

**UNVEILING THE UNSEEN: A RADIOLOGICAL CASE STUDY ON THE DIAGNOSIS AND MANAGEMENT OF NON-SMALL CELL CARCINOMA PRESENTING SOLELY WITH HEMOPTYSIS IN AN ELDERLY FEMALE****Ahmad Bin Khalid\***

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**ABSTRACT**

Non-Small Cell Carcinoma (NSCC) is a prevailing form of lung cancer that often presents with classic symptoms such as cough, shortness of breath, and weight loss. However, this case study delves into the intriguing scenario of NSCC manifesting atypically, emphasizing the challenges it poses in diagnosis and management. Our focus is on the radiological investigations of an elderly female patient who initially presented with the unexpected symptom of hemoptysis.

**KEYWORDS:** Non-Small Cell Carcinoma (NSCC), NSCC manifesting atypically.**Background Information**

Non-Small Cell Carcinoma (NSCC) is the most common type of lung cancer, accounting for approximately 85% of cases.<sup>[1]</sup> Traditionally, NSCC patients present with well-recognized symptoms and risk factors, such as a history of smoking, chronic cough, and radiological abnormalities.<sup>[2]</sup> However, in a minority of cases, NSCC can deviate from this pattern and present with unusual symptoms, making early diagnosis and treatment complex.<sup>[3]</sup>

**Setting/Hospital**

This case study was conducted at West Suffolk Hospital, a reputable healthcare facility known for its expertise in diagnosing and treating various medical conditions, including lung cancer.

**Case Presentation**

A 59-year-old female patient presented with a two-day history of hemoptysis, a symptom not commonly associated with lung cancer. The challenge was to promptly diagnose and effectively manage this unexpected presentation. The patient's medical history revealed several important factors. The patient was a former smoker with a significant history of tobacco use. The patient also had a history of chronic obstructive pulmonary disease (COPD) and hypertension, which further complicated the clinical picture.

**Investigations**

Initial investigations, including a Full Blood Count (FBC), clotting profile, Liver Function Tests (LFTs), and Renal Function Tests (RFTs), did not yield any significant abnormalities, adding to the diagnostic complexity.

Chest X-ray (CXR) was the initial radiological investigation, revealing right upper lobe collapse and an opacity in the right hilar region.

