

Axillary lymph node metastasis from squamous cell lung cancer: an unusual site of metastatic spread: A case report

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Abstract:

Lung cancer was the most often diagnosed cancer and the leading cause of death among men. It is usually discovered in the late metastatic stage. Metastasis of lung cancer to axillary lymph nodes is extremely rare. This case report presents a 73-year-old male with a productive cough and shortness of breath admitted to the emergency department. Physical assessment revealed tenderness in the upper chest and lower sternal area, as well as other symptoms. Lab results were normal, but a scan showed various lesions in the lungs, lymph nodes, liver, and spine. A biopsy confirmed metastatic squamous cell carcinoma originating from the lungs, and the patient started immunotherapy. Metastasis of lung cancer to axillary lymph nodes is rare. Normally, lymphatic drainage to the axillary lymph nodes comes from the upper limbs and chest wall instead of the lungs. There have been many theories hypothesized to explain the unusual pattern of ALN metastases from lung cancer. Lung cancers, including squamous cell carcinoma, rarely metastasize to axillary lymph nodes, but should be considered in cases with chest wall invasion.

Keywords:

Lung cancer; Squamous cell carcinoma; Axillary lymph nodes; Metastasis; Case report.

Introduction:

Lung cancer is the most prevalent form of cancer, and the leading cause of cancer-related mortality in both men and women. In 2018, the incidence and mortality rates of lung cancer showed an increase, compared to the rates reported in 2012. It is estimated a total of 2.09 million new cases, accounting for 11.6% of all cancer cases, and 1.76 million deaths, representing 18.4% of all cancer-related deaths. Additionally, it ranks as the third most common cancer type and the second most common cause of cancer death among women specifically. (1)

When lung cancer is discovered, it is usually in metastatic stage IV. Distant metastasis is estimated to be 30–40% at the time of diagnosis of non-small-cell lung cancer (NSCLC) (2). Axillary lymph node metastasis (ALNM) from lung cancer is a rare occurrence, affecting less than 1% of patients, and it is classified as a distinct type of distant lymph node metastasis according to the 8th grading system. (3,4)

This case report shows a case of 73-year-old man with axillary lymph node metastasis from squamous cell

lung cancer, and provides valuable insights into the unique instance of axillary lymph node metastasis from squamous cell lung cancer, shedding light on the diagnostic challenges associated with such cases.

Case presentation

A 73-year-old previously healthy male patient presented to the emergency department due to a productive cough, and shortness of breath for several months. He has been working as a mechanic for many years, and recalled no family history of cancer.

Upon admission, the physical assessment revealed right upper chest and lower sternal tenderness as well as vesicular breathing and expiratory wheezes. A reducible inguinal hernia was also noted. The laboratory test results were in normal ranges. Upon that, chest x-ray revealed right upper lobe consolidation (Figure 1).

For that reason, a scan with contrast was performed, which showed a right upper lobe cavitory lesion with a thick wall adjacent to the ipsilateral pleural surface measuring about 5x5 cm as well as pathologically appearing multiple hilar mediastinal and single right axillary lymph nodes. Vertebral pedicle lesions and two hypo-enhancing liver lesions were also seen (Figures 2–3).

The multidisciplinary team (MDT) meeting decided that a biopsy should be taken from the hepatic lesion at segment VI and from the right axillary lymph node. The result of the histopathology report was diagnostic for metastatic poorly differentiated squamous cell carcinoma consistent with lung origin. In light of our findings, the patient began immunotherapy.

Discussion

Lung cancer is a highly aggressive and deadly disease, accounting for the highest number of cancer-related deaths worldwide. The main reason behind this high mortality rate is the asymptomatic nature of lung cancer during its early stages, leading to late-stage diagnosis when treatment options are limited.(5)

Various occupational exposures have been identified as potential lung carcinogens, such as arsenic, asbestos, beryllium, cadmium, chloromethyl ethers, chromium, nickel, radon, silica, and vinyl chloride. Studies have estimated that approximately 10% of lung cancer deaths in men and 5% in women globally may be attributed to exposure to these occupational carcinogens, particularly asbestos, arsenic, beryllium, cadmium, chromium, nickel, silica, and diesel fumes. In our case, the patient has a history of working as a mechanic for an extended period of time, which is considered a potential risk factor for lung cancer. (1)

