



# Gluteal region muscle metastasis from squamous cell lung carcinoma

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## ABSTRACT

Lung cancer is known as a disease leading to metastases to all types of organs. Although covering a large part of the body and of much blood building-up, skeletal muscles are rare metastatic areas. In autopsies, less than 1% of malignant cancers that are spread hematogenously is known to lead to metastasis. A 51-year-old male patient diagnosed with squamous cell lung cancer and known to be in regression via screening after the administration of 32-day curative radiotherapy and 6-cycle chemotherapy, the patient was radiologically followed-up. Four months later, he was admitted to outpatient clinic with the complaint of left hip pain. Magnetic resonance imaging revealed a lesion of nodular, necrotic metastatic mass within left gluteus muscles. As a result of tru-cut biopsy performed for the solid lesion, metastasis of carcinoma was detected. As also in our case, metastatic muscle disease should be suspected in patients with muscle pain.

**Keywords:** squamous cell lung carcinoma, metastasis, skeletal muscles

## INTRODUCTION

Lung cancer is known as a disease leading to metastasis to all types of organs. The most common sites for local metastases are mediastinal and hilar lymph nodes in intrathoracic area, pleura, chest wall and pericardium; adrenal gland, bones, brain and liver extrathoracically. Although covering a large part of the body and have a rich blood supply, skeletal muscles are rare metastatic areas (1). There are limited number of cases reporting only skeletal muscle metastasis. Radiologically proven skeletal muscle metastasis is reported to be in 1-2% of all metastatic malignancies. Metastasis is limited to skeletal muscle in 10 % of all these metastases. Interestingly similar studies also documented that the metastatic lesion is usually confined to one muscle area in skeletal metastases (2). The primary focus of metastases are stomach, pancreas, colon, rectum, thyroid gland, kidney, urinary bladder, uterus, lung, breast, ovary, prostate and esophagus (3). We present our case with for its rare presentation.

## CASE PRESENTATION

A 51-year-old male patient was referred with the complaint of cough for one month and chest pain radiating from right anterior chest wall to posterior parascapular region. Chest X-ray documented eventration of right diaphragm medially, widening of right upper mediastinum, non-homogenous density in right upper zone and upper dislocation of horizontal fissure (Figure 1). On bronchoscopic examination, a tumoral lesion beginning from carinal level of right main bronchus through distal posterolateral wall was observed. Biopsy revealed squamous cell lung cancer. Thorax computed tomography documented as irregular contoured mass lesion 62x26 mm in size, with anterior segmental atelectasis and compression of right main bronchus in the hilum (figure 1). Metastatic screening tests as cranial magnetic resonance imaging (MRI) and positron emission tomography were done. No distant metastases were determined. PET-CT documented right lower

paratracheal and subcarinal (1.5 cm in size) lymph nodes with FDG uptake.

Primary lesion and affected lymph nodes were treated with 6400 cGy curative radiotherapy as with 2 Gy fractions in 32 fractions and 6 course of etoposide-cisplatin chemotherapy in 21 day cycle. A control tomography was obtained and demonstrated regression of the lesion. The patient was in the radiologic follow up. Four months later, he referred with another complaint a left pelvic pain and swelling. Bone scintigraphic examination revealed no metastasis. However left pelvic MRI displayed a 5x5 cm nodular, necrotic metastatic lesion (Figure 2). Under local anesthesia a tru-cut biopsy with 18 G needle was performed which resulted metastatic carcinoma. For the evaluation of primary lesion, a control tomography was obtained and documented progression of the lesion with 70% stenosis in the right main bronchus. Chemotherapy regimen with gemcitabine and cisplatin and concurrent palliative radiotherapy to muscle metastasis was started. The complaints of the patient were regressed after 3 weeks.

## DISCUSSION

There are limited studies considering skeletal muscle metastasis. The reason for this, is the difficult determination of skeletal muscle metastasis by physical examination and diagnostic tests or asymptomatic course of the disease. The true incidence of skeletal muscle metastases are higher than the diagnostic level. Therefore, the best results are obtained from the autopsy results.

