

Unusual Cause of Left-Sided Hydropneumothorax

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ABSTRACT

The condition known as hydropneumothorax occurs when fluid and air are both present in the pleural space. A bronchopleural fistula, an infection, a spontaneous pneumothorax, trauma, or rarely diffuse lung disease are a few conditions that might cause a hydropneumothorax. The most common radiographic finding in hydropneumothorax is an intrapleural air-fluid level. When hydropneumothorax is the major diagnosis, thoracentesis and chest radiographs offer a conclusive diagnosis. The current case report details an unusual cause of left-sided hydropneumothorax for a 78-year-old man who had a hydropneumothorax during his hospital stay, as well as how the problem was addressed with positive outcomes and patient satisfaction.

Keywords: Hydropneumothorax, Pneumothorax, Hemothorax

INTRODUCTION

An accumulation of fluid and air in the pleural cavity is referred to as a hydropneumothorax. It may just affect a small area of the pleural cavity (encapsulated), or it may affect the entire cavity. Depending on the length of the condition and the pathological response, it is categorized as "Acute" or "Chronic," but there is no clear distinction between the two in terms of either time or pathology.¹ In India, infectious causes of pleural effusions are treated with antibiotics and pleural

effusions with an intercostal drainage tube, or surgical procedures like decortications, which involve removing a thick fibrinous peel from the pleural surface to allow for the expansion of the underlying lung parenchyma² and partial or complete pneumonectomy and pleurodesis, which involves obliterating the pleural space to prevent recurrent pleural effusions, pneumothorax or to treat a persistent pneumothorax.³

CASE REPORT

A 78-year-old Indian male patient, with a known case of Hypertension for the past 3 years, Laryngeal cancer S/P Laryngectomy and S/P Tracheostomy came to the emergency department in a tertiary hospital with the complaints of cough with blood-stained tracheal secretions for 3 days, breathlessness on exertion, loss of appetite, history of left-sided pleuritic chest pain and generalized tiredness. S/P Laryngectomy and Tracheostomy were both done in the past. History of wound dehiscence with pharyngocutaneous fistula and repair with pectoralis major myocutaneous flap done and then had Cardiac arrest/Aspiration Pneumonitis/Hypoxic Ischemic Encephalopathy recovered, treated outside the hospital. He had respiratory failure and was on long-term oxygen therapy. On examination, he was conscious, oriented, tachypnea and, dyspneic. His vitals showed

SpO₂:79% at room air and 99% on 5 Liters of oxygen/minute, Blood pressure: 190/100mmHg, Respiratory rate:45/Minute, Pulse rate:118/minute, Temperature:98.5F. The respiratory system showed diminished air entry in Left Inter Scapula, Infra Scapular Area and, Infra Axillary Area.

Course in hospital

On hospital day 1, the patient was admitted to MICU with the all above-mentioned complaints. Upon admission, he was started with Oxygen support and initially treated with intravenous antibiotics (Inj.Piptaz 4.5gm IV 6th hourly), intravenous Proton pump inhibitors, nebulized bronchodilator. Hemoglobin (Hb) value was found to be 12.6g/dl, packed cell volume (PCV) was

39% and potassium (K⁺) level was found to be 2.91mmol/L. In view of hypokalemia, potassium correction was done. Cough with blood-stained secretion, sputum, and dyspnea was present.

In view of blood-stained secretion, **CT pulmonary angiogram** was done (**Figure 1**).

It showed:

1. Moderate left hydropneumothorax was seen with the passive collapse of the left lower lobe and the partial collapse of left inferior lingular lobe.
2. Cavitory change with fluid density and few air foci seen in the posteromedial collapsed left lower lobe, measuring ~ 48 x 40 mm.
3. Minimal right pleural effusion seen.

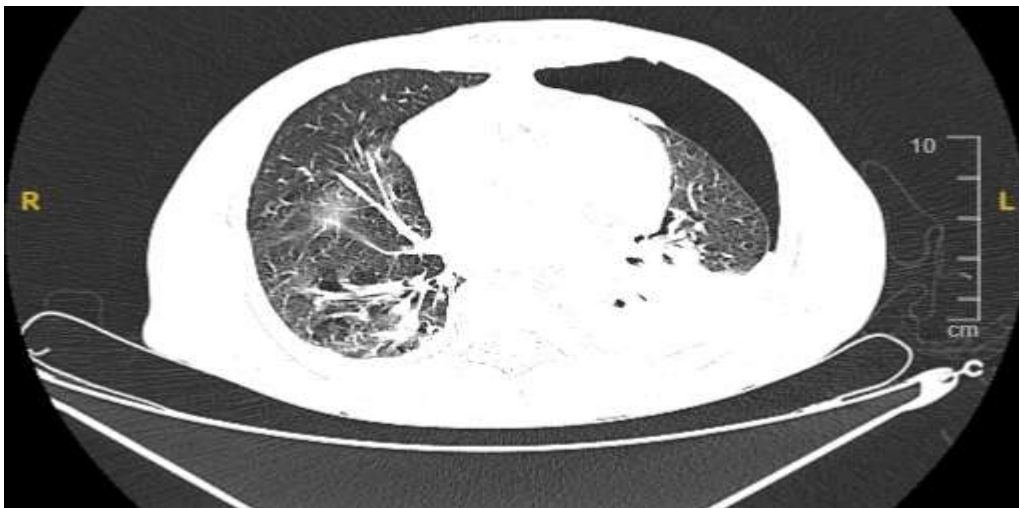


Figure 1. CT pulmonary angiogram showing moderate left hydropneumothorax

In view of left-sided hydropneumothorax, left-sided Pigtail drain was done (**Figure 2**).



