

Mediastinal Pseudocyst: A Rare Site Of Presentation

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Abstract

A common complication of inflammatory, traumatic and neoplastic conditions of the pancreas is pseudocyst formation, with a cavity lined by granulation or fibrous tissue without an epithelial lining, containing pancreatic enzymes and located in the peripancreatic areas in the abdomen. Mediastinal pseudocysts are postulated to be caused by rupture of the pancreatic duct posteriorly into the retroperitoneal space with tracking down of pancreatic enzyme-rich fluids into the mediastinum through the diaphragm. Patients may present with dysphagia, odynophagia, dyspnoea, pseudoachalasia, heartburn, back pain, weight loss, chest pain and congestive cardiac failure. Contrast-enhanced computed tomography has a very high sensitivity in providing the location and anatomical relation of the pseudocyst to the surrounding structures. Drainage may be in the form of laparotomy, radiologically guided external drainage or endoscopically guided internal drainage.

We report for the first time a rare case of mediastinal pseudocyst with an associated Barrett's ulcer.

INTRODUCTION

A common complication of inflammatory, traumatic and neoplastic conditions of the pancreas is pseudocyst formation, with a cavity lined by granulation or fibrous tissue without an epithelial lining, containing pancreatic enzymes and located in the peripancreatic areas in the abdomen. Pancreatic ductal obstruction due to stone or stricture leading to an elevated intraductal pressure usually results in the formation of pseudocysts, which are most frequently located in the lesser peritoneal sac and can even extend to the paracolic gutter and scrotum. Pseudocysts associated with chronic pancreatitis are generally intrapancreatic. Thoracopancreatic fistula is a rare complication of pancreatitis that manifests as a fistulous communication between pancreas and chest.

Thoracopancreatic fistulas are divided into four types based on the termination site of the fistula: pancreaticopleural, mediastinal pseudocyst, pancreaticobronchial and pancreaticopericardial.^{1,2}

CASE REPORT

A 14-year-old female presented with a chief complaint of progressive dysphagia since the last one and a half year which was more serious to solids than to liquids. She also complained of on-and-off odynophagia and retrosternal burning sensations during this period. She gave a past history of suffering from severe pain in the upper abdomen and jaundice 2 years back for which she had consulted a

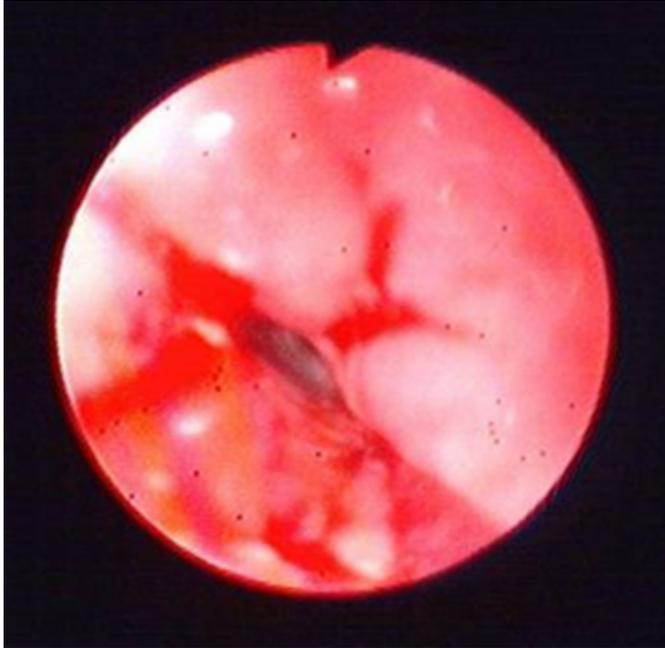
local physician and got treated; the records were not available. On admission, her vital parameters were within normal limits. Systemic examination revealed no abnormality.

Routine investigation revealed: hemoglobin 13g/dl, total leukocyte count 7240, differential leukocyte count: neutrophils 56%, lymphocytes 42%, and eosinophils 2%. Random blood sugar was 431mg/dl. Renal and liver function tests were within normal limits.

Upper gastrointestinal endoscopy revealed ulceration at the lower end of the esophagus just proximal to the gastro-esophageal junction and an external compression to the esophagus at the lower end through which the scope was negotiable, suggestive of a partial obstruction. (FIG-1)

Figure 1

Figure 1: Upper Gastrointestinal Endoscopy Revealing Ulceration At The Lower End Of The Esophagus Just Proximal To The Gastro-Esophageal Junction And An External Compression To The Esophagus At The Lower End.



Histopathological study of the ulcer suggested Barrett's ulcer.

