ORIGINAL RESEARCH PAPER

Internal Medicine

KEY WORDS: Pseudo tumour, Phantom tumour, Renal parenchymal disease, Orthopnea, Jugularvenous pressure

A VANISHING TUMOUR OF THE LUNG: CASE STUDY

Dr. Ajay Kumar Jha Senior Consultant, Department Of Medicine, Tata Main Hospital, Jamshedpur

ABSTRACT

A vanishing lung tumour, also referred to as a phantom tumour or pseudo-tumour, is characterized by a transient, well-demarcated accumulation of pleural fluid within the interlobar pulmonary fissures. Typically associated with congestive heart failure (CHF) [1, 2], this phenomenon can also be seen in patients with renal parenchymal disease and hypoalbuminemia [3]. A unique feature of phantom tumours is their rapid resolution following decongestive therapy. This case study discusses the presentation and management of a 68-year-old male patient with poorly controlled type II diabetes who exhibited classic symptoms of CHF. Treatment with diuretics led to the complete resolution of the tumour-like opacity within five days.

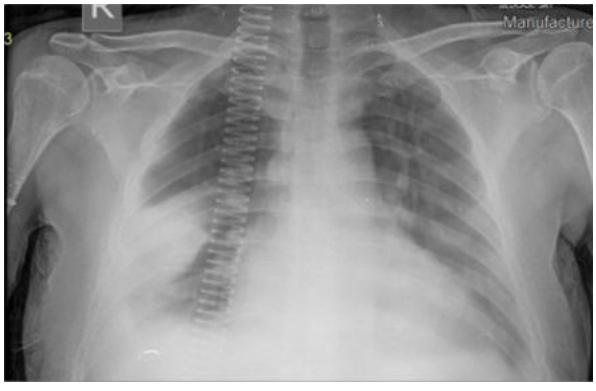
INTRODUCTION

The concept of a phantom tumour pertains to a localized accumulation of fluid, often found within the interlobar fissure of the lungs [1]. This condition poses a diagnostic challenge due to its similar radiological appearance to neoplasms, potentially leading to misdiagnosis and unnecessary interventions. Phantom tumours are notably common among individuals with compromised health states, such as CHF, where fluid dynamics are significantly altered [1]. The terms "phantom" or "pseudo-tumour" are used to describe these entities as they do not represent true neoplasia and typically resolve rapidly with adequate fluid management.

Case Study

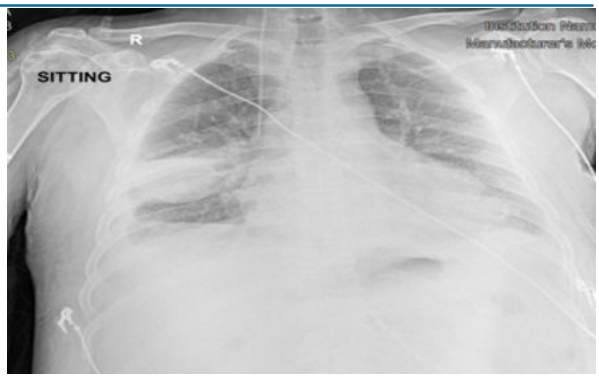
A 68-year-old male with a documented history of poorly controlled type II diabetes mellitus presented to the emergency department with increasing shortness of breath over the past week, progressive orthopnea, and paroxysmal nocturnal dyspnea. His medical history included hypertension, managed with lisinopril. Upon physical examination, he exhibited signs of elevated jugular venous pressure (JVP), bilateral crackles on auscultation, and pitting edema in the lower extremities.

Laboratory investigations revealed elevated creatinine levels at 2.1 mg/dL and a low serum albumin level of 2.8 g/dL. A chest X-ray conducted as part of the workup displayed a sharply demarcated round opacity in the right inferior lung zone, measuring roughly 11 x 5 cm (Figure 1). Given the clinical signs consistent with CHF and the nature of the radiographic findings, the differential diagnosis included a lung mass, pleural effusion, and phantom tumour.



(**Figure 1 -** X-ray Image)

Following diagnosis, the patient was initiated on intravenous furosemide, a loop diuretic, along with strict fluid restriction. Serial chest X-rays were performed to monitor the condition. Remarkably, within five days, the opacity previously identified on X-ray had completely resolved (Figure 2).