Yet, the reason for the scarce of skeletal muscle metastasis it is not well known. However, it is suggested that highly variable factors as, turbulent blood flow, higher tissue pressures,  $\beta$ -adrenergic stimulation, tissue oxygen levels, metabolism (the effect of lactic acid over formation of metastatic cells and toxic free oxygen radicals) and immune response of the host might be correlated (4, 5).

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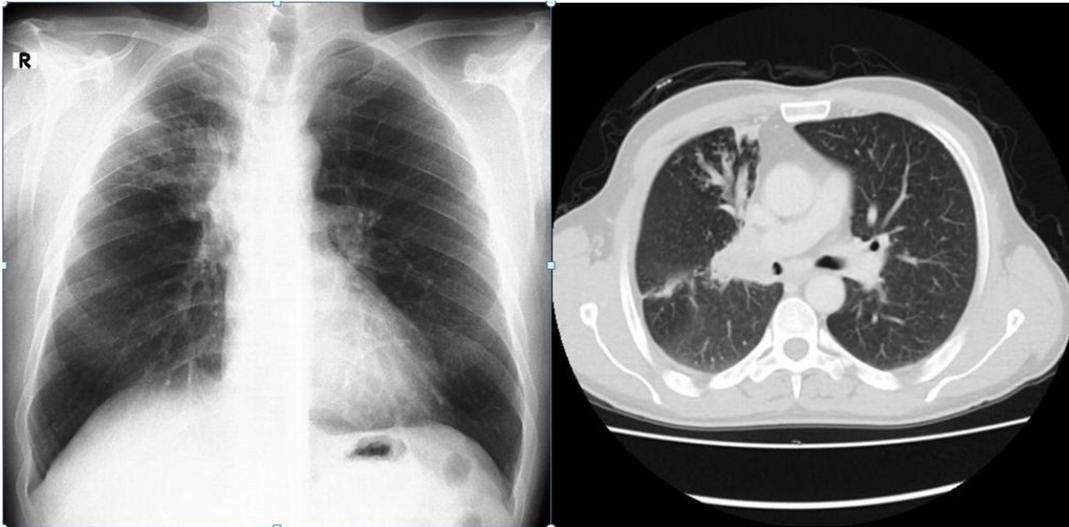


