Case Report

A Unique Case of Pancoast Tumor

Mustafa Singapurwala Mustafa, Nandinee, Bharat Kumawat, Mahak Mundra, Arti Julka, J.C. Agrawat

Background: Pancoast tumors are uncommon malignancies located in the superior sulcus of the lung, characterized by distinctive neurological and vascular involvement. However, extensive venous thrombosis and contralateral nodal involvement are rarely described.

Case Presentation: We report a striking case in a 64-year-old male smoker who presented with chest pain, facial swelling, dyspnea, and right-sided Horner's syndrome. Imaging revealed a right apical mass invading the thoracic inlet with bilateral internal jugular vein thrombosis and contralateral supraclavicular lymphadenopathy. Histology showed acinar adenocarcinoma.

Management and Outcome: Given extensive locoregional and systemic involvement, curative resection was not feasible, and palliative systemic therapy was initiated.

Conclusion: This rare constellation of findings underscores the aggressive biological behavior of superior sulcus tumors and emphasizes the need for heightened clinical suspicion and early multidisciplinary evaluation.

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Introduction

Pancoast tumors, also known as superior sulcus tumors, represent a rare subtype of lung cancer, accounting for approximately 3 to 5% of all cases.[1] They are located at the lung apex, adjacent to the thoracic inlet, and are characterized by a tendency to invade surrounding neurovascular structures. Such invasion can result in shoulder pain and neurological deficits from brachial plexus involvement (Pancoast-Tobias syndrome), disruption of the sympathetic chain leading to Horner's syndrome, or vascular obstruction, including superior vena cava (SVC) syndrome.[2] The majority of Pancoast tumors arise from non–small cell lung cancer (NSCLC). Squamous cell carcinoma is most frequently observed, followed by adenocarcinoma and large-cell carcinoma, while small-cell histology accounts for only a minority of cases.[3] Other conditions, such as lymphoma, mesothelioma, metastatic lesions, neurofibroma, hydatid cysts, tuberculosis, and fungal infections, can mimic these presentations.[4] Initial evaluation typically involves a detailed clinical history, physical examination, and chest radiography. Confirmation and further characterization require advanced imaging and tissue diagnosis, such as contrast-enhanced CT (CECT) of the thorax, fine-needle aspiration cytology (FNAC), bronchoscopy, or pleuroscopy.

R.D. Gardi Medical College Ujjain, Madhya Pradesh, India

Correspondence to: J.C. Agrawat, R.D. Gardi Medical College Ujjain, Madhya Pradesh, India. E-mail: jagdishagrawat@yahoo.com

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Here, we report a rare case of an advanced Pancoast tumor presenting with both classical and highly atypical manifestations, including bilateral internal jugular vein thrombosis and contralateral cervical lymph node involvement.

Case Report

A 64-year-old male farmer, with a history of chronic smoking for over 30 years, presented with right-sided chest pain persisting for one month. Over several days, he developed right-sided facial swelling, progressive exertional dyspnea, and a dry cough. He denied hemoptysis or unintentional weight loss. On examination, vital signs were stable. Notable findings included prominent superficial chest wall (p1) veins and distended jugular and cervical veins, suggestive of venous obstruction. Right-sided Horner's syndrome—characterized by miosis, ptosis, (p2) and anhidrosis was observed. A firm, enlarged left supraclavicular lymph node was palpable.

Laboratory studies revealed mild anemia and leukocytosis. Chest radiography (p3) demonstrated a dense right apical opacity with blunting of the right costophrenic angle, consistent with moderate pleural effusion. Neck ultrasonography showed necrotic cervical lymph nodes

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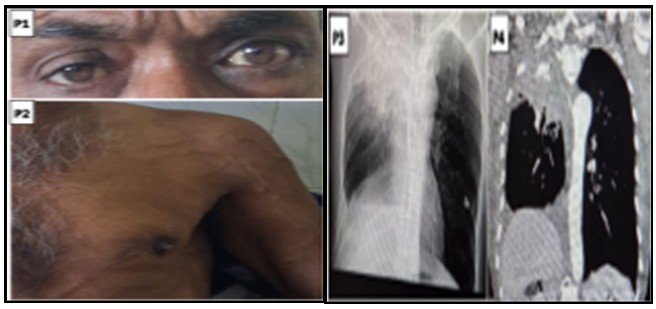

Figure 1: Prominent superficial chest wall (p1); Right-sided Horner's syndrome (p2); Chest radiography (p3); CECT (p4-8)

and thrombosis of both internal jugular veins, with prominent collateral veins. Pleural fluid cytology revealed atypical malignant cells. FNAC from the left supraclavicular node confirmed poorly differentiated carcinoma. CECT (p4-8) of the thorax revealed an 8.5 × 9.2 × 9.5 cm ill-defined right upper-lobe mass with internal necrosis and calcified foci. The mass invaded the thoracic inlet, encasing the right subclavian artery, superior vena cava, and right pulmonary artery. The right upper-lobe bronchus was completely encased, with erosion of the first rib, esophageal compression, and extension into the mediastinum and chest wall.