(**Figure 2 -** Follow-up X-ray Image)

The patient's symptoms associated with dyspnoea and peripheral oedema also showed significant improvement, confirming the diagnosis of a phantom tumour.

DISCUSSION

Phantom tumours are a challenging diagnostic entity, often encountered in clinical practice but infrequently reported in the literature. The rarity of this condition and its ambiguous radiological presentation necessitate that clinicians remain vigilant regarding potential causes and accurately assess the clinical context.

The literature traces the first mention of interlobar hydrothorax to Stewart in 1928, which is now understood to reflect the phenomenon known as a phantom tumor [4]. This condition is more prevalent in males, with a notable propensity for the right lung [5]. It commonly involves the right transverse fissure, although simultaneous effusions in both fissures have been documented, particularly on the right side [5].

The pathophysiology underlying phantom tumours appears multifactorial. It is theorized that pleuritis can create adhesions that lead to loculated fluid collections within the pleural spaces [6, 7]. The accumulation of fluid often results from an imbalance between the production and resorption of fluid, where the transudation from the pulmonary vasculature exceeds the lymphatic drainage capabilities [7]. A proposed hypothesis to explain the phenomenon includes the "suction cup" effect, wherein increased elastic recoil from adjacent atelectatic lung promotes fluid accumulation, even in the absence of significant pleural adhesions [6,7].

Notably, the right-side experiences greater hydrostatic pressure compared to the left in patients with CHF, which can lead to decreased venous and lymphatic drainage, thereby predisposing the right lung to fluid accumulation [8].

Phantom tumours typically appear as well-defined pulmonary masses with smooth margins, which may lead to initial misdiagnosis as malignancy or other pathological entities, such as parapneumonic effusions, haemothorax, malignant effusions, chylothorax, and benign pleural effusions [9].

In the case of our patient, the rapid resolution of the opacity following the initiation of diuretic therapy, along with significant improvement in clinical symptoms, provided crucial evidence supporting the diagnosis of a phantom tumour over other possible entities. Historical radiographic findings suggested a recurring pattern of similar fluid collections during episodes of cardiac decompensation, underscoring the transient nature of this condition (Figure 2).

CONCLUSION

This case study underscores the critical importance of including a phantom tumour in the differential diagnosis of lung masses, particularly in patients who exhibit signs and symptoms suggestive of congestive heart failure. The prompt resolution with decongestive therapy confirms the benign nature of this condition and highlights the necessity for precise clinical evaluation and image interpretation to avoid misdiagnosis and unnecessary surgical interventions. Analysis of prior radiographic evaluations can also aid clinicians in establishing a definitive diagnosis and guiding therapeutic approaches more effectively.

REFERENCES

1. Lichtenstein DA, Mezière G. Relevance of lung ultrasound in the diagnosis of acute respiratory failure. Curr Opin Crit Care. 2007;13(3):203-208.
2. Vignon P, et al. Lung ultrasound for the assessment of lung congestion in heart failure. Heart. 2017;103(18):1431-1438.
3. Tofani C, et al. The role of hypoalbuminemia in cardiovascular risk in chronic kidney disease. Nefrologia. 2014;34(3):307-316.
4. Stewart W. Interlobar hydrothorax. Am J Roentgenol Radium Ther Nucl Med. 1928;19(5):523–525.
5. Bhandari M, et al. Phantom lung tumors: A review of the literature on the rare radiological phenomenon. Int J Med Sci. 2018;15(1):54-59.
6. O'Dwyer H, et al. Mechanisms of loculated pleural effusions in congestive heart failure. Eur Respir J. 2016;48(4):1333-1340.
7. Schaffer JM, et al. Fluid dynamics in transudative effusions and their implications in chylothorax and other conditions. J Clin Med. 2020;9(12): 3942.
8. Packer M. Mechanisms of the effects of diuretics in heart failure. J Am Coll Cardiol. 1997;29(4):675-682.
9. Light RW. Pleural diseases. 5th Ed. Philadelphia: Lippincott Williams & Wilkins; 2013.