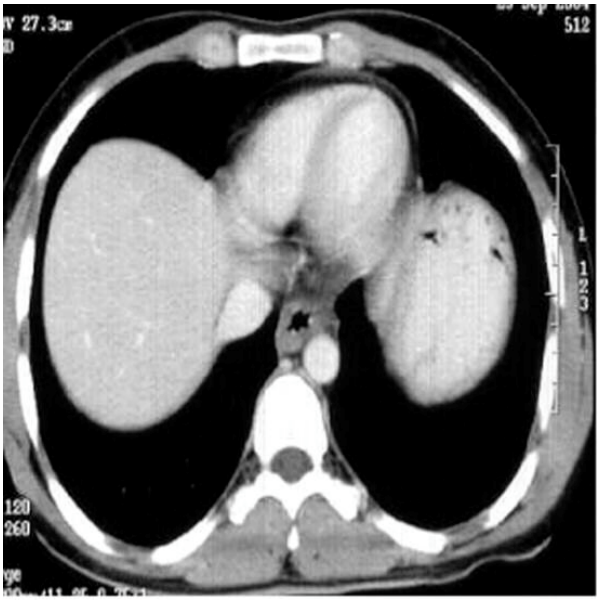

Figure 6. Contrast enhanced computerized tomography of the chest, performed 4 weeks post endoscopic retrograde pancreatography, shows the complete resolution of mediastinal pseudocyst and pleural effusion.

DISCUSSION

Mediastinal pseudocysts, a rare complication of pancreatitis, have been reported in patients ranging from 7 months to 73 years of age [1]. Alcohol-induced pancreatitis is responsible for the majority of cases of pseudocysts in adults and trauma is the cause in children [1]. Underlying chronic pancreatitis with complete pancreas divisum, as noted in the present case, has rarely been described in patients with mediastinal pseudocysts [7].

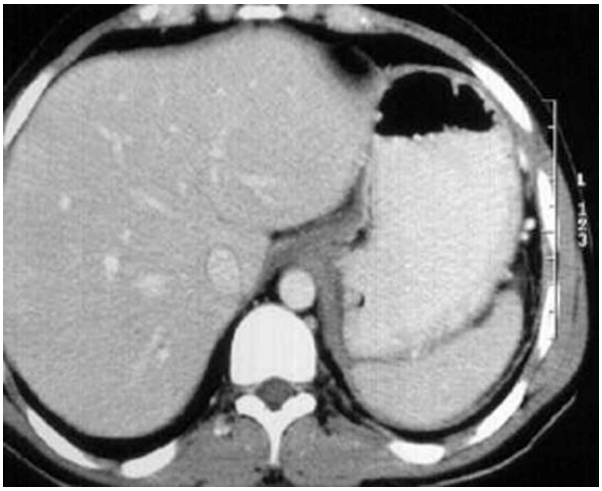

Figure 5. Contrast enhanced computerized tomography of the abdomen, performed 4 weeks post endoscopic retrograde pancreatography, shows the complete resolution of the abdominal pseudocyst.

A mediastinal pseudocyst is caused by the rupture of the pancreatic duct posteriorly into the retroperitoneal space. In the majority of patients, the pancreatic fluid enters the mediastinum through the esophageal or aortic hiatus [1]. Thus, mediastinal pseudocysts are commonly located in the posterior mediastinum. Other less frequent sites of entry into the mediastinum are the foramen of Morgagni, the inferior vena cava hiatus and direct penetration of the diaphragm [1, 7]. Mediastinal pseudocysts may rupture into the pleural space producing pleural effusion or may extend further into the neck [1, 3, 9]. Up to 54% of cases of mediastinal pseudocysts have associated pleural effusion as was present in our case [1]. In spite of mediastinal involvement by the pseudocyst, dysphagia is a rare symptom [10].

Although ultrasound is a quick, inexpensive radiological investigation for diagnosing intraabdominal pseudocysts, it cannot determine the presence of mediastinal extension. Imaging modalities, such as computerized tomography (CT) or MRI, are indispensable diagnostic modalities in defining the location and extent of

mediastinal pseudocysts [1]. MRI can also help in delineating the communication of mediastinal pseudocysts with an abdominal pseudocyst as was noted in the current case [1, 11, 12]. Newer techniques, such as endoscopic ultrasound (EUS) and EUS guided fine needle aspiration, have been reported to be extremely useful in diagnosing mediastinal masses [13]. EUS-guided aspiration of fluid from a mediastinal cyst with an elevated amylase level can confirm the diagnosis of a mediastinal pseudocyst [14].

The ideal management of mediastinal pseudocysts is controversial and depends on the underlying etiology, ductal anatomy, size of the pseudocyst and expertise available. Small pseudocysts may resolve spontaneously but this is a rare event and requires prolonged conservative management [2, 4]. Somatostatin or its analogues can also be used but this usually requires prolonged therapy [5, 7]. Successful resolution of mediastinal pseudocysts with 5-months of therapy with the mucolytic agent bromhexine hydrochloride has also been reported [15]. Radiologically guided percutaneous drainage is a less invasive therapeutic option with a lower mortality rate as compared to the surgical treatment; however, the risk of infection, blockade of catheters, fistula formation and recurrence are the major limitations of radiological drainage [6, 7]. Surgical treatment has been the most commonly used therapeutic modality for patients with mediastinal pseudocyst [1]. The surgical procedures described are varied and include pancreatic resection or external or internal drainage [1, 2, 16, 17]. Successful resolution of mediastinal pseudocysts with less invasive procedures, such as combined laparoendoscopic or thoracoscopic approaches has also been reported [17, 18].

While endoscopic therapeutic options, including transmural drainage or transpapillary stent placement, have been successfully used in patients with abdominal pseudocysts [19, 20, 21, 22, 23, 24, 25], there are few reports describing the successful resolution of mediastinal pseudocysts with endoscopic intervention [7, 8, 14]. A case of successful resolution of a mediastinal pseudocyst by endoscopic transhiatal drainage after performing transgastric transhiatal puncture of the cyst under EUS guidance has been reported [14]. EUS-guided transesophageal pseudocyst drainage has also been described and it can also be considered a viable option for the treatment of mediastinal pseudocysts [26]. Successful resolution of mediastinal pseudocysts with endoscopic transpapillary stent placement alone has rarely been described [7, 8].

We successfully treated our patient with endoscopic transpapillary nasopancreatic drainage through the minor papilla without the concurrent administration of somatostatin or percutaneous drainage. Like a stent, the placement of a transpapillary nasopancreatic drain could facilitate the healing of ductal ruptures by partially occluding the leaking duct or by traversing the pancreatic sphincter converting the high-pressure pancreatic duct system to a low-pressure system with preferential flow through the NPD [27]. Moreover, the NPD helped us in documenting the healing of pancreatic duct rupture by performing a nasopancreatogram through the NPD following which the NPD could be removed without the need of additional endoscopy.

To conclude, a mediastinal pseudocyst is a rare complication of chronic pancreatitis which can be treated by endoscopic transpapillary nasopancreatic drainage.

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Keywords Cholangiopancreatography, Endoscopic Retrograde; Pancreatic Pseudocyst; Pancreatitis

Abbreviations CECT: contrast enhanced computerized tomography; NPD: nasopancreatic drain

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