Case Report

CHYLOTHORAX: A RARE PRESENTATION OF CONSTRUCTIVE PERICARDITIS

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Summary: A 22-year male patient presented as bilateral chylous pleural effusion. There was no evidence of intra-abdominal or pulmonary pathology. Further investigation proved constrictive pericarditis as the most likely etiology. Patient underwent pericardiectomy by a cardio thoracic surgeon. The diagnosis was of tuberculous pericarditis. Patient responded to anti-tubercular treatment. Constrictive pericarditis as a cause of chylothorax is rare but should be considered in the differential diagnosis of chylothorax. [Indian J Tuberc 2005; 52:207-210]

Key Words: Chylothorax, Tuberculosis, Constrictive pericarditis

INTRODUCTION

Pleural effusion is one of the commonest clinical findings in an out patient of chest diseases department of any hospital. Chylothorax is a rare clinical entity characterised by a milky white aspirate and increased triglyceride level in the fluid. The commonest etiology in such effusions is malignancy (commonly lymphoma) and trauma to the chest (commonly due to cardio thoracic surgery). Rarely, constrictive pericarditis has been associated with chylothorax1. Mitral stenosis with RHD also has been reported2. Here we report a case of bilateral chylothorax due to pericarditis.

CASE REPORT

A 22 year old, male, non-smoker, driver, presented to Civil Hospital, B J Medical College, Ahmedabad, with complaints of dry cough, chest pain, dyspnoea on exertion, low grade evening fever, and weight loss since the last one month. There was no complaint of haemoptysis, edema feet and abdominal pain. The past medical history was not significant. There was no history of surgical illness or procedure.

On examination, he was well built, fairly nourished. There was no edema feet or ascites. His blood pressure was 110/80 mm of Hg, and his jugular venous pressure was normal. On pulmonary auscultation, air entry was absent in the infra-mammary, infra-axillary, infra-scapular regions on both the sides.

Investigations revealed hemoglobin 12.9 gm%, total count 10,200 , differential count – polymorphs 74%, lymphocytes 21%, eosinophils 4% and basophils 1%. The ESR was 50 mm after one hour, fasting blood sugar 76 mg% and normal urine examination for biochemistry and microscopy. He was HIV sero-negative. Serum total protein was 4.9 mg/dL with albumin 2.5 mg/dL. Chest radiography (Fig.1) revealed bilateral pleural effusion (moderate on right side and massive on left side). Ultrasound of the thorax and abdomen revealed bilateral pleural effusion, no free fluid in abdomen and normal intra-abdominal organs. Thoracocentesis of the pleural effusion revealed a milky white fluid, which did not separate on centrifugation (Fig 2). The fluid was investigated for physical, biochemistry and microbiological characteristics (Table 1). The cytology for malignant cells was negative. Microscopy by Gram and ZN stain revealed negative results. The fluid was negative for culture of pyogenic organisms as well as Mycobacterium tuberculosis.

2D-Echocardiography with Doppler study revealed normal ventricles and atria. The LVEF was 45%, RVSP was 40 mmHg. There was mild pericardial effusion. The findings were suggestive of constrictive pericarditis. Computed tomography
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Table: Biochemical characteristics of the pleural effusion

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Milky</td>
</tr>
<tr>
<td>pH</td>
<td>7.36</td>
</tr>
<tr>
<td>Leucocytes/mm³</td>
<td>3300</td>
</tr>
<tr>
<td>Lymphocytes %</td>
<td>35%</td>
</tr>
<tr>
<td>Glucose mg%</td>
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</tr>
<tr>
<td>Total protein g/dl</td>
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</tr>
<tr>
<td>LDH U/L</td>
<td>110</td>
</tr>
<tr>
<td>Triglycerides mg/dl</td>
<td>348</td>
</tr>
<tr>
<td>Cholesterol mg/dL</td>
<td>81</td>
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</tbody>
</table>

Figure 1: Radiograph of the chest showing bilateral pleural effusion

Figure 2: Test tubes containing the aspirated pleural fluid. Left before and right after centrifugation

Figure 3: Contrast enhanced CT scan of the chest

Appearance Milky
pH 7.36
Leucocytes cells-mm³ 3300
Lymphocytes % 35%
Glucose mg% 61
Total protein g-dl⁻¹ 4.7
LDH U-L⁻¹ 110
Triglycerides mg-dl⁻¹ 348
Cholesterol mg-dL⁻¹ 81

of the chest (Fig. 3) and abdomen with contrast enhancement revealed bilateral gross pleural effusion with collapsed lung. There was no mediastinal lymphadenopathy or intra-abdominal mass.

