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A Case of Secondary Spontaneous Pneumothorax in a Patient with Interstitial Lung Disease

Dr. Atul Sharma

Consultant, Critical Care Apollo Spectra Hospital, Gwalior, India

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ABSTRACT

Secondary Spontaneous Pneumothorax occurs in people with wide variety of parenchymal lung disease. These individuals have underlying pulmonary pathology that alters normal lung structure. Patients presenting with acute respiratory distress with underlying lung pathology should always be evaluated radiologically for any complications such as secondary spontaneous pneumothorax and managed accordingly. My case report of secondary spontaneous pneumothorax in a female patient with interstitial lung disease illustrates the importance of computed tomography (CT scan of Chest), insertion of intercostal drain tube and course of antibiotics for infection control and prevention.

Keywords: Secondary spontaneous pneumothorax, Interstitial lung disease, Intercostal drainage tube

INTRODUCTION

Secondary Spontaneous Pneumothorax occurs in people with wide variety of parenchymal lung disease. These individuals have underlying pulmonary pathology that alters normal lung structure. Air enters pleural space via distended, damaged or compromised alveoli. Presentation may include more serious clinical symptoms and sequelae due to comorbid conditions. I present a case of secondary spontaneous pneumothorax occurring in a patient with underlying interstitial lung disease (UIP pattern) in an elderly female patient. My objective is early identification and management which includes early detection of pneumothorax via CT scan of chest, insertion of intercostal tube drain, antibiotics for infection control and prevention, ICD care, steroids, oxygen support via high flow nasal cannula, nebulization and supportive measures for one week.

CASE DESCRIPTION

A 44 year old female patient with underlying interstitial lung disease presented to emergency room with cough, shortness of breath, chest discomfort since one day. After monitoring of vitals in emergency room and initial assessment, patient was given one bolus of injection hydrocortisone (100 mg) intravenously and nebulization with salbutamol and budesonide. After initial stabilization in emergency room, patient was shifted for High Resolution CT scan of chest. CT scan of chest revealed moderate right sided pneumothorax along with multifocal ground glass densities with interlobular and intralobular interstitial or septal thickening and intervening areas of fibrosis with tractional bronchiectatic changes involving multiple lung segments-interstitial lung disease(UIP pattern). Initial laboratory investigations were collected. Patient was immediately shifted to intensive care unit where she was immediately inserted with 28 Fr intercostal drain tube, which relieved her symptoms of respiratory distress. Patient was started with antibiotics which included intravenous ceftriaxone and intravenous levofloxacin as per body weight. Intravenous Methylprednisolone was administered and continued for a week. Patient was also treated with antitussive

syrup, nebulization measures, intravenous N-acetylcysteine, High flow nasal cannula (HFNC) support, initiating with FiO_2 of 100 % and oxygen flow of 15 litres/minute which was later switched to nasal prongs with oxygen flow of 2 litres/minute after 3 days of insertion of intercostal tube drain. Patient also did not defecate since 2 days which was treated with lactulose enema and oral lactulose syrup. Laboratory investigations revealed Complete blood count within normal limits, mild elevation of SGPT, SGOT enzymes, mild increase in CRP levels, Serum procalcitonin within normal limits, negative Trop-I, USG Whole Abdomen revealed Grade I fatty liver. Antibiotics were continued, oxygen demand reduced significantly, oxygen flow via HFNC was tapered to 10 litres per minute next day morning, which was further tapered to 5 litres per minute by evening. Patient was put on nasal prongs (oxygen flow of 3 litres per minute) on 3rd day. Chest X-ray were done on daily basis to evaluate lung expansion and to quantify reduction in pneumothorax. ICD tube was removed on 6th day based on no movement of air water column and chest X-ray findings of complete lung expansion. Patient was successfully discharged on 8th day after admission with advice to continue oxygen support via nasal prongs for 1-2 litres per minute via home oxygen concentrator machine, continue antibiotics in oral tablets form for another week, continue oral lactulose syrup at night time, N-acetyl cysteine in oral tablet form, antiulcerative drug, continue nebulization at home and undergo regular follow-up. On follow-up after one week, patient was clinically stable with no signs of respiratory distress.