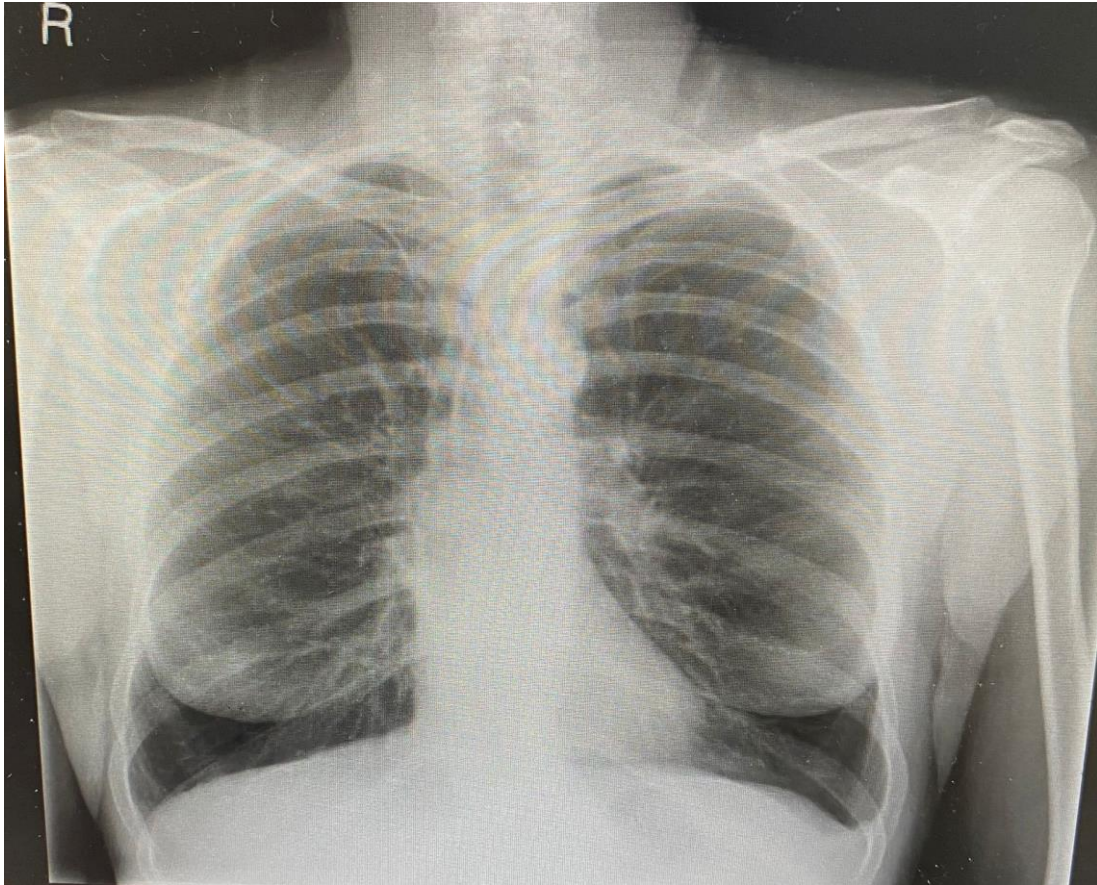


Figure 1.

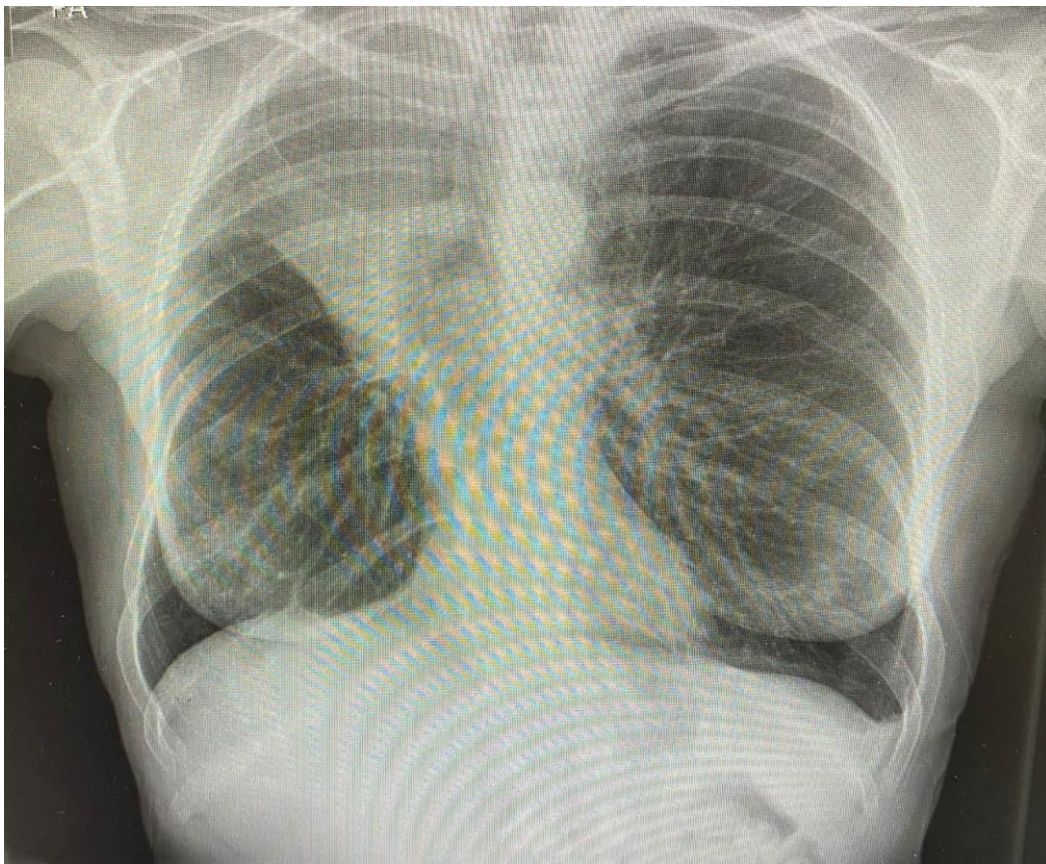


Figure 2.

A subsequent CT Chest Abdomen Pelvis was conducted, unveiling a tumor within the right lung with involvement in various thoracic structures. Additionally, the scan suggested a possible adrenal metastasis.

Further diagnostic clarification was sought through Endobronchial Ultrasound (EBUS), a procedure that confirmed squamous cell carcinoma and provided staging information. The EBUS-guided biopsy was also instrumental in obtaining tissue samples for a definitive diagnosis.