Figure 1. Chest X-ray and mass lesion in computed tomography of thorax

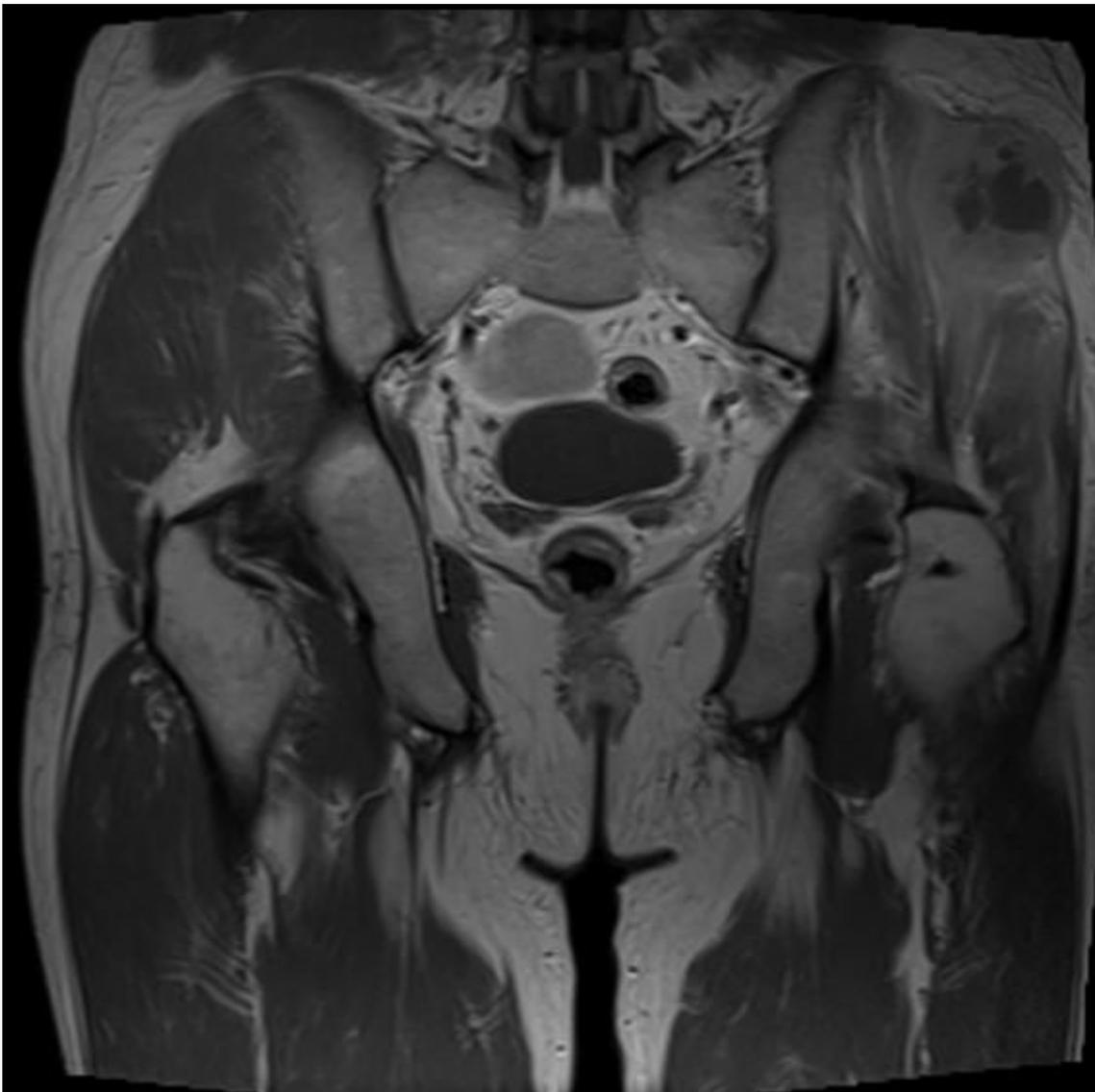


Figure 2. Metastatic lesion in pelvic MRI

The clinical symptoms of muscle metastases are local or disseminated muscle pain, muscle swelling, diminished joint mobility and joint interspaces, fever, weight loss and weakness. The diagnosis of muscle metastasis is not always easy. Like in our case, some of the patients might have pain and most of them present subclinically and diagnosed incidentally.

Ultrasonographic examination is convenient for differentiation of cystic or solid lesions. Earlier studies demonstrated the superiority of MRI over the tomographic examination for diagnosis of muscle metastases (6). Typically muscle metastasis display lower signal intensities in T1-

weighted images and higher signal intensities in T2-weighted images.

Di Giorgio et al. stated the significant decrease in the survival of patients with lung cancer and skeletal metastasis compared with patients without skeletal metastasis (7).

Surgical treatment regarding muscle metastasis is indicated only in localized disease. Palliative chemoradiotherapy is indicated in disseminated muscle metastasis. Symptoms were discarded and functional status was regained in patients with localized disease and resected metastasis. However progression of muscle metastasis is associated with disseminated disease

and bad prognosis. Most of the patients with muscle metastasis had disseminated disease in one year period and resultant mortality (8).

## CONCLUSION

Consequently, muscle metastasis of primary lung cancer is a very rare clinical situation, but is an indicator for worse prognosis. Likewise in our case, muscle pain and soft tissue swelling must arouse a suspicion for metastatic muscle disease.

## REFERENCES

1. Combalia A, Sastre S, Casas F. Lung carcinoma with metastasis to biceps muscle: Report of a case and review of literature. *Eur J Orthop Surg Traumatol*. 2004;14:172-6.
2. Surov A, Hainz M, Holzhausen HJ, et al. C. Skeletal muscle metastases: primary tumours, prevalence, and radiological features. *Eur Radiol*. 2010;20:649-58.
3. Heyer CM, Rduch GJ, Zgoura P, Stachetzki U, Voigt E, Volkmar N. Metastasis to skeletal muscle from esophageal adenocarcinoma. *Scand J Gastroenterol*. 2005;40:1000-4.
4. Marioni G, Blandamura S, Calgaro N, et al. Distant muscular (gluteus maximus muscle) metastasis from laryngeal squamous cell carcinoma. *Acta Oto-Laryngologica*. 2005;125:678-82.
5. Pop D, