

## Case Report

# Pancoast Syndrome Due to High Grade Anaplastic Tumor

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## Abstract

### Description

The Pancoast tumor is an uncommon type of lung cancer that arises from within the superior sulcus. With most clinical manifestations occurring due to mass effect, Pancoast syndrome is a known complication that includes shoulder and arm musculoskeletal pain, Horner's syndrome and neurological complications of the upper extremities, including weakness and atrophy. Even though adenocarcinoma is the most common cause of Pancoast syndrome among lung cancers, other malignancies can be responsible as well. Treatment is similar to that of other standard NSCLC treatments that include chemotherapy, radiation, immunotherapy and surgery. Here we report a patient with Pancoast syndrome secondary to a poorly differentiated malignant neoplasm composed of anaplastic cells.

### Keywords

pancoast syndrome; lung neoplasms; lung diseases; neoplasms; unknown primary neoplasms; lymphadenopathy; emphysema; anaplastic tumors

## Introduction

Pancoast tumor is an uncommon type of lung cancer that arises from within the superior sulcus, with most clinical manifestations occurring due to mass effect. Pancoast syndrome describes symptoms that accompany such tumors. Symptoms include shoulder and arm musculoskeletal pain, Horner's syndrome, and neurological complications of the upper extremities. Non-small cell lung cancers (NSCLC), most commonly adenocarcinoma is a predominant cause of Pancoast syndrome.<sup>1</sup>

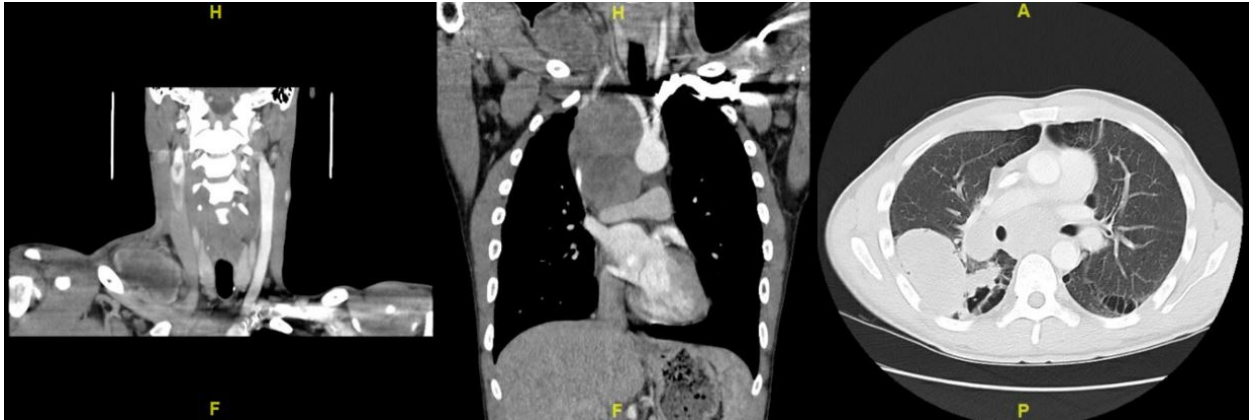
## Case Presentation

A 39-year-old male with a medical history of left-sided pneumothorax secondary to a stab wound and chronic cigar use presented to the hospital complaining of a right neck mass and right arm pain. Physical exam was notable for right supraclavicular lymphadenopathy. Initial labs were remarkable for leukocytosis of 13,200 cells/m<sup>3</sup>, hemoglobin 11 g/dl, lactate dehydrogenase 1590 IU/L, and ESR 92 mm/h. Neck CT with contrast showed a right side

supraclavicular mass with right internal jugular vein thrombosis. Heparin infusion was initiated. Chest CT with contrast showed diffuse emphysematous changes, and a large bulky mass involving the medial right upper lobe and anterior mediastinum, with a mass-effect upon the brachiocephalic vein and superior vena cava consistent with Pancoast syndrome. (**Figure 1**) Alpha 1 antitrypsin levels were normal. Ultrasound-guided biopsy of the right supraclavicular mass demonstrated a poorly differentiated malignant neoplasm composed of anaplastic cell sheets with extensive areas of necrosis. Immunohistochemical analysis was positive for CD34 and vimentin. (**Figure 2**) CT abdomen and pelvis showed multiple retroperitoneal nodal metastases and a right upper quadrant mass abutting the liver and posterior diaphragm. His tumor was inoperable, and palliative chemotherapy was elected.

