Clinical Oncology (2002) **14**: 129–131
doi:10.1053/clon.2001.0019, available online at http://www.idealibrary.com on IDEAL®

Thoracic Malignancy: Case Report

Muscle Metastasis as Initial Manifestation of Epidermoid Carcinoma of the Lung

ORHAN TÜRKEN*, DURMUS ETIZ†, BÜLENT ORHAN‡, HAKAN ÇERMIK||, MUSTAFA YAYLACI*, AHMET ÖZTÜRK*, NECDET ÜSKENT¶

**Department of Hematology and Oncology, GATA Training Hospital, Istanbul, Turkey, †Department of Radiation Oncology, School of Medicine, Osmangazi University, Eskisehir, Turkey, ‡Ali Osman Sönmez Oncology Hospital, Bursa, Turkey, ||Department of Pathology, GATA Training Hospital, Istanbul, Turkey, ¶Department of Hematology and Oncology, Kadir Has University, Istanbul, Turkey*

Received: 12 March 2001 Accepted: 19 September 2001

ABSTRACT: Typical sites of squamous cell carcinoma of lung metastases include liver, brain, bones, pulmonary and adrenal glands. In advanced dissemination it can rarely involve the skeletal muscle. The patient in this case report was a 46-year-old man, with no significant medical history. He was admitted to hospital because of a large swelling on his left thigh. Investigations resulted in a diagnosis of primary squamous cell carcinoma of the lung. Biopsy of the left great adductor muscle produced similar pathology to that of the lung primary. This case report describes a skeletal muscle metastasis as the first sign of metastatic disease. Türken, O, *et al*. (2001) *Clinical Oncology* **14,** 129–131.

Key words: Non-small cell lung cancer, skeletal muscle metastasis

INTRODUCTION

Metastasis is defined as the spread of cells from a primary neoplasm to distant secondary sites and proliferation at these sites. To produce clinically relevant lesions, metastatic cells must complete angiogenesis, progressive growth, motility, detachment, invasion, embolisation, aggregation, adhesion, extravasation, evasion of host defences, angiogenesis and progressive growth [1]. Failure to complete one or more steps of the process eliminates the metastasis.

The main sites of non-small cell carcinoma metastases are live, brain, bones, lung and adrenal glands. Clinically apparent hematogenous skeletal muscle metastases are extremely rare. A case of metastasis to skeletal muscle from bronchogenic carcinoma is reported.

Author for correspondence: Dr Durmus Etiz, Osmangazi University School of Medicine, Department of Radiation Oncology, 26480/Eskisehir/Turkey. Tel: +90 222 2392979/ ext: 3454, +90 532 5785956; Fax: +90 222 2291150, +90 222 2393772; E-mail: d_etiz@yahoo.com

Case Report

A 46-year-old man was admitted to our hospital because of a painful mass on the left hip and weight loss of 9 kg over the preceding six months. On physical examination, he was in moderate general condition, had an 10 × 8 cm fluctuant mass fixed to the adductor magnus muscle without ulceration of the skin. No other abnormal findings were evident on clinical examination. Chest X-ray showed a mass in the left lung field.

Pretreatment laboratory investigation of the peripheral blood showed WBC 13×10^3/mL (neutrophils 72%, lymphocytes 28%), RBC 3.10×10^6/mL, HGB 9.7 g/dL and a platelet count of 310×10^3 /mL. The erythrocyte sedimentation rate was 45 mm/h. Renal and liver function tests were within normal limits except for an increased serum LDH level (780 U/L).

Computed tomography revealed a parenchymal lesion, in the left hilar region which was infiltrating around the left pulmonary artery and obliterating the upper lobe bronchus. Bronchoscopy showed the presence of a haemorrhagic, irregular mass and a biopsy was obtained. Histology showed a squamous cell carcinoma

