Case Report

Shoulder Pain as The First Clue: A Case Report of Pancoast Tumor with Early Presentation

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Abstract

Background: In some cases, shoulder pain can be an early sign of a serious condition, such as a Pancoast tumor. A Pancoast tumor is a type of lung cancer located in the upper lobe of the lung. These tumors are often difficult to diagnose because their symptoms are similar to those of musculoskeletal conditions.

Case: A 68-year-old man presented with a three-month history of right shoulder pain. The pain had been treated with analgesics and acupuncture but showed no improvement. The patient reported experiencing shortness of breath over the past few days. The patient had a history of smoking and unintentional weight loss. A chest X-ray revealed atelectasis and a suspicious mass in the superior lobe of the right lung. A chest CT scan confirmed the presence of a mass in the superior lobe of the right lung. A biopsy was performed to confirm the diagnosis, which revealed poorly differentiated small cell carcinoma in the right lung. The patient was subsequently diagnosed with a Pancoast tumor (with staging T4N3M1a).

Discussion: A pancoast tumor is a condition which oftenly overlooked due resemblane of musculoskeletal disorders. Shoulder pain caused by this tumor may result from the tumor invading surrounding tissues. It is important for physicians to perform a thorough evaluation of patients presenting with shoulder pain, especially when risk factors are present.

Conclusion: Shoulder pain as an early symptom of a Pancoast tumor is an important clinical concern for healthcare professionals. Early detection through comprehensive and appropriate evaluation can significantly improve patient prognosis.

Keywords: early clinical presentation, pancoast tumor, shoulder pain

INTRODUCTION

Shoulder pain is often considered a common complaint that can be caused by various conditions, ranging from muscle injuries to joint diseases. However, in some cases, shoulder pain can be an early sign of a serious condition, including Pancoast

tumors.[1] Pancoast tumor is a type of lung cancer located in the upper part of the lungs, near the spine, and mediastinal structures. These tumors are often difficult to diagnose in the early stages because their symptoms resemble those of musculoskeletal conditions, leading them to be frequently overlooked by medical practitioners.[2]

Pancoast tumors represent about 3–5% of the total cases of lung carcinoma.[3] In 1924, Pancoast described four cases involving patients who experienced pain in the shoulder and arm, wasting of the intrinsic hand muscles, and symptoms on the same side. Horner's syndrome was noted to be associated with a mass located at the lung apex. Pancoast tumor is a carcinoma that arises from the lung apex and frequently produces a group of signs and symptoms collectively referred to as Pancoast syndrome. These may involve shoulder and arm pain along with Horner's syndrome, which is marked by ipsilateral facial anhidrosis, pupillary constriction, and eyelid drooping.[4]

In clinical reports and case series, misdiagnosis of Pancoast tumor as musculoskeletal pain are frequently documented, with diagnostic delays of 3 to over 9 months described in multiple observational reports, reflecting the challenge of recognizing this rare condition when presenting as shoulder pain without pulmonary symptoms.[5–9] This case underscores the importance of early detection of Pancoast tumor with the initial symptom of shoulder pain overlapping with Horner Syndrome to prevent misdiagnosis and mistreatment of the patient.

CASE

A 68-year-old man presented to the hospital with a history of right shoulder pain that had persisted for the past three months. The pain radiated from the shoulder to the right arm, felt like a burning sensation (VAS 7/10), and was accompanied by hand muscle weakness and paresthesia. The pain worsened with physical activity and did not respond to analgesics or acupuncture. The patient also complained of shortness of breath in the past few days. The patient was a heavy smoker with a history of smoking for over 40 years. The patient reported difficulty moving his right arm and significant weight loss without a clear cause.

