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# Pleural Effusion Secondary to Pancreatic Diseases

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***ABSTRACT***
*Pleural effusion often occurs as a complication of pancreatic disorders such as acute pancreatitis, chronic pancreatitis, pseudocyst of pancreas, pancreatic abscess etc. Alcoholism is the most common risk factor, seen in males predominantly.*
*It mainly occurs on left side, but can also occur on right side and bilaterally. It usually presents as hemorrhagic or typical cola coloured pleural effusion. Here we would like to present a case series of three such patients.*
***KEYWORDS*** *Pancreatic diseases, Pleural effusion, Cola coloured or hemorrhagic pleural effusion.*

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## I. INTRODUCTION

Pancreatic diseases are often accompanied by pleuropulmonary complications. They may include various respiratory pathologies like ARDS, mediastinal pseudocyst, basal atelectasis and pleural effusion[1]. Pleural effusion often occurs as a complication of pancreatic diseases like acute pancreatitis, chronic pancreatitis, pseudocyst of pancreas, pancreatic abscess and rarely in pancreatic cancer. Small and transient pleural effusion is a feature of acute pancreatitis while massive effusion is a feature of chronic pancreatitis[6].

The underlying pancreatic disease is often asymptomatic and therefore diagnosis can be missed. If the pleural effusion doesn't resolve within 2 weeks of treatment of the pancreatic disease, the possibility of pancreatic abscess or pancreatic pseudocyst must be considered. Here, a case series of three patients who presented with unilateral pleural effusion which on further workup were diagnosed as pleural effusion secondary to pancreatic diseases.

### CASE 1

35 years old male patient presented with complains of cough with scanty expectoration, dyspnea on exertion since 15 days, fever on and off and generalized weakness since 7 days. Patient had no other comorbidities and no past history of tuberculosis. He was a chronic alcoholic for the past 10 years, taking 3 quarters per day. On admission patient was vitally stable and auscultation of chest revealed decreased breath sounds on right side. Chest Xray of patient was done which confirmed right-side pleural effusion (fig.1a). About 700ml of fluid was drained by thoracocentesis. Since the fluid was cola coloured, along with other routine investigations pleural fluid amylase and lipase were also sent (Table A). His routine blood investigations showed leukocytosis with white blood cell count of 22,000/mm$^3$.His liver function tests and renal function tests were within normal range. His serum amylase was 350U/L and serum lipase was 240U/L. Since his pleural fluid amylase and lipase were high, pleural effusion secondary to pancreatic disease was suspected. So, his CECT thorax and abdomen-pelvis was done. (fig.1b). CECT was suggestive of pancreatic-pleural fistula. Patient was diagnosed with pancreatic pleural effusion and transferred to higher center, gastroenterology department for surgery and further management.

fig.1a chest x-ray s/o right side pleural effusion

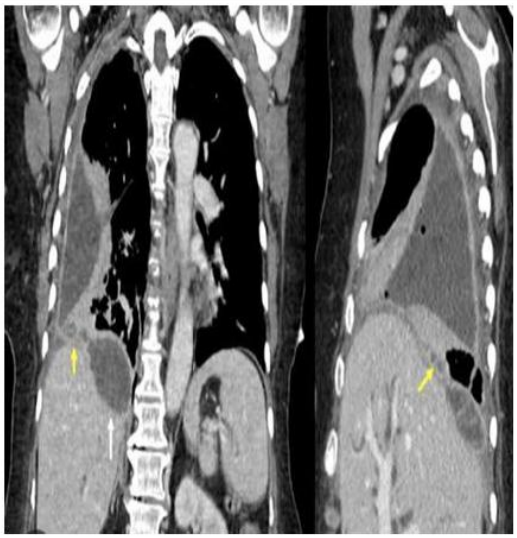

fig.1b CECT thorax and abdomen s/o 14mm pancreatic pleural fistula

**CASE 2**

37 Years old male patient, farmer by occupation, presented to us with complains of dry cough, left side chest pain and abdominal pain radiating to back since one month which was increased in intensity since one day. Patient also had fever since last 15 days. Patient had no other comorbidities, and no past history of respiratory illness. He was chronic alcoholic since last 6 years, taking 2 quarters per day. On examination patient was vitally stable except increased respiratory rate. On auscultation air entry was decreased on left side. Chest X ray (fig.2a) of the patient showed left side pleural effusion. This was followed by thoracocentesis. Since cola coloured pleural fluid was noted along with other routine pleural fluid investigations, pleural fluid amylase and lipase was also sent (Table A). Serum amylase was 1335.9 and lipase was 240U/L. Routine blood investigations was suggestive of total leucocyte count of 35000, hemoglobin of 9 gm / dl, LFT showed deranged serum total bilirubin of 2.2mg/dl, direct bilirubin of 1mg/dl, SGOT and SGPT level increased to 346U/L and 260U/L respectively. Surgical opinion taken. CECT abdomen and pelvis was done as advised by surgery (fig.2b). As CECT report was suggestive of chronic calcific pancreatitis with pseudocyst formation, he was diagnosed with pleural effusion secondary to pancreatic disease and was transferred to surgery department for surgical management.