0936–6555/02/020129+03 $35.00/0

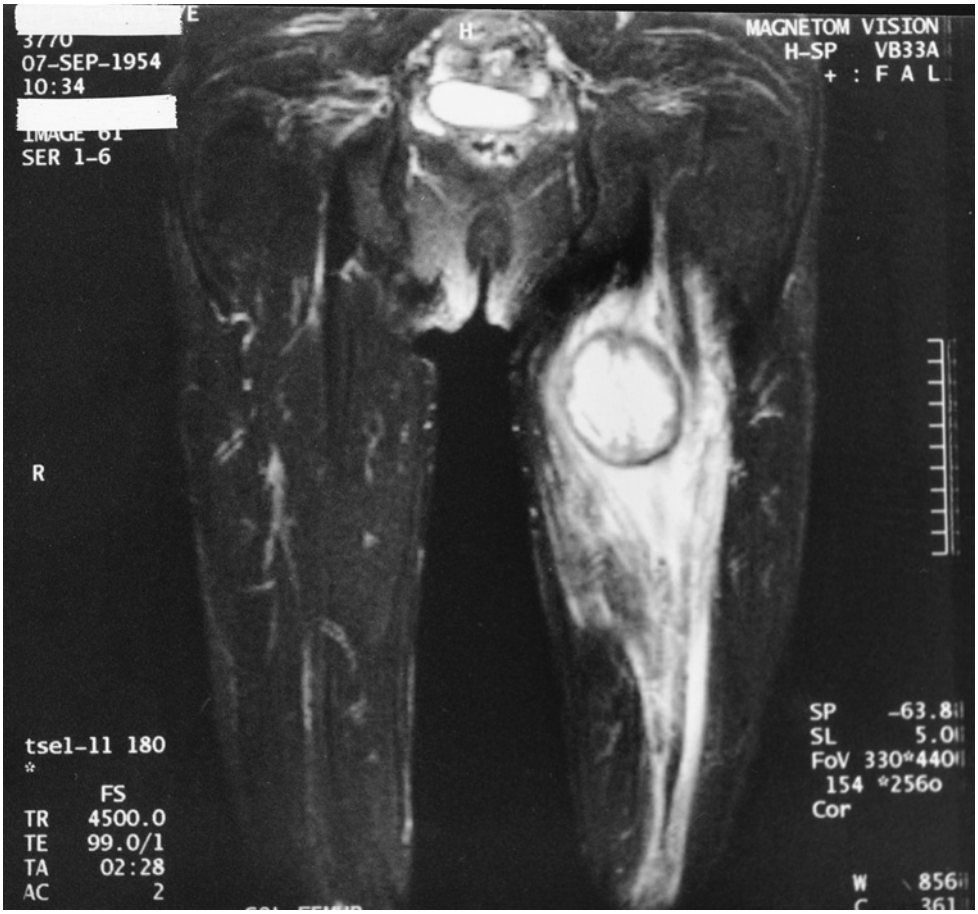

Fig. 1 – MRI showing a mass in the left adductor magnus muscle.

of the lung. Skeletal scintigraphic examination and abdominal ultrasound showed no abnormalities. Magnetic resonance imaging of the left hip revealed a mass about 6 × 7 cm in size in the left adductor magnus muscle which contained necrotic and cystic areas (Fig. 1). Fine needle aspiration biopsy was performed and cytology revealed a squamous cell carcinoma. The tumour cells demonstrated nuclear pleomorphism, frequent multinucleation, active mitoses and prominent nucleoli (Fig. 2).

Combination chemotherapy was commenced with cisplatin 80 mg/m^2 i.v. day 1 and etoposide 100 mg/m^2 i.v. days 1–3 given in three-weekly cycles. The primary and metastatic lesion in the muscle decreased in size by more than 50% following three cycles of chemotherapy. Following chemotherapy, local control of the metastatic lesion was achieved by local radiotherapy. Treatments were delivered with opposed fields to include a one centimetre margin around gross tumour volume. Total dose was 50 Gy in 2 Gy daily fractions. The patient had a complete response in the chest at the end of six cycles of chemotherapy. Thorax radiation was delayed for salvage and he remained free of disease for 12 months.

Discussion

Despite their rich blood supply, skeletal muscles are rarely secondary metastatic sites (less than 1% of all

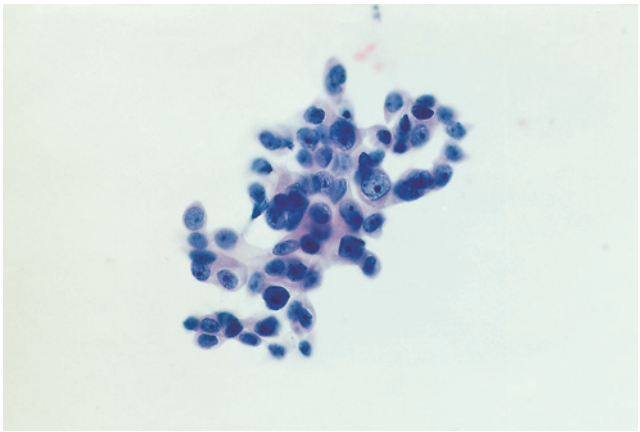

Fig. 2 – Cytology: fine needle aspiration biopsy of a mass. The appearance is similar to the primary tumour and consistent with metastasis (Papanicolaou stain, original magnification × 400).