CT-guided biopsy established a diagnosis of acinar adenocarcinoma. Considering the apical mass, Horner's syndrome, chest wall invasion, vascular encasement, malignant pleural effusion, and distant nodal spread, a diagnosis of advanced Pancoast tumor with systemic involvement and bilateral internal jugular vein thrombosis was made and the case was referred to the oncology unit for further management.

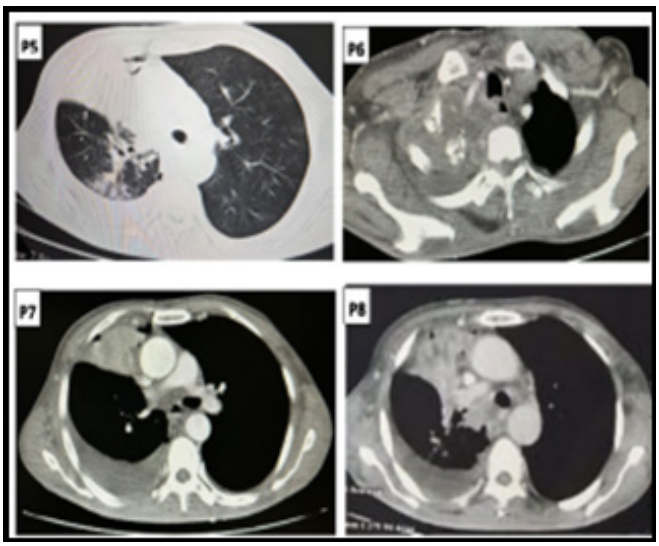

Figure 2

Discussion

Pancoast tumors are a rare subset of NSCLCs, representing approximately 3 to 5% of all lung cancers.[1] Their apical location predisposes them to early involvement of thoracic inlet structures, including the brachial plexus and sympathetic chain, producing the classical triad of shoulder pain, upper-limb neurological deficits, and Horner's syndrome.[5] Our patient exhibited these hallmark features along with additional uncommon manifestations. The presence of pleural effusion and cervical lymphadenopathy at presentation is atypical and reflects aggressive tumor behavior. While squamous cell carcinoma has historically been the predominant histologic subtype, recent studies indicate an increasing proportion of adenocarcinomas among Pancoast tumors.[6] The acinar adenocarcinoma in our patient aligns with this evolving trend. The tumor demonstrated extensive locoregional spread, involving the mediastinum, superior vena cava, subclavian artery, and upper-lobe bronchus. Patterns of vertebral and rib invasion are comparable to those described by Foroulis et al., and the degree of thoracic inlet involvement is a key factor in determining resectability and prognosis.[7] Major vascular invasion occurs in fewer than 10% of cases, making the simultaneous encasement of multiple major vessels in this patient exceedingly rare.[8] Several exceptional features were observed. Bilateral internal jugular vein thrombosis (IJVT) at diagnosis is an uncommon finding in thoracic malignancy (15%) and has been reported only in isolated cases.[9] Contralateral supraclavicular lymphadenopathy, though rarely documented, indicates advanced lymphatic spread.[10] Malignant pleural effusion, present in this patient, is rarely an initial presentation of Pancoast tumors and automatically classifies the disease as stage IV, precluding surgical management.[11] High cervical lymphadenopathy (levels II–V) is also unusual and has been described sporadically in the literature.[12] The combination of bilateral IJVT, contralateral supraclavicular and high cervical lymphadenopathy, malignant pleural effusion, and major vascular encasement represents a previously unreported constellation of findings, signifying an aggressive tumor phenotype that extends beyond classical Pancoast patterns. Standard management of resectable Pancoast tumors involves trimodal therapy, neoadjuvant chemo-radiation followed by en bloc resection. In this case, however, the extensive locoregional and metastatic involvement rendered curative surgical intervention inappropriate, necessitating systemic and palliative management.[13]

Our Perspective

We believe this case illustrates an unusually aggressive biological behavior of Pancoast tumors. The bilateral jugular vein thrombosis likely results from both direct vascular compression and a tumor-induced hypercoagulable state. Contralateral supraclavicular and high cervical lymphadenopathy may reflect atypical lymphatic spread due to mediastinal obstruction. This case underscores the need for clinicians to maintain a high index of suspicion for atypical presentations, perform thorough cervical, mediastinal, and vascular evaluation, and employ a multidisciplinary approach in planning management. Early recognition of such aggressive phenotypes can help optimize staging, prognostication, and therapeutic decision-making.

Conclusion

Pancoast tumors are rare lung malignancies that typically manifest with thoracic inlet involvement and neurologic or vascular symptoms. This case demonstrates an exceptionally aggressive presentation, with simultaneous bilateral internal jugular vein thrombosis, contralateral supraclavicular and high cervical nodal metastases, malignant pleural effusion, and major vascular encasement. Such extensive disease precluded curative surgical intervention and necessitated palliative therapy. Clinicians should be vigilant for atypical manifestations in patients with apical lung masses, and comprehensive imaging of cervical, mediastinal, and vascular structures is essential. Reporting rare presentations like this contributes to understanding the full spectrum of Pancoast tumor behavior and informs multidisciplinary management strategies.

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