Figure 2. Chest X-ray showing left side pigtail drain

On hospital day 2, The hemoglobin (Hb) value was found to be 11.7g/dl, packed cell volume (PCV) was 35% and potassium (K+) was found to be 3.20mmol/L. In view of blood-stained tracheal secretion and left lower lobe consolidation, Bronchoscopy for Bronchoalveolar lavage (BAL) was done.

On hospital day 3, Bronchoalveolar lavage analysis showed: AFB smear: no acid-fast bacilli seen, Gene Xpert for Mycobacterium tuberculosis: not detected, fungal smear (KOH): no fungal elements seen, gram stain: many pus cells and occasional gram-negative bacilli seen, colony count: 103 CFU/ml. The patient improved symptomatically over a while, and hence

shifted to the ward. Breathlessness and cough got better, with no further episodes of blood-stained secretion.

On hospital day 4, Bronchoalveolar lavage culture report: 'Serratia marcescens' species grown in culture. In view of BAL culture report (Serratia species), antibiotics changed to Inj.Amikacin 500mg IV OD. Left-sided pleural fluid for cytology: suggestive of Exudative pleural effusion. In view of Pleural fluid <100ml/day, there was no column movement hence clamp trial was done. After 4 hours, in chest x-ray resolution of hydropneumothorax was noted (**Figure 3**). Hence pigtail drain was removed.

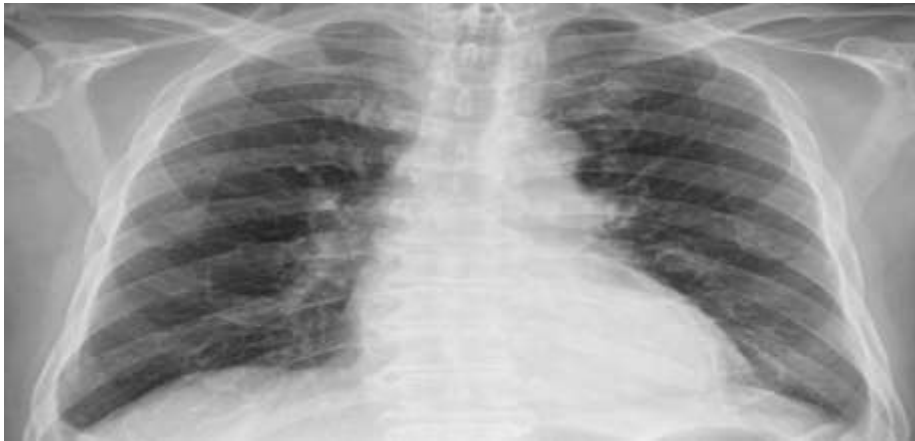


Figure 3. Chest X-ray showing resolving of hydropneumothorax.

Patient symptoms improved, and no further fever spikes. A swallow assessment was done and the patient was able to swallow a solid diet without any cough.

On hospital day 5, a chest x-ray showed complete expansion of the left lung (**Figure 4**). The patient was observed one day in the ward and got symptomatically better, hence he was discharged.



Figure 4. Chest X-ray showing complete re-expansion of the left lung

DISCUSSION

The patient had history of a pharyngocutaneous fistula and repair with pectoralis major myocutaneous flap. Closure of the tracheocutaneous fistula/pharyngocutaneous fistula is recommended in these types of cases. Various closure techniques have been advocated, ranging from simple tract excision with skin closure to more complicated procedures with strap muscle flaps and scar revision. Muscle flaps are used to seal the airway to prevent dissection of air into the thorax. Complications of repair include pneumomediastinum, pneumothorax, and respiratory insufficiency requiring tracheotomy.⁴ In our case, pharyngocutaneous fistula and repair with pectoralis major myocutaneous flap could be the reason for the development of left-sided hydropneumothorax in the patient.

1. In our case, the patient underwent early interventions such as appropriate antibiotics and pigtail draining, which prevented any surgical procedures like video-assisted thoracoscopic surgery (VATS) or Decortication. Albores J et al., reported a case report of a 46-year-old female with right-side hydropneumothorax. In this patient, complete re-expansion was not achieved through Intercostal drainage (ICD) or antibiotics. Hence video-assisted thoracoscopic surgery with decortication and pleurodesis was performed for the complete re-expansion of the right lung.⁵
2. Due to the early therapeutic interventions, the occurrence of further complications such as pleural thickening and empyema was prevented in our patient. Mubarik A et al., reported a case report of a 35-year-old female with left-sided hydropneumothorax. The CT chest documented collapse of the left lung, with cavitation, left-sided pleural thickening, and a fluid density, likely to be an empyema. Subsequently, a pneumonectomy, with left lung decortication, was performed because of

the empyema and left-sided pneumothorax.⁶

3. In our case, the hydropneumothorax was resolved through early interventions that effectively prevented any chances of pleural leaking. Dixit D et., reported a case of a 72-year-old woman with right-sided hydropneumothorax. Despite the initial resolution of hydropneumothorax after the chest tube placement, the patient had a continued pleural leak and persistent and progressive pneumothorax.⁷

CONCLUSION

Early interventions for any pleural pathologies play a major role in preventing further risk and complications like pleural thickening, empyema, bronchopleural fistula, etc. Early interventions such as Intercostal drainage (ICD), appropriate antibiotics plays a major role in preventing further worsening of clinical symptoms and also can be prevented by surgical decortications, video-assisted thoracoscopic surgery (VATS), etc.

In the era of therapeutic care for pleural pathologies, significant progress has been made. However, there aren't many national or international publications that discuss hydropneumothorax. This case report serves as a resource for future clinical practice references and sheds insight on the early interventions and management profiles of patients with hydropneumothorax.

Declaration by Authors

Ethical Approval: Not Applicable

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Conflict of Interest: The authors declare no conflict of interest.

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