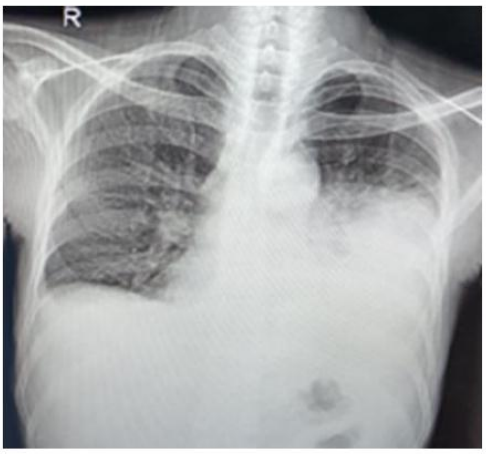


fig.2a chest x-ray s/o left side pleural effusion

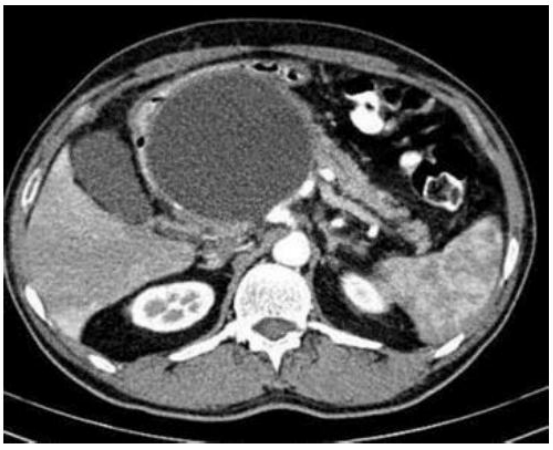

fig.2b CECT (A+P) s/o pseudocyst of pancreas

**CASE 3**

A 40 Yrs. old male patient presented to us with complains of decreased appetite and cough with scanty expectoration since 15 days, left side chest pain and shortness of breath since 4 days. Patient had no history of PTB or TB contact in the past and no comorbidities. Patient was a chronic alcoholic for 15 years taking 1 quarter per day. On admission he was tachypneic and tachycardic with absent breath sounds on left side on auscultation. chest Xray was suggestive of left side pleural effusion (fig.3a). So thoracocentesis was done for three-four times, draining nearly 4-5 lit of fluid. Since the color of fluid was cola coloured (fig.4), along with other routine pleural fluid investigations, pleural fluid amylase and lipase was also sent (Table A). Blood routine investigations revealed total Leucocyte counts of 26,000, hemoglobin of 9 gm/dl and Platelet count of 2.4 lakh. His liver function tests were deranged showing serum total bilirubin of 4.1mg/dl direct bilirubin of 2mg/dl and SGOT-220U/L, SGPT-300U/L. Serum amylase was 1800 U/L and lipase was 1240 U/L.CECT Chest and abdomen was done and was suggestive of chronic pancreatitis with left side pleural effusion. (fig.3b). Patient was transferred to surgery department for further management.

fig.3a Chest Xray s/o Left side pleural effusion with mediastinal shift to right side

fig.3b CECT abdomen and pelvis s/o mild bulky edematous pancreas with walled of necrosis s/o chronic pancreatitis

fig.4 s/o coca coloured pleural fluid

**TABLE A. PLEURAL FLUID INVESTIGATIONS**

| Investigations | Case 1 | Case 2 | Case3 |
|---|---|---|---|
| A. Routine microscopy | | | |
| 1) Colour | Red, Opaque fluid | Cola coloured fluid, Hazy appearance | Haemorrhagic with plenty of RBC |
| 2) Lymphocytes | 25% | 64% | 33% |
| 3) Neutrophils | 75% | 44% | 67% |
| 4) Total Protein | Not possible due to opaque pleural fluid | 4.2 gm/dl | 4.1 gm/dl |
| 5) Glucose | Not possible due to opaque pleural fluid | 46 mg/dl | 52 mg/dl |
| B. Lipase | 1200 IU/L | 1329.7 IU/L | 1080 IU/L |
| C. Amylase | 2680 IU/L | 5483.3 IU/L | 640 IU/L |
| D. ADA | 24 IU/L | 21.9 IU/L | 12 IU/L |
| E. Cytology | Negative for Malignancy | Negative for Malignancy | Negative for Malignancy |
| F. CBNAAT | MTB not detected | MTB not detected | MTB not detected |

## II. DISCUSSION

Pleural effusion is one of rare complication of pancreatic diseases, usually seen in alcoholic patients with male predominance[4]. Our all three patients are chronic alcoholic and male. It usually occurs on left side, but also seen on right side or bilateral[6]. These pancreatic pleural effusions are commonly hemorrhagic, typically look like coca cola color. Pleural effusions are exudative in nature. Analysis of pleural effusion shows high pleural fluid amylase and lipase. High level of pancreatic enzymes in pleural fluid are characteristic of pancreatic pleural effusion[4].

