

# Pulmonary Tuberculosis with Mediastinal Lymphadenopathy and Superior Veno Caval Obstruction, Mimicking Lung Malignancy: A Case Report

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## Abstract

Pulmonary tuberculosis may present as a mass-like lesion can mimic lung cancer and can also coexist with it. We report a case of pulmonary tuberculosis in middle-aged female with right upper lobe lesion, mediastinal adenopathy and with superior vena cava obstruction mimicking lung malignancy. X-ray chest, multi detector computed tomography chest, fiberoptic bronchoscopy, and thoracotomy findings are consistent with malignancy. Imaging findings alone are not sufficient to distinguish tuberculosis from malignancy. Ultimately open biopsy revealed tuberculous granulomatous pathology. We reviewed our case with existing literature.

**Keywords:** Biopsy, Lung malignancy, Pulmonary tuberculosis, Superior vena cava obstruction

## INTRODUCTION

Tuberculosis continues to be a health problem despite efforts at eradication and control, and a total of 9.2 million cases of tuberculosis are reported World Wide annually.<sup>1</sup> Pulmonary tuberculosis exhibits variable radiological findings, mimicking all the other pathological formations of the lung and clinical difficulties for diagnosis.<sup>2</sup> Bacterial pneumonias, fungal infections, and bronchogenic carcinoma are such common diseases among others which can be mistaken as tuberculosis because of non-specific symptoms and similar radiological findings. Over-reliance on clinical findings and imaging may lead for misdiagnosis.<sup>3</sup>

Keeping endemicity of the disease in India, knowledge of typical and atypical radiological patterns is necessary. This case report is about pulmonary tuberculosis that mimicked lung cancer in the way it had presented which required open biopsy for final diagnosis.

## CASE REPORT

A 30-year-old female presented with chest pain, cough and sputum since 1-month. Chest X-ray (Figure 1) showed soft tissue opacity right upper lobe with peripheral haziness extending medially to mediastinum and below with upward displacement of minor fissure: Suggestive of right upper lobe mass with mediastinal invasion or mediastinal mass with partial collapse of right upper lobe.

Routine lab investigations were unremarkable. Sputum for acid-fast bacilli (AFB) negative, HIV non-reactive. Patient was managed as a community acquired pneumonia and discharged. Patient was not presented for follow-up. After 1-year, she was readmitted with chest pain, cough

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and hemoptysis. Routine blood chemistry and lab tests were unremarkable and sputum for AFB negative and HIV non-reactive.

Second plain X-ray chest (Figure 2) showed well-defined homogenous mass lesion in right upper lobe with upward displacement of minor fissure with mild displacement of distal trachea suggestive of right upper lobe mass (or) mediastinal mass. In comparison with old X-ray, the same findings are noted.

Contrast-enhanced computed tomography (CT) chest findings (Figure 3a-d) in axial, coronal views in mediastinal and lung window showed large non homogenously enhancing, lobulated heterogenous soft tissue mass lesion in anterior superior mediastinum extending to apical segment of right upper lobe (measuring 8.1 cm × 7.1 cm

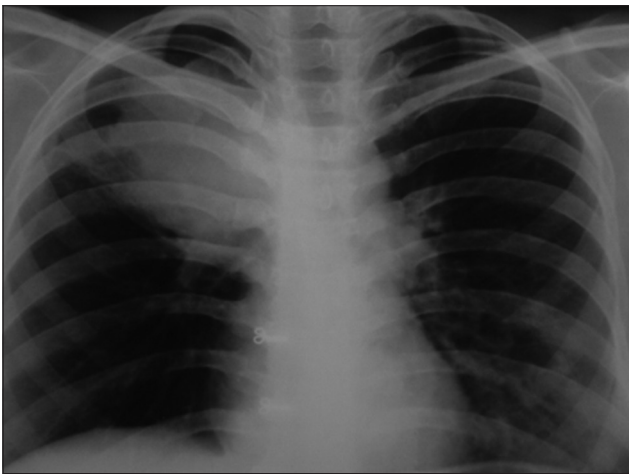
× 7.5 cm) with encasement of superior vena cava, right pulmonary artery, abutting trachea with mild displacement toward left. The lesion seen extending up to the right hilum encasing right upper lobe bronchus with collapse, consolidation of right upper lobe suggestive of malignant mediastinal mass (or) lymphoma (or) carcinoma lung.

