



Case Report

# Ileo-psoas muscle metastasis from pulmonary carcinoma

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**ABSTRACT**

Metastatic disease to muscle is rare and may be misdiagnosed when it is the presenting symptom, particularly in the absence of a known primary tumor. Skeletal muscle metastasis as a mode of presentation of primary lung cancer is an unusual phenomenon. Here, we report a case of ileo-psoas muscle metastasis from lung cancer as the initial clinical manifestation in a 58 year-old male with a personal history of heavy smoking. Excisional biopsy of the mass in the ileo-psoas muscle revealed metastatic adenocarcinoma. Computed tomography scan of the chest for a primary search was done and found to be pulmonary carcinoma.

## INTRODUCTION

Skeletal muscle metastasis from lung cancer is rare. Skeletal muscle metastasis as a mode of presentation of primary lung cancer is an unusual phenomenon. The skeletal muscle is usually resistant to hematogenous metastases from epithelial neoplasms.<sup>1</sup> It is thought that muscular contractile actions, local pH, and accumulation of lactic acid and other metabolites contribute to the rare occurrence of this phenomenon.<sup>2</sup>

The most commonly reported primary carcinomas in clinically recognized skeletal muscle metastases are those of the lung, kidney, and colon.<sup>3</sup> Lung tumor metastasis to the skeletal muscle commonly present with an occult pulmonary primary. This finding is consistent with the fact that non-small cell lung carcinoma, when it arises peripherally, commonly presents without pulmonary symptoms.<sup>4</sup> Primary presentation of a skeletal muscle metastasis, such as in our

case, remains an exceptionally unusual occurrence.<sup>5</sup>

## CASE REPORT

A 58-year-old heavy smoker male presented to the orthopaedics OutPatient Department with complaints of severe pain over the right lower back radiating to the right upper thigh. The patient gave a history of a mild pain since the last 2 weeks after a history of trauma. There were no other significant past medical illness.

Ultrasonography (USG) done on the back revealed the possibility of a haematoma on the ileo-psoas muscle and Ultra Sound-guided fine needle aspiration (FNA) was done from the ileo-psoas muscle. The FNA smears showed small groups and singly dispersed malignant looking epithelial cells admixed with clusters of fibroblasts against a haemorrhagic background (fig. 1). Computed Tomography (CT) scan and Magnetic resonant imaging (MRI) revealed a possibility of a primary malignant neoplasm on the ileo-psoas muscle seen eroding the surrounding bones.

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An excisional biopsy was done and the specimen was sent for histopathological examination. Gross examination revealed a 5x4 cm nodular circumscribed mass enclosed within fibro-fatty tissue. External surface of the mass showed focal areas of haemorrhage and congestion. Cut section of the mass showed solid grayish-white firm tissue with foci of haemorrhage at the periphery (fig. 2).

Microscopic examination revealed extensive infiltration of the muscle with atypical tumour cells arranged in numerous small, irregular glands lined by hyperchromatic enlarged nuclei. Frequent atypical mitotic figures were also noted. Chronic inflammatory cell infiltrate was present in the stroma (fig 3). The diagnosis of metastatic adenocarcinoma to the ileo-psoas muscle was made. The possible primary sites considered were the lung, gastro-intestinal tract, prostate and urinary bladder. The patient underwent gastrointestinal and colorectal endoscopies and cystoscopies and there were no signs of any malignancy. Prostate specific antigen level was within normal limit. Chest-X ray was unremarkable. CT scan of the chest finally revealed a lesion measuring 2x1 cm in the right upper lobe towards the periphery suggestive of adenocarcinoma.

## DISCUSSION

The true incidence of skeletal muscle metastasis of adenocarcinoma of lung remains unknown, but an autopsy series suggests that its incidence could be as low as 0.8% despite of the fact that skeletal muscle accounts for nearly 50% of the total body weight and is characterized by rich blood supply.<sup>6</sup> The cause for the low incidence of skeletal muscle metastases of primary cancer is still unclear. The constant movement of skeletal muscles which may represent a difficult condition for the implantation and growth of metastatic cells under the high tissue pressure related to the exercise-associated increase of blood flow, the local production of lactic acid which would create an unfavorable environment for metastatic cell growth, the inhibition of cell invasion by protease inhibitors located in the basement membrane, and the antitumor activity of lymphocytes or natural killer cells within the skeletal muscle.<sup>6,7</sup>

The reason why distant skeletal muscle metastasis has been not been reported may be because of the relative rarity and poor prognosis. Another possibility is that physicians and patients tend to overlook the distant skeletal muscle metastasis, which is frequently asymptomatic, nonspecific, and in hidden locations.<sup>8</sup> Under-diagnosis of skeletal muscle metastases may contribute to their apparent low incidence.

In 194 autopsies involving tumor metastasis to skeletal muscles, which were performed at the Marque de Valdecilla National Medical Center from 1980 to 1982, metastases to skeletal muscle were noted in 11%, and 20% of the patients with carcinoma had muscle metastasis.<sup>2</sup>

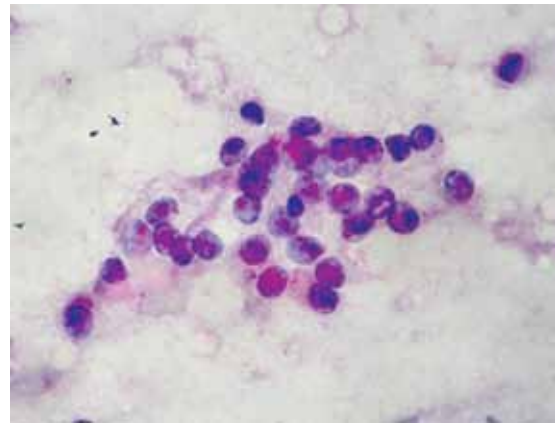


Figure 1: Fine needle aspiration cytology smears from the swelling in the ileo-psoas muscle showing cluster of tumour cells with coarsely granular chromatin pattern and prominent nucleoli (HE stain, X400).