Chest radiology in antero-posterior view showed a rounded, dense, radio-opaque retrocardiac shadow which was found to be a lesion localized in the posterior mediastinum in the left lateral view. (FIG-2) (FIG-3)

Figure 2

Figure 2: Chest X-Ray In Antero-Posterior View Showing A Rounded, Dense, Radio-Opaque Retrocardiac Shadow.



Figure 3

Figure 3: Chest Radiology In Left Lateral View Showing A Rounded, Dense, Radio-Opaque Retrocardiac Shadow Localized In The Posterior Mediastinum.



Barium swallow revealed a radio-opaque shadow compressing and displacing the lower third of esophagus and gastro-esophageal junction antero-laterally. (FIG-4)

Figure 4

Figure 4: Barium Swallow Revealing A Radio-Opaque Shadow Compressing And Displacing The Lower Third Of Esophagus And Gastro-Esophageal Junction Antero-Laterally



Contrast-enhanced computed tomography of the thorax and upper abdomen showed a well circumscribed thin-walled abdominothoracic cystic lesion in the posterior mediastinum extending into the upper abdomen, compressing the heart anteriorly and the lower esophagus anterolaterally towards the left. The stomach was also compressed anteriorly. The pancreas showed atrophic changes with specks of calcification along with dilatation of the pancreatic duct, suggestive of chronic pancreatitis. The gallbladder was normal. (FIG-5) (FIG-6)

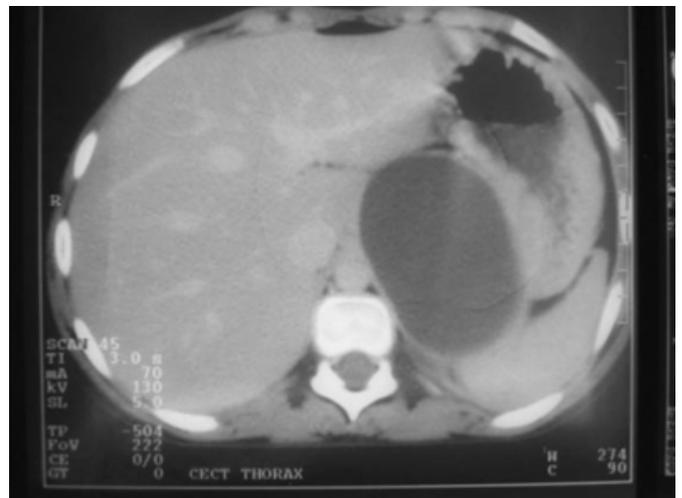
Figure 5

Figure 5: Contrast-Enhanced Computed Tomography Of The Thorax Showing A Thin-Walled Cystic Lesion In The Posterior Mediastinum Compressing The Heart Anteriorly And The Lower Esophagus Anterolaterally Towards The Left.



Figure 6

Figure 6: Contrast-Enhanced Computed Tomography Of The Upper Abdomen Showing A Thin-Walled Cystic Lesion Compressing The Stomach Anteriorly.



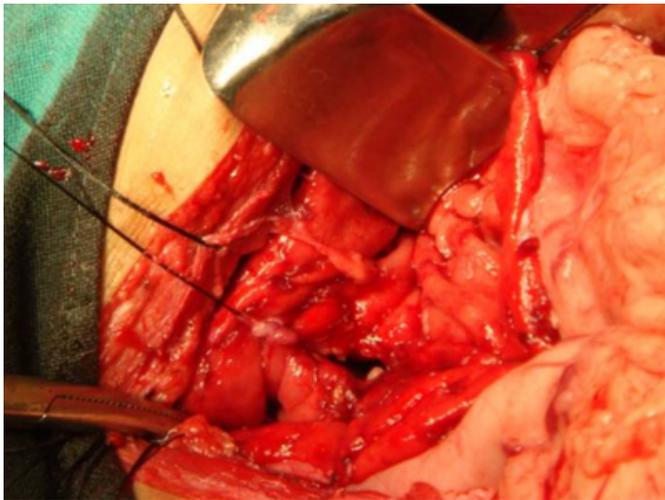
Analysis of the fluid aspirated from the cyst under CT guidance showed an amylase of 4480 IU/l.

Exploratory laparotomy revealed a pseudocyst in the upper part of the lesser sac of the peritoneum extending into the posterior mediastinum through the esophageal hiatus. The cyst was compressing the cardia and upper part of the body of the stomach and the lower part of the esophagus. Transdiaphragmatic drainage of the cyst was done through the left dome of the diaphragm, followed by

cystogastrostomy in the upper part of the body of the stomach. The transdiaphragmatic cyst wall opening was closed and the diaphragm was repaired. An intercostal chest tube was placed in the left side of the chest and the abdomen was closed. (FIG-7)

Figure 7

Figure 7: Cystogastrostomy Done In Our Patient With Mediastinal Pseudocyst



Postoperatively, the intercostal chest tube drainage fluid was sent for analysis of the amylase value, which was found to be within normal limits.

