Case Report

From chest pain to spinal cord compression: A rare presentation of stage IV thoracic squamous cell carcinoma – A case report

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ABSTRACT

Delayed diagnosis of cancer, often secondary to vague or non-specific symptoms, remains one of the most critical factors contributing to poor survival rates in the United Kingdom. We discuss a 50-year-old, otherwise fit and healthy man presenting to the emergency department (ED) with vague symptoms, including atypical chest pain, left-sided shoulder pain, and hoarseness of voice. He had a history of multiple presentations to the ED and general practitioner surgery with similar nonspecific symptoms and was repeatedly managed as anxiety or costochondritis. On one of the presentations, the patient had anisocoria and mild left-sided ptosis, indicating possible Horner's syndrome. Subsequent computed tomography imaging confirmed a partly necrotic anterior mediastinal mass encasing major vessels with necrotic supraclavicular nodes, later confirmed as metastatic squamous cell carcinoma. This case highlights the importance of thorough clinical examination, especially in patients with recurrent non-specific presentations, as subtle findings can provide critical diagnostic clues, uncover severe underlying pathology, and enable timely intervention.

Key words: Delayed cancer diagnosis, Horner's syndrome, Mediastinal mass, Spinal cord compression, Thoracic squamous cell carcinoma

Squamous cell carcinoma (SCC) is a common malignant epithelial tumor that most frequently arises from the lung, head and neck, or esophagus and may involve the mediastinum through direct extension or metastatic spread [1,2]. The mediastinum contains vital vascular and lymphatic structures, and malignant involvement of this region often indicates advanced disease. Metastatic spread to mediastinal and supraclavicular lymph nodes is well recognized in thoracic and upper aerodigestive tract malignancies, particularly in SCC, due to the rich lymphatic drainage pathways in this region [3-5]. Clinically, patients may present with non-specific symptoms such as chest pain, dyspnea, cough, or features related to compression or encasement of adjacent structures, including major vessels and airways [6]. Imaging, particularly contrast-enhanced computed tomography (CECT), plays a crucial role in detecting mediastinal masses, assessing necrosis, vascular encasement, and lymph node involvement, which are suggestive of aggressive malignant disease [7]. Histopathological confirmation remains essential for definitive diagnosis and appropriate oncologic management [8].

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CASE PRESENTATION

A 50-year-old male with no known comorbidities or significant past medical history presented to the emergency department (ED) with complaints of atypical chest pain, left-sided shoulder pain, and progressive hoarseness of voice. His symptoms had evolved over a 4-month period before diagnosis and resulted in multiple healthcare encounters. The patient initially presented to his general practitioner (GP) with scapular pain, palpitations, and hoarseness of voice. These symptoms were attributed to a musculoskeletal etiology, and conservative management was recommended. Two months later, he attended the same-day emergency care service with right-sided chest pain and associated right upper-limb paresthesia. Clinical assessment and initial investigations were unremarkable, and he was discharged with a working diagnosis of musculoskeletal pain and anxiety.

One month thereafter, he re-presented to his GP with persistent hoarseness of voice and was treated for a presumed upper respiratory tract infection. Despite these interventions, his symptoms persisted and progressively worsened. Approximately 1 month later, and 4 months after his initial presentation to primary care, he presented

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to our ED with ongoing atypical chest pain, left shoulder pain, and worsening hoarseness of voice.

On presentation, the patient was hemodynamically stable, and the initial systemic examination was unremarkable. However, a detailed head-to-toe neurological examination revealed anisocoria with mild ptosis of the left eye, raising concern for an underlying neurological or compressive pathology that had previously gone unrecognized [9].

Baseline laboratory investigations, including complete blood count and biochemical profile, were within normal limits. In view of the persistent symptoms and the newly identified neurological findings, important differential diagnoses included primary lung carcinoma, particularly an apical tumour, and lymphoma with mediastinal involvement. Neurovascular pathology, including carotid artery dissection, was also considered given the presence of partial Horner's syndrome.

To confirm, a CECT scan of the head, cervical spine, thorax, abdomen, and pelvis was performed. Imaging revealed an anterior mediastinal mass with areas of necrosis encasing the origin of the brachiocephalic trunk and left common carotid artery, along with enlarged necrotic supraclavicular lymph nodes (Fig. 1).

Based on the radiological findings and clinical presentation, a thymic neoplasm with possible metastatic disease was initially suspected, with consideration of a thoracic primary malignancy [10]. The case was discussed at the lung multidisciplinary team (MDT) meeting, where additional concern was raised regarding a possible left vocal cord lesion, prompting further evaluation to exclude laryngeal carcinoma as an alternative primary source [11]. Infective and inflammatory etiologies, including tuberculosis, were considered less likely due to the absence of systemic symptoms and supportive radiological features.

The patient was discharged with plans for outpatient follow-up and further investigations. On follow-up, he was found to have evidence suggestive of widespread disease progression. Further evaluation with positron emission tomography–computed tomography (PET-CT) revealed extensive metastatic involvement of the cervical and thoracic spine, along with bilateral diaphragmatic lymphadenopathy.

Histopathological confirmation was obtained from an ultrasound-guided core biopsy of an enlarged left supraclavicular/suprasternal lymph node. The microscopic examination of the specimen demonstrated reactive fibrous stroma containing p40-positive moderately to poorly differentiated SCC. The tumor exhibited a high proliferative index, with a Ki-67 of approximately 95%. Immunohistochemical staining was negative for TTF-1 and p16.

