

## Muscle Metastasis in a Patient With Squamous Cell Lung Cancer

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### Abstract

Hematogenous metastases to skeletal muscles are extremely rare. These metastases may present as painful masses in the proximal skeletal muscles. Computed tomography (CT) can confirm the location of the tumor within the facial planes of skeletal muscles. In this report, a case with squamous cell lung carcinoma and

metastases in the biceps and pectoralis major muscles, diagnosed by the histopathological assessment of the biopsy specimens, is presented.

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**Key words:** Lung cancer, Skeletal muscle metastases

**Abbreviations:** CT: Computed tomography, NSCLC: Non-Small Cell Lung Cancer

### Introduction

In non-small cell lung carcinoma (NSCLC), extrathoracic metastases are present in 50% of the cases at diagnosis. While metastases to extrathoracic sites such as liver, adrenal glands, bone, bone marrow, kidney and central nervous system are common in these patients, metastasis of NSCLC to skeletal muscle is an infrequent occurrence. The reasons for the rarity of metastatic tumors in skeletal muscle are not clear (1,2).

### Case Report

A 64-years-old man presented with a two months history of malaise, anorexia and cough. He had a 20 pack-years history of smoking. On physical examination an oval mass of an approximate size of 4 x 5 cm was palpable in the right biceps and another on the right anterior chest wall.

The chest X-ray showed areas of increased density in the left lower and right middle lobes (Figure 1). Thorax CT revealed a soft tissue mass in the right pectoralis major and also a mass in the lingular segment (Figure 2). Bronchoscopy revealed an endobronchial lesion. The histopathological examination of the biopsy specimen from this lesion led to a diagnosis of infiltrating squamous cell carcinoma. Microscopically, the bronchial mucosa was infiltrated with malignant cells. The tumor cells contained an abundant eosinophilic cytoplasm; intercellular bridges and prominent keratinization were also

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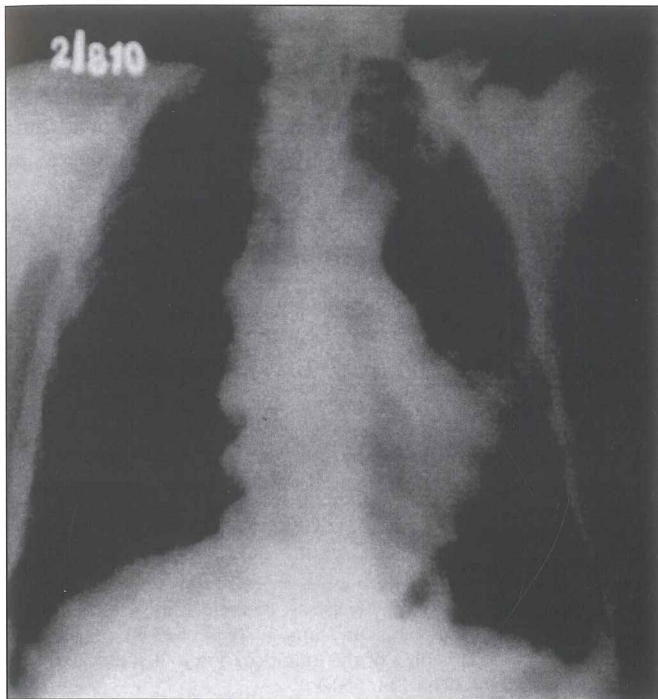


Figure 1. Chest X-ray showing an increase in density in left lower and right middle lobes.

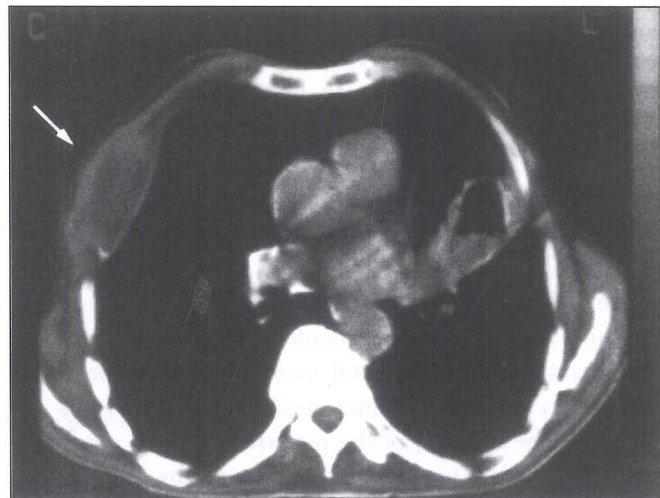


Figure 2. Chest CT showing the soft tissue masses in the right pectoralis major and the lingular segment.