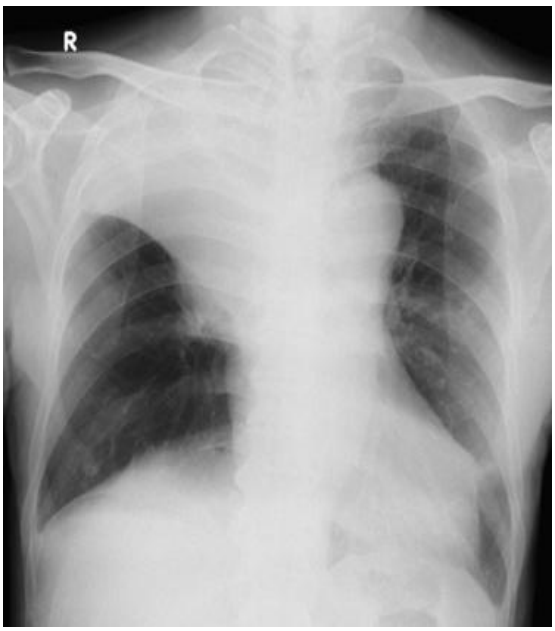

Figure 1. Chest X-ray showing atelectasis and a suspected mass in the upper right lung

Physical examination revealed tenderness in the supraclavicular area, limited range of motion in the right shoulder

joint, and enlargement of the right supraclavicular lymph nodes. There was decreased movement of the right chest wall and diminished vesicular breath sounds on the same side. We also found right ptosis, right miosis, anhidrosis, and specific weakness in the right intrinsic hand muscles related to the C8-T1 nerve roots, which indicated the occurrence of Horner's syndrome in the patient.

Based on the presenting symptoms, the patient was advised to be hospitalized and undergo a chest X-ray. The X-ray revealed atelectasis and a suspected mass in the right upper lung lobe (Figure 1).

Figure 2. CT images demonstrating a solid mass with heterogeneous enhancement compressing the trachea. Showing a lung tumor with infiltration into the trachea

The physician then recommended further radiological evaluation. The thorax Multislice Computed Tomography (MSCT) examination shows a solid mediastinal mass that presses to narrow the trachea and main bronchus with the narrowest diameters of ±0.2 and ±0.1 cm, respectively. It encloses the right brachiocephalic artery, bilateral subclavian arteries, and bilateral common carotid arteries (CCA). Obliteration of the right superior lobar bronchus causes atelectasis of the right superior lobe of the lung and intra-vena cava superior (VCS) thrombus. Enlarged lymph nodes are also seen in the left supraclavicular (±1.1 x 1.2 cm), right (±0.8 x 0.9 cm), left upper paratracheal (±2.2 x 1.2 cm), and subcarinal (±1.2 x 1.3 cm) (Figure 2).

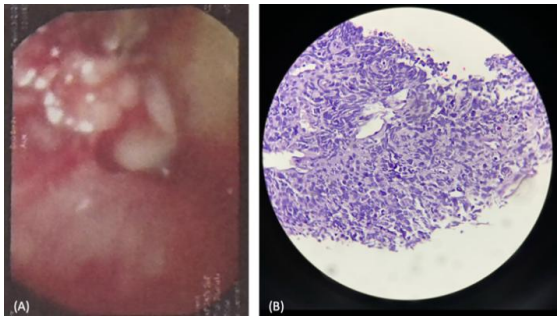

Figure 3. A) Bronchoscopy examination;
B) Histopathology

Bronchoscopy was subsequently performed, revealing a mass with an irregular surface in the carina and right main bronchus (Figure 3). Histopathology examination with a biopsy was performed to confirm the diagnosis, showing tumor cell proliferation with polymorphic, hyperchromatic nuclei and moulding with subnuclei that is generally inconspicuous, and mitosis is readily observed. Necrosis within the tumor mass is present,

accompanied by fibrosis and crush artefact. Therefore, poorly differentiated neuroendocrine carcinoma/small cell carcinoma of the right lung was concluded. The patient was subsequently diagnosed with a Pancoast tumor (with staging T4N3M1a). Chemotherapy was planned to help reduce pain and improve the patient's quality of life. However, the patient refused chemotherapy and preferred palliative care only.

DISCUSSION

Pancoast tumor is a condition that is often overlooked because its symptoms closely resemble those of musculoskeletal disorders. Shoulder pain caused by this type of tumor may result from tumor invasion into surrounding tissues, including nerves and bone structures. The pain associated with Pancoast tumors is often persistent and may spread to other areas, such as the upper back and arm. This can lead to misdiagnosis, where patients may be referred for physical therapy or pain management.[10]

It is important for physicians to perform a thorough evaluation of patients presenting with shoulder pain, especially when risk factors such as a history of smoking and significant unexplained weight loss are present. The heavy smoking history (over 40 years) is an excellent factor to highlight in this case report. Reinforce the argument by stating that approximately 60–80% of patients with Pancoast tumors are smokers.[11]