Next, patient was subjected for fiberoptic bronchoscopy (FOB) which revealed pedunculated fleshy growth in lower end of the trachea, extending to right main bronchus. Biopsy was taken from pedunculated growth showed lymphocytes, multinucleated giant cells prominent neutrophils, macrophages, Langerhans type giant cells with epithelioid cells with no evidence of malignancy suggestive of tuberculosis.

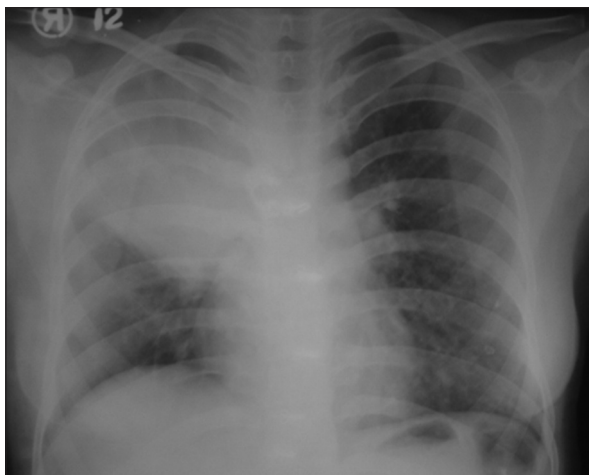
Still with high radiological suspicion of malignancy and pedunculated growth in trachea and right main bronchus in FOB, patient was referred to the cardiothoracic surgeon for thoracotomy and open biopsy to rule out malignancy.

Per-operative findings showed a mass lesion occupying right upper lobe and mediastinum with plenty of right para and pre tracheal lymph nodes. After incising, the lesion showed contents with loculated pus. Biopsy was taken from mass lesion and sent for histopathological examination (HPE).

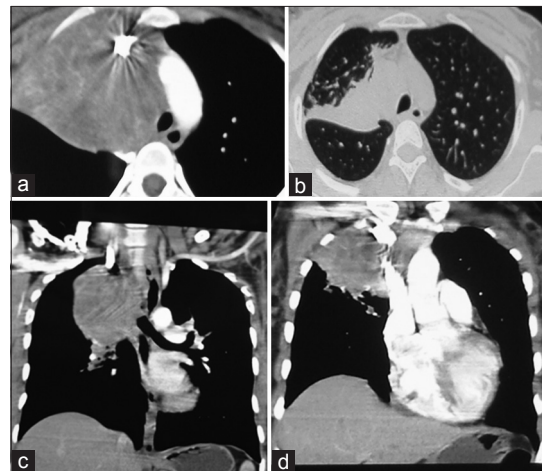
HPE report of open biopsy specimen revealed lymphoid tissue replaced by caseation necrosis, granulomas with epithelioid cells and Langerhans foreign body giant cells suggestive of tuberculous pathology (Figure 4).



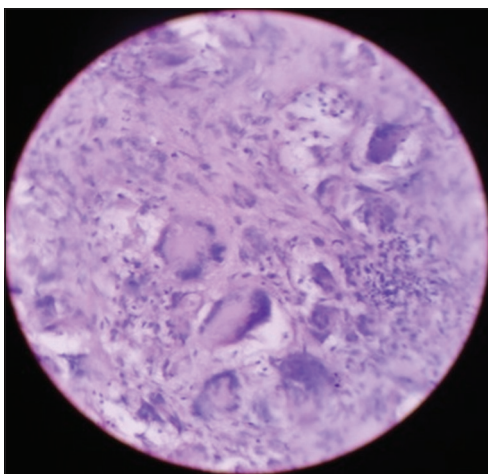
**Figure 1: Plain X-ray chest posteroanterior view - large soft tissue opacity in right upper lobe with peripheral haziness extending to mediastinum and inferiorly to minor fissure with upward displacement of minor fissure**