Chest tube was inserted in the left pleural space after repeated attempts to drain the fluid by therapeutic thoracocentesis. In 10 days, 7,200 ml of fluid was drained. Intercostal drainage tube was put on the right side as well to drain the fluid. Patient was put on a chylothorax diet, which involved a fat free diet with protein supplementation. Broad-spectrum antibiotics were given parenterally. Anti-tubercular treatment was started (Isoniazid 300mg, Rifampicin 450 mg, Ethambutol 800 mg, Pyrazinamide 1500 mg daily). Patient was referred to a cardio thoracic surgeon for pericardiectomy. Pericardiectomy was done and the histopathological examination of the pericardium proved the diagnosis as of tuberculosis. There was no post-operative complication. Post-operative radiograph of the chest showed minimal effusion with lower zone haziness (Fig 4). The patient was discharged after both
the tubes were removed. In follow up after 2 months the patient was asymptomatic, gained weight and the X-ray chest was normal.

DISCUSSION

At times pleural fluid is milky or at least turbid. When the milkiness/turbidity persists after centrifugation, it is almost always due to high lipid content of the pleural fluid. High levels of lipids accumulate in two situations, first when thoracic duct is disrupted, chyle can enter the pleural space to produce a chylous pleural fluid. In the second condition, the patient has a long standing pleural effusion. For convenience, the causes of chylothorax can be grouped into four categories. The cause of 50% chylothorax is tumour, which is in the lymphoma group 75% of times. The second leading cause of chylothorax is trauma. This trauma is usually cardiovascular, pulmonary or esophageal surgical procedure. Thrombosis of superior vena cava or subclavian vein is becoming one of the more common causes. Third category is idiopathic, mainly congenital chylothorax. Most causes of idiopathic chylothorax are probably due to minor trauma, such as coughing, hiccups. Fourth category comprises miscellaneous causes which account for only a small percentage. These include constrictive pericarditis, pulmonary lymphangioleiomyomatosis, Kaposi’s sarcoma in AIDS, filariasis, heart failure, Bechet’s syndrome, tuberculosis and sarcoidosis. The diagnosis is usually not difficult, because the chyle has a distinctive white odorless, milky appearance. On centrifugation, the milkiness persists. If cholesterol crystals are responsible for turbidity, they may be demonstrated by sediment examination. The cholesterol turbidity will disappear when 1-2 ml of ethyl ether is added. The best way to establish the diagnosis is by measuring TG level in the pleural fluid. If the pleural fluid TG is more than 110 mg/dL, the patient has a chylothorax. If TG level is less than 50 mg/dL, the patient definitely does not have chylothorax. In patients with TG level between 50 and 110 mg/dL, lipoprotein analysis should be performed, the presence of which will establish the diagnosis.

The mechanism of production of chylothorax in constrictive pericarditis has not been understood. Riza Altiparmak et al, reported a case of chylothorax in a patient undergoing haemodialysis and the etiology was eventually put as constrictive pericarditis. After pericardiectomy, the chylothorax resolved. There may be two mechanisms. One, the high venous pressure increases the abdominal lymph production. The lymph flow of the thoracic duct can increase 10 fold the normal rate, but the stiffness of veno-lymphatic junction in the neck limits lymphatic flow. Second, the high pressures in the left subclavian vein reduces lymphatic drainage. As a result of the restricted lymph drainage, lymphatic venous collaterals form but cannot handle the normal lymph flow. The chylous fluid leaks out. The mechanisms have not been completely explained. However, constrictive pericarditis should be considered in the differential diagnosis of chylothorax.

REFERENCES

3. Copu L, Finri S, Sekuk ZT. Life threatening chylous pleural

Figure 4: Radiograph of the chest, 45 days post-operatively

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