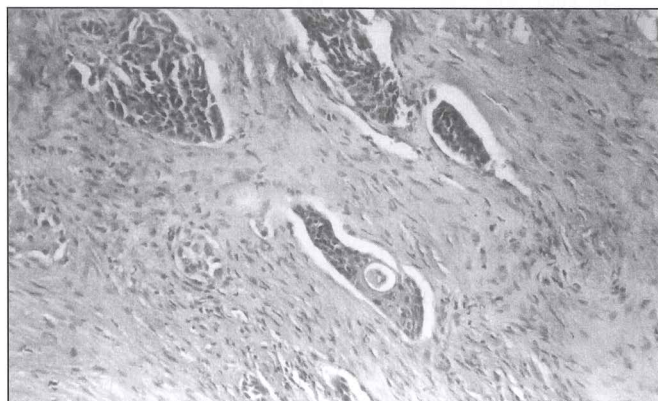


Figure 3: Metastatic squamous cell carcinoma in the skeletal muscle (HE X 200).

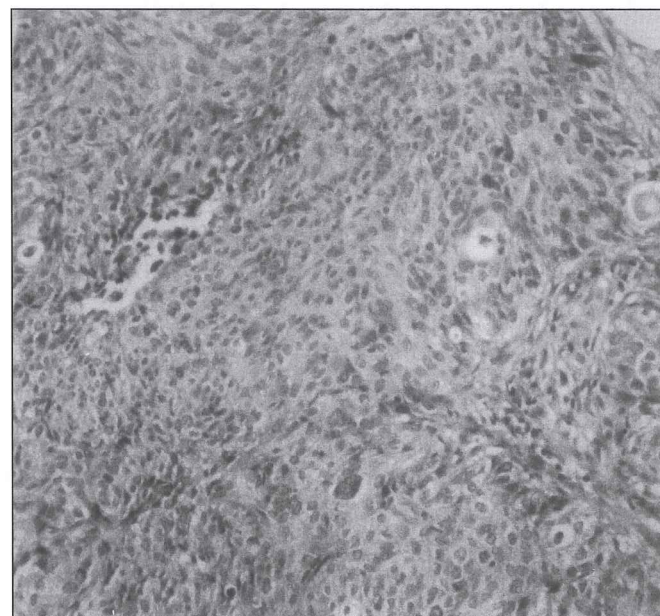


Figure 4: Squamous cell carcinoma of the bronchus, showing a moderately differentiated area with keratinization.

noted. The stroma was desmoplastic and contained scarce inflammatory cells. Biopsy specimens were also obtained from the masses in the right pectoral and biceps muscles. The histopathology of these lesions was similar to that of the primary tumor and was consistent with a diagnosis of squamous cell carcinoma metastasis (Figure 3,4). Cranial CT showed multiple metastases.

The patient was graded as T<sub>2</sub> N<sub>2</sub> M<sub>1</sub> (stage IV) lung cancer. Cranial radiotherapy was planned, but the patient refused the treatment. Then he showed a rapid clinical progression.

## Discussion

Primary tumors in skeletal muscles are more common than secondary tumors. The reason for the rarity of metastatic

tumors in skeletal muscle are unknown but could be related to circulatory, metabolic, or other factors such as tissue pressure. Organs which are more common sites of metastatic carcinoma such as lung, liver and bone are rich in capillary vasculature but have a constant blood flow. It has been suggested that blood flow in skeletal muscle is variable and under the influence of beta-adrenergic receptors. Some authors have suggested that lactic acid production by skeletal muscle inhibits the growth of tumor cells and protease inhibitors in the muscle may resist invasion by tumor cells (3-6).

Autopsy results on large numbers of cases have shown that metastases to skeletal muscle are rare. In an autopsy series of 500 cases of cancer, there were only 4 cases (0.8%) of

carcinoma with metastasis to muscle (4,5). Lawrence and Murray reported a single case of carcinoma of the colon which presented as a mass on the forearm (7). Pellegrini reported a case of squamous cell carcinoma of the lung with a metastasis in the triceps (8). More recently, Yılmaz reported two cases of skeletal muscle metastases in squamous cell lung cancer in the proximal limb muscles (9).

Skeletal muscle metastases are deep in location and painful. Their occurrence should be suspected in cancer patients with pain in skeletal muscle sites in whom X-ray evaluation for osseous metastasis and bone scans are negative. The location of the metastases can be confirmed with CT and the tumor can be diagnosed by examination of the material obtained by thin needle aspiration or by incisional biopsy. Identification of malignant cells will exclude common causes of pain and swelling such as infection, hematoma and ruptured muscle (10).

The diagnosis of skeletal muscle metastasis appears to be a late event in the progression of the disease. The treatment should be primarily palliative (5,7,11).

The optimal treatment of skeletal muscle metastasis is unknown. There are reports of surgical resection followed

by adjuvant radiotherapy or chemotherapy. Some have suggested that solitary metastases less than 4 cm in diameter should be treated by excision rather than incisional biopsy. Surgical resection is reserved for lesions that fail to be controlled locally with radiation or when tumor growth results in neurologic deficit (5,7,11).

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