**Figure 2: Plain X-ray chest posteroanterior view - large soft tissue opacity in right upper lobe with peripheral haziness extending to mediastinum and inferiorly to minor fissure**



**Figures 3: (a-d) Contrast-enhanced computed tomography chest mediastinal and lung window - axial and coronal views - large non homogenous enhancing soft tissue density mass lesion in anterior superior mediastinum extending to apical segment of right upper lobe, encasing superior vena cava, right pulmonary artery and mild displacement of distal trachea. The lesion is extending to the right hilum encasing right main bronchus with collapse consolidation of right upper lobe**



**Figure 4: Open biopsy of the lesion showing lymphoid tissue replaced by caseation necrosis, granulomas, with epithelioid cells, Langerhans and foreign body giant cells suggestive of tuberculous pathology**

## DISCUSSION

Among pulmonary infections mimicking lung malignancy, tuberculosis plays major role approximately in one quarter of cases<sup>4</sup> Cherian *et al.*<sup>5</sup> in his study of atypical pulmonary pattern of tuberculosis found that the most common unusual pattern of pulmonary tuberculosis was mass-like lesion, most of which are initially and mistakenly diagnosed as neoplasms.

Lung tuberculosis is often seen radiographically in the forms of cavitary, micro and macronodular and miliary types, fibro-calcification and pleural involvement. In our study, the above typical findings were absent. Parenchymal lesion and associated mediastinal pathology in X-ray chest could not be distinguished from malignancy or any mediastinal mass.

The chest CT patterns of pulmonary Koch's described are bronchial narrowing or obstruction without a central mass-like lesion (Pattern 1), central mass-like lesion with distal atelectasis or obstructive pneumonia (Pattern 2), peripheral nodule or mass including mass-like consolidation (Pattern 3), and cavitary lesion (Pattern 4).<sup>6</sup> In our case study, the above patterns are not appreciated. Our findings are mass lesion extending onto right upper lobe with encasement of superior vena cava (SVC) and other vascular structures and trachea, right upper lobe bronchus, strongly suggesting lung malignancy or invasive mediastinal mass and on contrast study there is non-homogenous enhancing pattern, which is attributed to the thoracotomy findings of encrypted abscess with peripheral inflammation.

FOB findings in our case are pedunculated fleshy growth in lower end of the trachea extending into right upper

lobe bronchus is feature of epithelial malignancy of airways with submucosal spread. These findings can be correlated with study of Chung and Lee<sup>7</sup> on endobronchial tuberculosis which explains that tuberculous granulations tissue may be observed to erupt through bronchial mucosa to form a tumor-like mass. The caseous tracheo-bronchial lymph node can produce ominous irregular swelling on the trachea or main bronchus which suggest malignant invasion of lymph node. Finally, bronchial biopsy will reveal the tissue situation. Similar pattern was observed in our study.

Despite biopsy on bronchoscopy suggesting tuberculosis, the symptom of persisting haemoptysis, clinical features of SVC obstruction which are most common with malignancies and non responsiveness to conservative treatment patient was subjected to thoracotomy and open biopsy to rule out associated malignancy. As pulmonary malignancies are common in our place, and surgery is now safe, thoracotomy should not be withheld if there is clinical suspicion of malignancy.<sup>8</sup>

Contrary to CT findings and gross findings on FOB and thoracotomy suggesting malignant mass-like lesion in our case, the biopsy report turned out to be chronic tuberculous granulomatous pathology. In developing countries like India, keeping endemicity of the disease, as many patterns of pulmonary tuberculosis mimic malignancy,<sup>9,10</sup> the disease should be kept in the differential diagnosis of controversial lesions. Clinical, radiological, and pathological correlation is necessary to initiate appropriate therapy.

## CONCLUSION

As pulmonary tuberculosis is known for its ability to masquerade other infectious and disease processes, when combined efforts of clinical, laboratory, imaging findings do not help to exclude malignancy, biopsy can lead to a timely diagnosis. This helps to initiate appropriate therapy.

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