All patients who are suspected or confirmed to have non-small cell lung cancer (NSCLC) should have a comprehensive clinical assessment and a contrast-enhanced CT scan of the chest. If both the clinical evaluation and CT scan do not reveal any abnormalities outside of the thoracic region, a PET scan is advised to assess for the presence of metastases. In cases where the stage of NSCLC is not clearly defined as very early or advanced, it is recommended to perform lymph node staging within the thoracic cavity. (5)

Metastasis of lung cancer to axillary lymph nodes is rare. In a 1941 report, Ochsner and DeBaakey discussed axillary lymph node metastases for lung cancer for the first time. They reported a 6.6% incidence of ALNM in 1,298 lung cancer cases (6). However, Riquet et al. discovered ALNM in 9 of 1,486 (0.61%) postoperative patients with lung cancer (4). Satoh et al. additionally noted a 0.75% rate of ALNM from lung cancer (10 of 1,340 patients). (3)

typically, lymphatic drainage to the ALN comes from the upper limbs and chest wall instead of the lungs. There have been many theories hypothesized to explain the unusual pattern of ALN metastases from lung cancer. The first hypothesis proposed was that ALNM arises through newly created lymphatic channels developing in the chest wall or a pleural adhesion (7).

Another possible pathway for ALNM is retrograde spread, which might give rise to the formation of SCLNM. It has been hypothesized that involvement of the ipsilateral ALNs in the absence of involvement of the chest wall requires metastatic diseases to the ipsilateral mediastinal lymph nodes (MLNs) and subsequent involvement of the cervical lymph nodes (7–9).

A third pathway of ALNM The involvement of intercostal lymphatics via dissemination from MLNM is the third suggested mechanism for ALNM (6). The other suggested mechanism is that ALNM develops as a result of a systemic disorder.

This was possibly the mechanism in our case, wherein the ipsilateral axillary lymph node metastasis probably resulted from the ipsilateral mediastinal lymph nodes (MLNs) and subsequent involvement of the cervical lymph nodes.

According to TNM staging systems, non-regional lymph node dissemination, such as ALNM, is categorized as a type of distant metastasis. Patients with non-regional metastases have a poor prognosis, with survival times varying from 1 to 10 months (3,4).

In recent years, various therapeutic approaches have been attempted to combat lung cancer, but they face significant challenges. However, novel cancer immunotherapy and alternative therapeutic options show promising potential in improving patient outcomes. Chemotherapy with platinum-based regimens is the standard treatment for patients with stage IV non-small cell lung cancer (NSCLC). However, recent advancements have led to the development of targeted therapies for specific driver mutations in NSCLC. Additionally, testing for programmed death ligand-1 expression levels can help guide treatment decisions involving immunotherapies. While a medical oncologist will oversee the management of these therapies, it is beneficial for referring clinicians to be knowledgeable about the available options. (5)

Early detection methods have the potential to significantly impact the outcomes of lung cancer. This can be achieved through the implementation of screening programs, increased awareness and recognition of lung cancer symptoms, and the establishment of clear referral pathways. The use of low dose CT scanning for lung cancer screening is currently being evaluated by the UK National Screening Committee. Studies have demonstrated that this approach is effective in detecting early-stage lung cancers and has shown improved mortality rates compared to traditional chest X-ray screenings. (10)

Conclusion:

All lung cancers, including squamous cell lung cancer, have a rare incidence of axillary lymph node metastasis. Therefore, clinicians should maintain a high index of suspicion and consider this rare condition in the differential diagnosis when examining axillary lymph nodes in cases of any lung carcinoma with chest wall invasion.

Abbreviations

ALN: axillary lymph nodes, **NSCLC:** non-small-cell lung cancer, **ALNM:** Axillary lymph node metastasis, **MDT:**multidisciplinary team, **SCLNM:** Squamous Cell Carcinoma Lymph Node Metastasis, **MLN:** mediastinal lymph nodes, **MLNM:**mediastinal lymph nodes Metastasis.

Declarations:

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CONFLICT OF INTEREST STATEMENT

The authors want to declare that none of them is or was employed by any government agency that has any function other than research and education, and none of them is submitting this manuscript as an official representative or on behalf of the government.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Not applicable.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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