## Discussion

Most Pancoast tumors are caused by NSCLC,<sup>1</sup> however, other malignancies can be responsible



**Figure 1.** Right supraclavicular mass and right internal jugular thrombosis. Advanced paraseptal pulmonary emphysema. Large bulky mass involving medial right upper lobe and anterior mediastinum with mass-effect upon brachiocephalic vein and superior vena cava.

as well. In our patient, this occurred due to a poorly differentiated tumor with immunohistochemistry suggesting a possible mesenchymal origin. Surgery was contraindicated due to extensive local progression and distant metastases. In such patients, Site-specific chemotherapy can be selected based upon molecular testing and identification of the primary site.<sup>2</sup>

### Conclusion

This case is notable for its rarity due to a poorly differentiated tumor of unknown primary site invaded the lung parenchyma and adjacent structures resulting in Pancoast's syndrome. In such Cancer of Unknown Primary Site (CUP), empiric chemotherapy is the best treatment option available until further advancements in

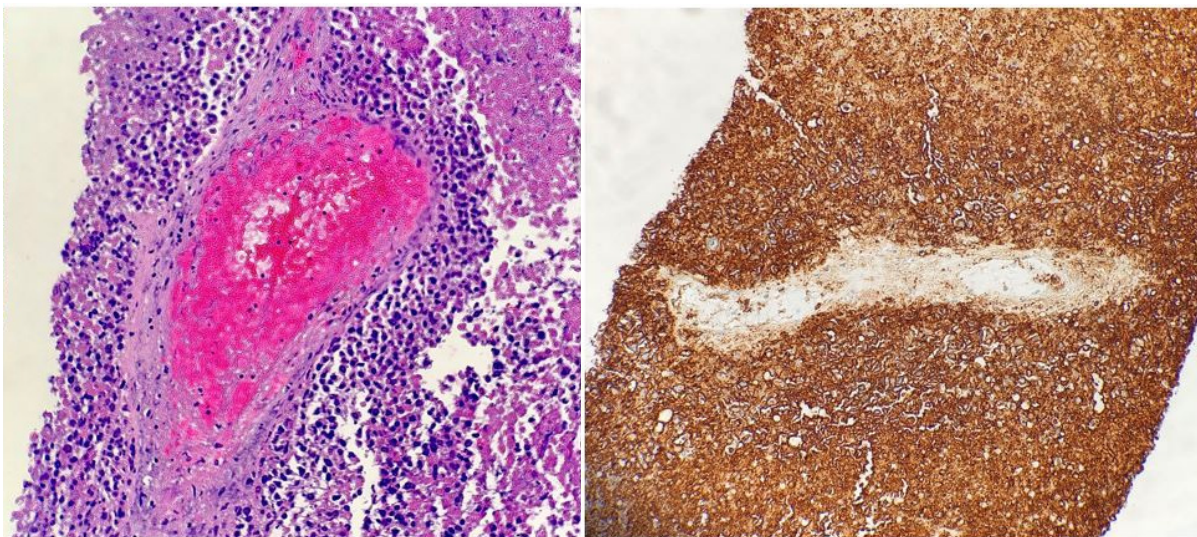
molecular targeted therapies are achieved.<sup>2</sup>

### Conflicts of Interest

The authors declare they have no conflicts of interest.

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**Figure 2.** High power images demonstrating a poorly differentiated malignant neoplasm composed of sheets of anaplastic cells with extensive areas of necrosis surrounding blood vessels. The positive CD34 and vimentin suggest a mesenchymal origin and confirm positive malignant cells.

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