The patient had an uneventful postoperative recovery.

DISCUSSION

The incidence of mediastinal pseudocysts is very low with around 50 cases reported in the world literature till now. They are mostly found in males and in patients with alcoholic pancreatitis. ³

Mediastinal pseudocysts are postulated to be caused by rupture of the pancreatic duct posteriorly into the retroperitoneal space with tracking down of pancreatic enzyme-rich fluids into the mediastinum through the diaphragm. In the majority of cases the fluid enters the mediastinum through the esophageal or aortic hiatus. 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. ^{4,5}

Abdominal symptoms may be absent as the pseudocyst can easily decompress into the low-pressure thoracic cavity. The clinical presentation depends upon compression or invasion of the mediastinal structures. Patients may present with dysphagia, odynophagia, dyspnoea, pseudoachalasia, back

pain, weight loss, chest pain and congestive cardiac failure. Gastro-esophageal reflux symptoms are due to ineffectiveness of anti-reflux mechanisms of the diaphragmatic crura, widening of the esophageal hiatus and loss of gastro-esophageal angle. Our patient had Barrett's ulcer, which may be explained by the association of chronic gastro-esophageal reflux disease with the mediastinal pseudocyst. Review of literature did not show any case report of a mediastinal pseudocyst with clinical features of a Barrett's ulcer. ^{6,7,8,9,10}

Chest radiograph may show retrocardiac opacity. Anterior and lateral displacement of the lower thoracic esophagus on barium study is a nonspecific finding. Sonography is not sensitive in identifying this rare condition due to difficulty in scanning beneath the sternum. Fluid from the mediastinum aspirated under ultrasonographic guidance showing a high amylase level can, however, confirm the diagnosis. Contrast-enhanced computed tomography has a very high sensitivity in providing the location and anatomical relation of the pseudocyst to the surrounding structures. CT shows a thin, cystic, low-attenuated mass, the contents of which can be iso-attenuating or hyper-attenuated in relation to water, depending upon the presence of hemorrhage or infection. Magnetic resonance imaging and magnetic resonance cholangiopancreatography (MRCP) can identify the connection between mediastinal and abdominal pseudocyst, which is sometimes not evident in CT scan, and also image the ductal system of the pancreas. Endoscopic ultrasound (EUS) and EUS-guided aspiration of fluid from a mediastinal pseudocyst with an elevated amylase level can confirm the diagnosis. ^{8,11,12,13,14,15}

Complications of a mediastinal pseudocyst can occur due to compression, invasion or rupture of the pseudocyst into the surrounding structures, besides hemorrhage and infection. Respiratory compromise may occur due to obstruction of trachea or major bronchus combined with compression of lymphatic flow of the lungs with resultant lymphatic interstitial edema. Retrocardiac compression leading to congestive cardiac failure has also been reported in literature. Mediastinal pseudocysts may also erode into the pericardial sac causing life-threatening cardiac tamponade, and into the pleural space producing pleural effusion. Extension of the pseudocyst into the neck is also reported. ^{6,10,16,17,18}

Spontaneous regression of a mediastinal pseudocyst is rare. The treatment options are dependent upon the severity of

symptoms, size, ductal anatomy and the expertise available. Medical management is mainly supportive in the form of bowel rest, nutritional support and somatostatin analogues. Mucolytics such as bromohexin hydrochloride have also been reported to be used in the resolution of mediastinal pseudocysts. Drainage may be in the form of laparotomy, radiologically guided external drainage or endoscopically guided internal drainage. Transcutaneous external drainage may be combined with CT-guided stent placement but has the risk of complications of bleeding, infection, clogging of catheter and pancreatic fistula. Endoscopic internal drainage may be in the form of either ERCP with transpapillary duct drainage when there is a communication between pancreatic duct and mediastinal pseudocyst or may be in the form of transmural drainage by transgastric, transesophageal or transenteric approach. Endoscopic ultrasound (EUS) is increasingly used to guide transmural internal drainage by identifying wall thickness, site of puncture and avoiding major vessels. Open surgical procedures are reserved for complicated mediastinal pseudocysts such as infections, obstruction, rupture or hemorrhage. Various procedures include cystogastrostomy, cystojejunostomy, pancreaticojejunostomy and transdiaphragmatic cystojejunostomy with loop Roux-en-Y. ^{3,17,19,20,21,22}

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