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Rhomboideus major muscle metastasis as an initial clinical manifestation of pulmonary adenocarcinoma

A 54 year old man was referred by his primary care physician for further evaluation of a 4 month history of progressive swelling over his right scapular region. He had complained of a mildly productive cough for 2 months and a weight loss of 4 kg during the past month. He was a smoker of 35 pack years. Physical examination revealed a painful mass fixed on the right scapular region (fig 1). The rest of the chest examination was normal.

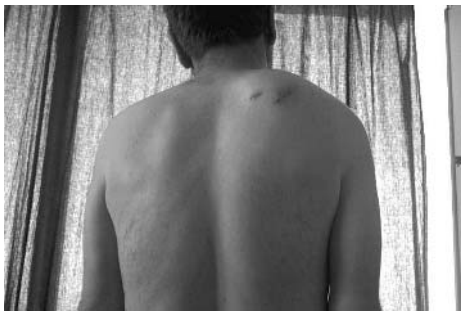

Figure 1 Mass 10 × 10 × 5 cm fixed on the right scapular region.

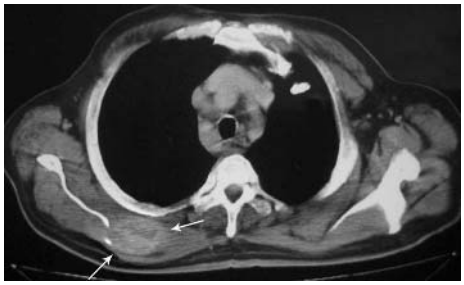

Figure 2 CT scan showing a well defined enhanced mass 7 × 3 cm in the right rhomboideus major muscle (arrows).

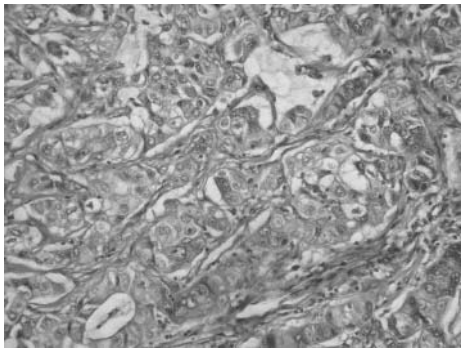

Figure 3 Pathological appearance of metastatic adenocarcinoma at the right rhomboideus major muscle. Stain: haematoxylin and eosin; magnification ×200.

Learning points

- Haematogenous dissemination of metastatic carcinoma from lung cancer to skeletal musculature is extremely rare, but with the increasing incidence of lung cancer worldwide, physicians will probably encounter rarer patterns of metastases.
- This should be kept in mind in a smoker who complains of pain or weakness in an extremity, and appropriate clinical and imaging investigations should be performed in the differential diagnosis.

A computed tomographic (CT) scan revealed a 5 × 3 cm irregular parenchymal lung lesion and a well delineated solid mass within the right rhomboideus major muscle, invading the medial part of the subscapularis and infraspinatus muscles. This mass was enhanced after the administration of iodine-based contrast material (fig 2).

Bronchoscopic biopsy examination revealed an adenocarcinoma of the left upper lobe. An incisional biopsy of the right rhomboideus major muscle showed extensive infiltration of the muscle with adenocarcinoma cells (fig 3).

Metastatic disease to muscle is uncommon and may be misdiagnosed when it is the presenting symptom, particularly in the absence of a known primary tumour. Although skeletal muscle represents approximately 50% of total body mass and receives a large portion of total cardiac output, haematogenous metastatic disease to skeletal muscle is extremely rare. Muscle motion and mechanical tumour destruction, inhospitable muscle pH, and the ability of the muscle to remove tumour produced lactic acid that induces tumour neovascularity in the other tissues are deemed to act as defensive factors against the spread of the tumour. Metastatic disease to muscle tends to be found in people with advanced stage neoplasms. A rim enhancing mass with central hypoattenuation is reported to be the most common appearance, occurring in 83% of lesions.[1] Intramuscular abscesses may have a similar appearance but the absence of acute focal findings, fever, or sepsis should prompt biopsy examination.

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1 **Pretorius ES**, Fishman EK. Helical CT of skeletal muscle metastases from primary carcinomas. *AJR* 2000;**174**:401–3.