While awaiting completion of diagnostic investigations, the patient developed acute-onset paraplegia. Magnetic resonance imaging of the spine demonstrated spinal cord compression at the T1–T3 levels, in addition to extensive regional disease consistent with an aggressive malignancy (Fig. 2) [12]. The patient underwent urgent spinal decompression surgery to relieve the cord compression. His post-operative course was complicated by the development of a spinal hematoma, which was managed conservatively with a prolonged course of antibiotics.

Following reassessment at the lung MDT, and considering the patient's performance status of 3 and absence of significant comorbidities, he was deemed suitable for systemic oncological therapy in combination with radiotherapy, along with supportive and symptomatic care.

DISCUSSION

This case illustrates the diagnostic difficulty associated with thoracic malignancies presenting with atypical, non-specific symptoms, and emphasizes the importance of meticulous clinical examination. The patient had repeated healthcare encounters for chest and shoulder pain with hoarseness, initially attributed to benign causes. The eventual detection of anisocoria with mild ptosis was a pivotal finding. Such features are characteristic of Horner's syndrome, which is frequently associated with apical or mediastinal tumors that disrupt the sympathetic

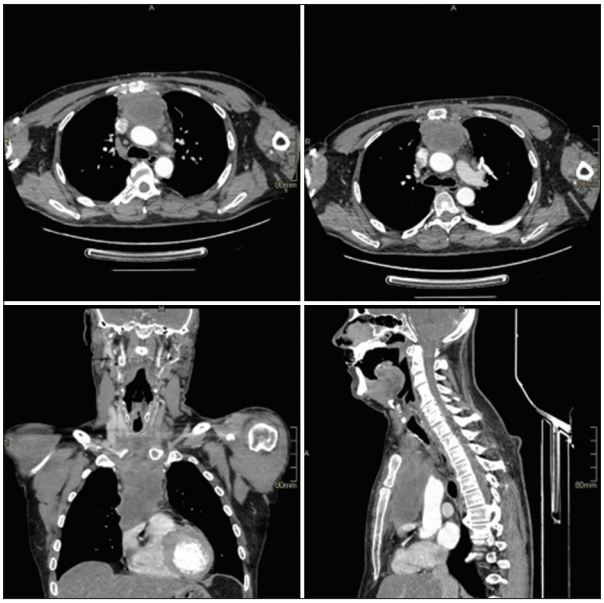

Figure 1: Cross-sectional, sagittal, and coronal computed tomography images showing possible thymic neoplasm and enlarged necrotic supraclavicular lymph nodes

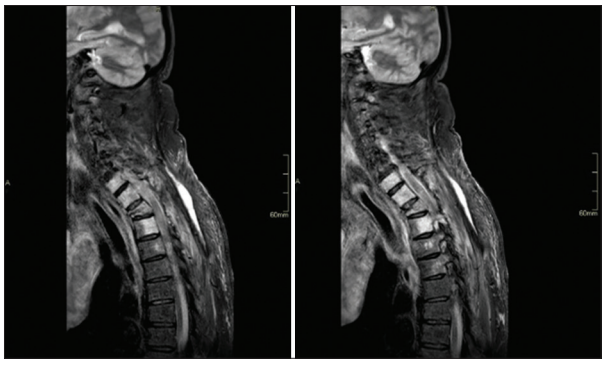

Figure 2: Magnetic resonance imaging images confirming cord compression at T1-T3 levels

chain and may be the first indicator of an underlying malignancy [13].

Imaging revealed an anterior mediastinal mass with necrotic changes and vascular encasement. In adults, anterior mediastinal masses most commonly represent thymic tumours, lymphoma, germ cell tumours, or metastatic disease, and radiological characteristics combined with clinical features help narrow the differential diagnosis [6]. MDT discussion was crucial in guiding further evaluation and avoiding premature diagnostic closure.

Hoarseness of voice raised suspicion of recurrent laryngeal nerve involvement. Vocal cord paralysis can occur secondary to mediastinal or lung malignancies due to nerve compression or invasion and may precede other systemic manifestations [14]. This highlights the need to evaluate voice changes thoroughly, particularly when persistent or associated with other red flag symptoms.

Disease progression was confirmed on PET-CT, with subsequent development of acute paraplegia due to spinal cord compression. Malignant spinal cord compression is a well-recognized oncological emergency requiring urgent diagnosis and intervention to prevent irreversible neurological damage [15]. This case underscores the aggressive nature of advanced SCC and the critical need for early recognition of warning signs to reduce diagnostic delay and morbidity.

CONCLUSION

This case demonstrates the diagnostic challenges associated with thoracic malignancies presenting with non-specific or atypical symptoms. Persistent chest pain, shoulder discomfort, and hoarseness, when repeatedly attributed to benign causes, can obscure serious disease. Subtle neurological findings, such as anisocoria and mild ptosis suggestive of Horner's syndrome, were crucial in raising suspicion for a mediastinal mass and highlight the need for thorough clinical examinations.

Early identification of these warning signs should prompt timely imaging and multidisciplinary evaluation, thereby improving outcomes. The rapid progression to spinal cord compression demonstrates the aggressive nature of advanced SCC and the necessity for prompt intervention. Clinicians should maintain a high index of suspicion for malignancy in patients with persistent, unexplained symptoms and ensure appropriate follow-up and escalation if initial conservative management is unsuccessful. This case underscores the importance of vigilance and comprehensive assessment in achieving diagnostic accuracy.

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