MATERIALS & METHODS

FIG. 1 High resolution CT Scan Chest

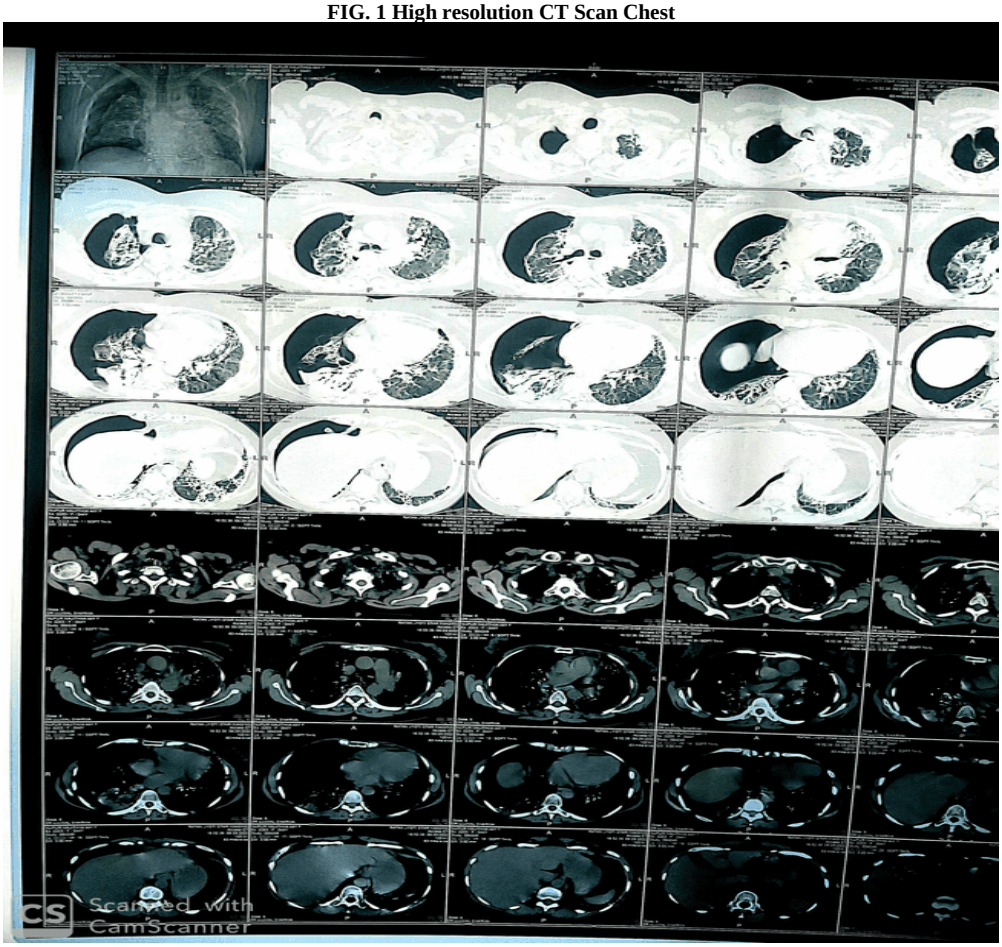


Table1: Laboratory Investigations

Haemoglobin 10.6gm%
Total Leucocyte Count 8,700 per cumm
Platelet Count 1.4 lakhs/cmm
Serum Creatinine 0.5 mg/dl
Trop-I <0.05 ng/ml
Serum Procalcitonin 0.081 ng/ml
Serum CRP 7.1 mg/L
SGOT 56U/L SGPT 40U/L

DISCUSSION

Pneumothorax[1] sometimes occurs in patients with interstitial lung disease during their clinical course. Generally, secondary spontaneous pneumothorax induces respiratory failure more frequently than primary spontaneous pneumothorax.[2] Secondary pneumothorax[3] may occur during clinical course of interstitial lung disease; the frequency is reported 12.9-20.2%. In addition, the onset of pneumothorax is significantly associated with poor outcomes.[4] The most important reason for this is limitation of treatment options due to patient underlying diseases, progressive respiratory dysfunction and poor performance status.[5]

Management of Secondary spontaneous Pneumothorax[6]:

All patients with secondary spontaneous pneumothorax should be admitted to hospital for at least 24 hrs and receive supplemental oxygen in compliance with the BTS guidelines on the use of oxygen. Most patients will require insertion of a small bore chest drain. All patients will require early referral to chest physician. Those with persistent air leak should be discussed with thoracic surgeons at 48 hrs. Secondary spontaneous pneumothorax is less likely to be tolerated by patients than primary spontaneous pneumothorax because of coexisting lung disease. Furthermore, the air leak is less likely to settle spontaneously[7,8] so that most patients will require active intervention. Oxygen is indicated[9,10], but caution is required for patients with carbon dioxide retention.[11] The insertion of a small bore chest drain is recommended, a study in secondary spontaneous pneumothorax[12], having found equivalent success to the use of large drains. Early referral to chest physician is encouraged for all patients with secondary spontaneous pneumothorax, both for management of pneumothorax and also of underlying lung disease. Similarly, those with persistent air leak should be discussed with thoracic surgeon after 48 hrs[13] even though many will resolve spontaneously if managed conservatively for as long as 14 days.

CONCLUSION

Secondary Spontaneous Pneumothorax should be considered one of the differential diagnoses in patients who develop acute respiratory distress. Patients should be thoroughly evaluated and investigated. Computed Tomography Scan of Chest is essential for confirmation of diagnosis. Early Intercostal tube insertion in such cases prevent further exacerbation of symptoms in such cases.

HIGHLIGHTS

Due to infrequent occurrence, Secondary spontaneous pneumothorax is likely to be underseen. This case report elucidates the importance of considering it as a differential diagnosis when a patient present with acute respiratory distress with underlying interstitial lung disease. As in our case, we managed with early investigation, prompt management using ICD insertion, resulting in recovery and survival.

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Conflict of Interest: None

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