Progression of acute or chronic pancreatitis can lead to extension of pancreatic collection to mediastinal space forming mediastinal pseudocyst or pancreatic-pleural fistula (PPF)[1]. A PPF is formed by leakage or rupture of pancreatic pseudocyst or pancreatic duct disruption[3]. PPF is treated by medical bowel rest and anti-secretagogue drugs like octreotide, followed by surgical intervention like thoracocentesis or tube thoracostomy, and pancreatic duct stenting endoscopically[2]. In acute pancreatitis, the acute inflammatory reaction results in the walling-off of the pancreatic ductal leakage by the posterior wall of the stomach, the transverse colon, and the mesocolon, leading to the formation of a pseudocyst[5]. The resulting pancreatic pleural effusions can be moderate to severe, depending on the size of the pseudocyst[5]. In chronic pancreatitis, the leakage of pancreatic secretions may be only partially walled off, in which case the resulting pseudocyst can cause persistent leakage into the pleural cavity. In some instances, chronic pancreatic inflammation can disrupt the pancreatic duct, leading to the formation of an internal pancreatic fistula into the pleural cavity[5]. Massive pleural effusion is rare complication of chronic pancreatitis[6].

Clinical presentation of these pleural effusions secondary to pancreatic diseases is obscured by predominant pulmonary symptoms, very less patients also present with abdominal symptoms. In our cases, two patients presented with respiratory symptoms only. Therefore, delayed diagnosis is common[6]. There should be a high index of suspicion for haemorrhagic pleural effusion[9]. Early evaluation of pleural fluid for amylase and lipase is important. Most of the affected patients were males and alcoholic[6].

CECT abdomen and lower thorax help in diagnosis of probable pancreatic pathology. ERCP may be done in special situations to confirm diagnosis and planning surgery in these cases[8].Treatment with thoracocentesis or drainage by ICD with simultaneous treatment of pancreatic condition like nasogastric suction or total parenteral nutrition, somatostatin analogue[7] and surgical care in case of pseudocyst or pancreatic pleural fistulas, ERCP with stent surgeries give a better outcome.

## III. CONCLUSION

Early diagnosis of pancreatic pleural effusion can reduce mortality significantly. If underlying pancreatic disease is asymptomatic, diagnosis can be missed. A high index of suspicion should exist in such clinical scenarios. We want to increase awareness of this not very common complication of pancreatic diseases i.e. pancreatic pleural effusion secondary to various pancreatic diseases.

## References


[1]. 6Nagar AB, Gorelick FS. Epidemiology and pathophysiology of acute pancreatitis. In: {0} (ed.) CE Forsmark. Pancreatitis and its Complications. Totowa, NJ: Humana, 2005; 3–15.

[2]. Bustamante Bernal, Marco Antonio et al. “Recurrent Pleural Effusion Secondary to a Pancreatic-Pleural Fistula Treated Endoscopically.” The American journal of case reports vol. 18 750-753. 5 Jul. 2017, doi:10.12659/ajcr.903925

[3]. Kull, Ivana et al. “Rare case of bilateral pleural effusion caused by pancreatic pleural fistula.” BMJ case reports vol. 13,9 e234286. 7 Sep. 2020, doi:10.1136/bcr-2020-234286

[4]. Panicker, V., Paulson, M., Sruthi, S., Kallarackal, J. S., Sajitha, M., & Venugopal, K. P. (2023). An Uncommon Cause of Pleural Effusion. Pulmon, 25(3), 91-94.

[5]. Arumairaj, Antony J et al. “Black Pleural Effusion as a Complication of Acute Pancreatitis.” Cereus vol. 14,12 e32783. 21 Dec. 2022, doi:10.7759/cureus.32783

[6]. Reechaipichitkul, Wipa, Chippewan Obdormition, and Eakkapol Utchariyaprasit. "Chronic pancreatitis presenting with right pleural effusion: a case report." J Med Assoc Thai 93.3 (2010): 378-82.

[7]. Zerem, Enver. "Treatment of severe acute pancreatitis and its complications." World Journal of Gastroenterology: WJG 20.38 (2014): 13879

[8]. Jain, Harsha, et al. "A young male presenting with black pleural effusion." Journal of Advanced Lung Health 3.3 (2023): 105-107.

[9]. Aryal, Binit, et al. "massive haemorrhagic right sided pleural effusion as a cause of respiratory failure in patient with acute pancreatitis without ascites." CHEST 164.4 (2023): A2313-A2314.

[10]. Trudzinski, F. C., et al. "Massive pleural effusion complicating chronic pancreatitis. Treatment by endoscopic closure of a pancreatic-mediastinal fistula." Deutsche Medizinische Wochenschrift (1946) 133.48 (2008): 2507-2509.

[11]. Salguero B, Kakked G, Narayanswami G, Mathew J, Rose K, Shujaat A. CHARACTERISTICS AND MANAGEMENT OF PANCREATIC PLEURAL EFFUSIONS: A SYSTEMATIC REVIEW OF CASE REPORTS. Chest. 2018 Oct 1;154(4):513A.

[12]. Beger, Hans G, and Bettina M Rau. “Severe acute pancreatitis: Clinical course and management.” World journal of gastroenterology vol. 13,38 (2007): 5043-51. doi:10.3748/wjg. v13.i38.5043