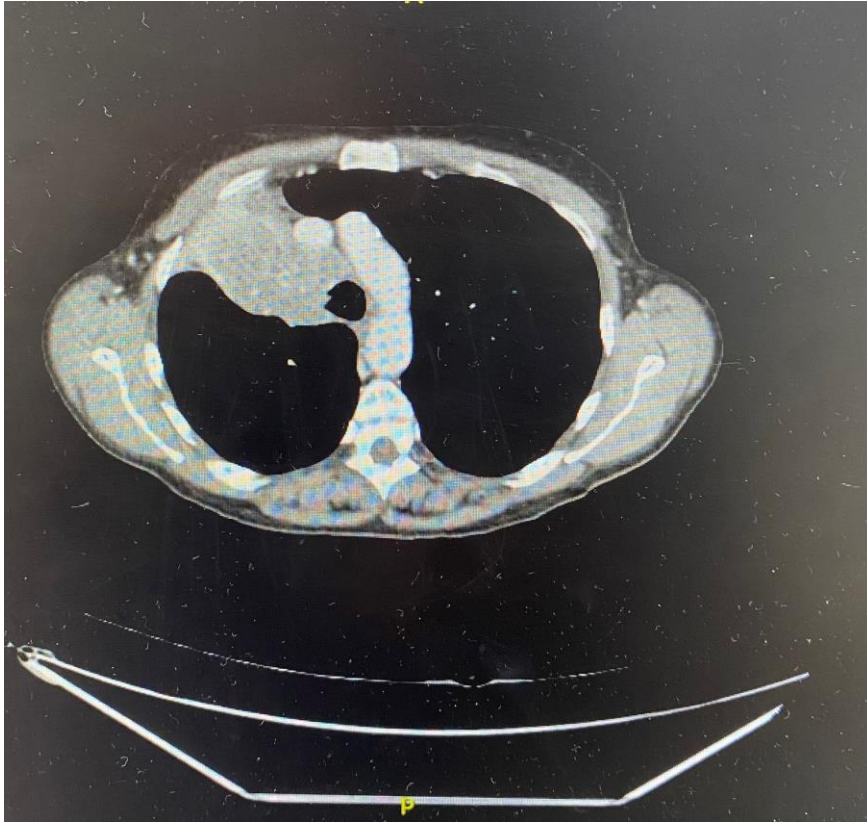


Figure 3.

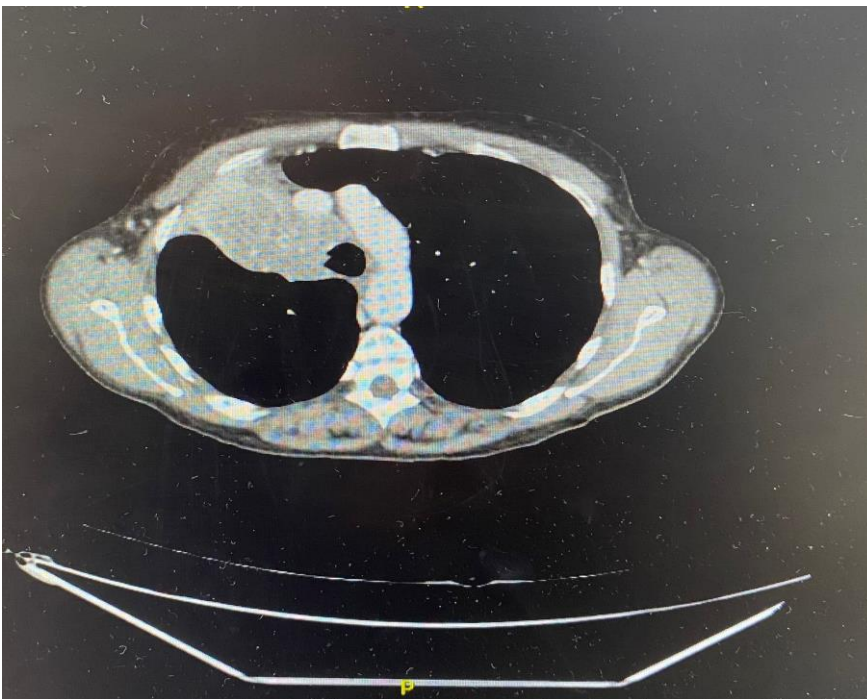


Figure 4.

To alleviate symptoms associated with tumor compression, the patient was started on dexamethasone, marking the commencement of symptom management.

### Treatment Plan

Given the necrotic nature of the tumor tissue, a CT-guided biopsy was deemed unfeasible. Consequently, an Endobronchial Ultrasound (EBUS) procedure was performed, allowing for confirmation of the diagnosis and staging of the cancer.

A multidisciplinary team (MDT) comprising experts from various medical disciplines convened to assess the case comprehensively. Their collective conclusion established the disease as T4N2M1b, indicating extensive local tumor growth (T4), regional lymph node involvement (N2), and distant metastasis (M1b) with right adrenal gland involvement.

The SARON trial was recommended as the most appropriate treatment approach. This trial involves a combination of radiotherapy, chemotherapy, and immunotherapy tailored to the specific characteristics of the patient's cancer.

To further evaluate the extent of metastasis, additional imaging studies, including a Positron Emission Tomography-Computed Tomography (PET-CT) scan and Magnetic Resonance Imaging (MRI) of the brain, were conducted. These investigations confirmed the absence of further metastatic sites, helping to refine the treatment plan.