Figure 2: Gross specimen of the metastatic nodule on cut surface.

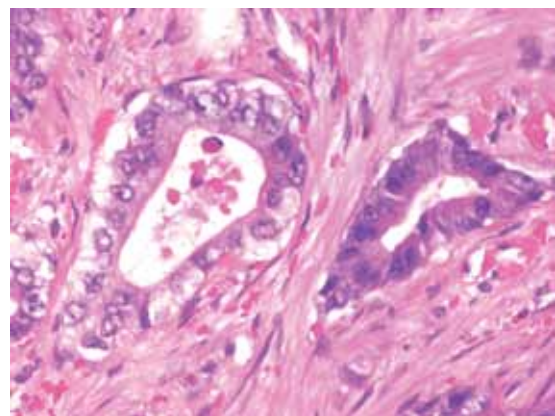


Figure 3: Histopathology of the mass showed glands lined by neoplastic cells enclosed within the fibrous tissue (HE stain, X1000).

Metastatic disease to muscle is rare and may be misdiagnosed when it is the presenting symptom, particularly in the absence of a known primary tumor. In most cases, muscle metastases become apparent after the primary lung lesion has been diagnosed and the tumor has already metastasized through the lymphatic system or blood to other sites.

Tuoheti et al found only 4 patients (0.16%) of metastasis to the skeletal muscle among 2557 patients with primary lung cancer.<sup>3</sup> The most frequent presentation of skeletal muscle metastasis is pain with or without swelling.<sup>3-5</sup> Diagnosis of this condition, even with radiographic imaging, is often tricky because it can be confused with an abscess or soft tissue tumors, highlighting the value of histological diagnosis. As the tumor size of the primary site is very small, bronchoscopic biopsy and fluorodeoxyglucose scanning (FDG-PET) are important in making the definite diagnosis of skeletal muscle metastasis from primary lung cancer.

The thigh, ilio-psoas, and paraspinal muscles are the most frequent sites of reported clinical involvement. Regardless of surgical or medical therapy, the presence of skeletal muscle metastasis indicate poor survival, which is consistent with the fact that skeletal muscle metastasis generally occurs as a feature of systemic spread.<sup>2</sup> In fact, the majority of patients with skeletal muscle metastasis from lung cancer died within one year of diagnosis, with a mean survival period of eight months after resection of the primary carcinoma.<sup>9</sup> The optimal strategy is unknown and the presence of skeletal muscle metastasis does not modify the regimens of chemotherapy and radiation therapy.

Singh AK et al conducted a study in 33 patients with a neoplastic mass detected in the iliopsoas muscles on a CT. Out of 33 patients 3 had primary lung cancer.<sup>10</sup> Kwon OS et al reported a first case of distant skeletal muscle metastasis of intrahepatic cholangiocarcinoma presenting as Budd-Chiari syndrome and acute thrombus extended down into the bilateral iliac veins and femoral veins.<sup>11</sup>

## CONCLUSION

Lung cancers typically metastasize to liver, brain, bone, kidney, and adrenal glands. They rarely metastasize to

skeletal muscles due to metabolism, high tissue pressure and blood flow of muscles. Possibility of metastatic lung cancer should be considered in the differential diagnosis of low back pain and detection of an iliopsoas mass warrants a careful search for primary lesion in the lung.

## REFERENCES

1. Di Giorgio A, Sammartino P, Cardini CL et al. Lung cancer and skeletal muscle metastases. *Ann Thorac Surg* 2004;78:709-11.
2. Acinas Garcia O, Fernandez FA, Satué EG et al. Metastasis of malignant neoplasms to skeletal muscle. *Rev Esp Oncol* 1984;31:57-67.
3. Tuoheti Y, Okada K, Osanai T et al. Skeletal muscle metastases of carcinoma: a clinicopathological study of 12 cases. *Jpn J Clin Oncol* 2004;34:210-4.
4. Damron TA, Heiner J. Distant soft tissue metastases: a series of 30 new patients and 91 cases from the literature. *Ann Surg Oncol* 2000;7:526-34.
5. Belhabib D, Maalej S, Fenniche S et al. Muscle metastasis of a primary bronchial carcinoma. *Tunis Med* 2001;79:557-60.
6. Sudo A, Ogihara Y, Shiokawa Y et al. Intramuscular metastasis of carcinoma. *Clin Orthop Relat Res* 1993;296:213-7.
7. Bar-Yehuda S, Barer F, Volfsson L, Fishman P. Resistance of muscle to tumor metastases: a role for  $\alpha 3$  adenosine receptor agonists. *Neoplasia* 2001;3:125-31.
8. Cione GP, Arciero G, De Angelis CP et al. Intrahepatic cholangiocarcinoma: case report. *Suppl Tumori* 2005;4:S46-7.
9. Tsunozuka Y, Saito H, Masuda S. A case of adenosquamous cell carcinoma of the lung which was founded by metastasis to the skeletal muscle. *Jpn J Lung Cancer* 1994;34:411-6.
10. Singh AK, Gervais DA, Hahn PF, Mueller PR. Neoplastic iliopsoas masses in oncology patients- CT findings. *Abdominal imaging* 2008;33:493-7.
11. Kwon OS, Jun DW, Kim SH et al. Distant skeletal muscle metastasis from intrahepatic cholangiocarcinoma presenting as Budd-Chiari syndrome *World J Gastroenterol* 2007;13:3141-3.