The clinical presentation in Pancoast tumor is often dominated by unrelenting shoulder and arm pain rather than typical pulmonary symptoms like cough or hemoptysis, because the tumor initially grows toward the brachial plexus and chest wall rather than inward into the lung airways.[12,13] Pain typically radiates along the distribution of the C8–T1 and T2 nerve roots, producing a burning or neuropathic character and often leading patients to first seek care from orthopedics or neurology before the correct diagnosis is confirmed.[12]

This patient's prolonged right shoulder discomfort with radiation into the arm that did not react to analgesics or acupuncture follows this classic pattern, indicating direct involvement of the lower portions of the brachial plexus by a growing apical tumour. Hand muscle weakness and paresthesia are well-documented symptoms of C8-T1 nerve involvement, implying widespread local neurological impairment.[12,13]

Another hallmark of Pancoast tumors is Horner's syndrome, characterized by ipsilateral ptosis, miosis, and anhidrosis, which arises when the tumor encroaches on the sympathetic chain or stellate ganglion in the thoracic inlet.[12–14] In fact, up to 20–50% of patients with apical lung tumors will develop partial or complete Horner's syndrome at presentation, and its presence in this case provided an important clinical clue toward a neoplastic cause rather than a primary musculoskeletal or peripheral nerve disorder.[13]

Systemic symptoms such as significant unintentional weight loss and

shortness of breath, as reported by this patient, are also consistent with advanced malignancy and local mass effect, a finding seen in more advanced or invasive apical tumors. These symptoms are often delayed due to the apical location, which avoids early involvement of major airways, meaning patients commonly present with pain and neurological deficits long before respiratory complaints.[12,13]

Additionally, the use of imaging techniques such as CT scans is crucial for detecting the presence of a mass at the lung apex.[15] Bronchogenic carcinomas that arise peripherally at the lung apex and extend into the superior pulmonary sulcus are located within the limited space of the thoracic inlet. They infiltrate lymphatic channels within the endothoracic fascia and spread directly to involve the lower brachial plexus roots, intercostal nerves, stellate ganglion, sympathetic chain, as well as nearby ribs and vertebrae, leading to intense pain and the manifestation of Horner's syndrome, also known as Pancoast syndrome.[15,16]

Biopsy is critical not only to confirm malignancy but also to identify histologic subtype, which guides therapy. Although non-small cell lung cancer (NSCLC) is historically the predominant histology in superior sulcus tumors, small cell lung carcinoma presenting with Pancoast syndrome has been documented and carries distinct therapeutic implications, often necessitating systemic chemotherapy rather than primary surgical resection.[8,12] Small-cell lung cancer (SCLC) generally carries a worse overall prognosis than NSCLC, particularly when advanced. It is known for early and widespread metastatic potential, frequent involvement of lymph nodes, and a high likelihood of distant spread even at initial presentation, contributing to lower long-term survival.[8,17]

In this case, shoulder pain was not merely a bothersome symptom, but an important indicator of a more serious underlying tumor. Although long-term prognosis ultimately depends on the stage of the cancer, this early intervention highlights the importance of recognizing initial symptoms and providing appropriate management. This case underscores the need for greater awareness among healthcare professionals regarding the possibility of a Pancoast tumor in patients with persistent shoulder pain.

Through this case report, it is hoped that awareness will be raised regarding how shoulder pain can serve as an early warning sign of a Pancoast tumor. It also highlights the importance of thorough evaluation in patients with seemingly harmless symptoms, in order to prevent delays in diagnosis and treatment that could affect the outcome.

CONCLUSION

Pancoast tumors should be considered in patients, especially long-term smokers with persistent shoulder and arm pain that radiates along the C8–T1 distribution and does not respond to usual musculoskeletal therapies, as this pattern often reflects lower brachial plexus invasion rather than a benign orthopedic condition.

Early recognition is critical because initial misdiagnosis as shoulder or cervical musculoskeletal pathology is common and can delay definitive diagnosis by several months, allowing the tumor to progress locally and systemically. Timely diagnosis with CT or Magnetic Resonance Imaging (MRI) and biopsy not only facilitates appropriate staging and therapy, but may improve symptom control and quality of life, even in advanced disease where curative treatment is not feasible.

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