Chemoradiotherapy with Cisplatin and Vinorelbine, as prescribed by the MDT, was initiated to target the primary tumor and any remaining localized disease.

### RESULTS AND OUTCOMES

As the patient is currently undergoing treatment, the long-term outcomes are yet to be fully realized. However, this case study underscores the importance of early diagnosis, a multidisciplinary approach, and personalized treatment plans in managing complex NSCC cases, especially those presenting with atypical symptoms like hemoptysis.

### DISCUSSION

This case study, titled "Unveiling the Unseen: A Radiological Case Study on the Diagnosis and Management of Non-Small Cell Carcinoma Presenting Solely with Hemoptysis in an Elderly Female," set out to explore the intricate relationship between radiological imaging and the diagnosis and management of Non-Small Cell Carcinoma (NSCC) in an unusual clinical presentation.

In this case, the initial radiological investigation, a Chest X-ray (CXR), unveiled crucial findings. It showed right upper lobe collapse and an opacity in the right hilar

region. These findings were indicative of a pulmonary mass, prompting further investigations. CXR is often the first step in evaluating lung pathology due to its accessibility and ability to provide an initial impression of the disease.<sup>[4]</sup> However, as demonstrated in this case, it may not provide detailed information for staging or characterization of the lesion.<sup>[5]</sup>

The importance of CXR as a preliminary screening tool for lung cancer has been highlighted in various studies.<sup>[6]</sup> However, its limitations in providing comprehensive information for staging and characterization are well-documented.<sup>5</sup> Published studies support the notion that more advanced imaging modalities, such as CT scans, are essential for precise diagnosis and staging of lung cancer.<sup>[7]</sup>

Subsequent to the CXR, a CT Chest Abdomen Pelvis was conducted. This CT scan provided a more detailed assessment of the pulmonary mass, revealing its involvement in various thoracic structures and suggesting a possible adrenal metastasis. The CT scan not only confirmed the presence of the tumor but also played a crucial role in staging the disease, providing invaluable information about the extent of local and distant involvement.

The utilization of CT scans for staging and characterizing lung cancer is well-established in published literature.<sup>[8]</sup> CT scans are instrumental in differentiating between NSCC subtypes, identifying distant metastases, and guiding treatment decisions.<sup>9</sup> Studies have consistently emphasized the high sensitivity and specificity of CT imaging in this context.<sup>[8,9]</sup>

Endobronchial Ultrasound (EBUS) was employed to obtain a definitive diagnosis in this case. EBUS not only confirmed squamous cell carcinoma but also provided staging information, which was critical in shaping the treatment plan. This procedure bridged the gap between radiological findings and clinical presentation, establishing a direct link between the tumor and the presenting symptom of hemoptysis.

Published studies have recognized the pivotal role of EBUS in the diagnosis and staging of lung cancer, particularly in cases with atypical presentations.<sup>[10]</sup> EBUS has been shown to enhance the accuracy of diagnosis and facilitate early intervention, aligning with the objectives of this study.<sup>[11]</sup>

The involvement of a multidisciplinary team (MDT) in this case was instrumental. Their collective expertise allowed for a comprehensive assessment, leading to the staging of the disease as T4N2M1b with right adrenal metastasis. This staging was pivotal in guiding treatment decisions, highlighting the significance of a multidisciplinary approach in managing complex NSCC cases.

Published studies have consistently emphasized the advantages of a multidisciplinary approach in managing lung cancer cases.<sup>[12]</sup> MDT discussions lead to more accurate staging, tailored treatment plans, and improved patient outcomes, aligning with the objectives of this study.<sup>[13]</sup>

The patient in this case was recommended to participate in the SARON trial, a clinical trial that involves a combination of radiotherapy, chemotherapy, and immunotherapy. This approach emphasizes the importance of personalized treatment plans that consider the specific characteristics of the patient's cancer. Clinical trials offer innovative treatment options that can significantly impact patient outcomes.

Numerous published studies have demonstrated the efficacy of personalized treatment plans and the value of clinical trials in improving outcomes for NSCC patients, especially in cases involving limited metastatic spread.<sup>[14]</sup> The incorporation of targeted therapies and immunotherapies has revolutionized NSCC treatment.

## CONCLUSION

In conclusion, this case study aligns with its objectives, illustrating the pivotal role of radiological imaging in diagnosing and managing Non-Small Cell Carcinoma, particularly when the disease presents atypically. The discussion underscores the significance of advanced imaging modalities, a multidisciplinary approach, and personalized treatment plans in improving outcomes for NSCC patients. Published studies further support the findings and recommendations of this case study, emphasizing the importance of a comprehensive and collaborative approach to lung cancer diagnosis and management.

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