malignant metastases of haematogenous origin). Primary cancers of the lung, gastrointestinal tract and genitourinary tract are the most frequent to involve skeletal muscles [2,3]. Most frequently involved skeletal muscles are gluteals, psoas, pectoralis muscle, biceps brachii, quadriceps femori and paraspinal muscles [3–5].

Skeletal muscle metastases are first manifest by a painful mass. Clinical symptoms may mimic those of abscess, haemorrhage or soft tissue sarcoma. Subcutaneous and osseous metastases which are more frequent must be differentiated by careful physical examination, bone scan and X-rays. Various imaging techniques (ultrasonography, computed tomography and magnetic resonance imaging) may help determine the location and extent of the mass, providing biopsy for histologic diagnosis may help accurate delineation of the radiation portal [4]. The authors were unable to find any clinical or radiographic characteristics that might distinguish metastatic carcinoma to muscle from soft tissue sarcoma. A retrospective study [2], seven cases of metastases, included two where the primary lesion was bronchial carcinoma [2]. Glockner *et al*. [6] report 1421 patients examined for soft tissue lesions (no known primary malignancy), and 11 were metastases. Eight were from primary lung cancer. Herring *et al*. [7] documented 15 patients with skeletal metastases referred with an initial diagnosis of sarcoma ($n=14$) or infection. The primary tumours were lung (eight), melanoma (two), gastrointestinal (one), kidney (one), and bladder (one). Damron *et al*. reported 20 skeletal muscles metastases. Eight cases were primary NSCLC, five cases were unknown primary, two cases bladder carcinoma, one case poorly differentiated carcinoma, one case small-cell lung carcinoma, one case hypopharyngeal carcinoma, one case multiple myeloma and one case leiyomyosarcoma [3].

Long-term survival (10-year actuarial survival 86%) has been reported after radiation or resection of isolated metastases from non-small cell lung carcinoma [8]. Howerver, Stage IV, non-small cell lung carcinoma is generally associated with a poor outcome whether treated with systemic agents or palliative irradiation. Other series report mean survival from diagnosis from soft tissue metastasis to death of 5.4 months (range 1–19 months) [3].

Localized skeletal muscle swelling may rarely indicate a muscle metastasis, in patients with lung cancer. Further investigation into the incidence and optimal treatment is warranted, but in this case local radiotherapy to 50 Gy was effective for local control.

REFERENCES

1 Hart IR. 'Seed and soil' revisited: Mechanisms of site specific metastasis. *Cancer Metastasis Rev* 1982;1:5–17.
2 Menard O, Parache RM. Muscle metastases of cancers. *Ann Med Interne (Paris)* 1991;142:423–428.
3 Damron TA, Heiner J. Distant soft tissue metastases: a series of 30 new patients and 91 cases from the literature. *Ann Surg Oncol* 2000;7:526–534.
4 Nash S, Rubenstein J, Chaiton A *et al*. Adenocarcinoma of the lung metastatic to the psoas muscle. *Skeletal Radiol* 1996;25:585–587.
5 McKeown PP, Conant P, Auerbach LE. Squamous cell carcinoma of the lung: an unusual metastasis to pectoralis muscle. *Ann Thorac Surg* 1996;61:1525–1526.
6 Glockner JF, White LM, Sundaram M *et al*. Unsuspected metastases presenting as solitary soft tissue lesions: a fourteen-year review. *Skeletal Radiol* 2000;29:270–274.
7 Herring CL Jr, Harrelson JM, Scully SP. Metastatic carcinoma to skeletal muscle. A report of 15 patients. *Clin Orthop* 1998;355:272–281.
8 Luketich JD, Martini N, Ginsberg RJ *et al*. Successful treatment of solitary extra-cranial metastases from non-small cell lung cancer. *Ann Thorac Surg* 1995;60(6):1609–1611.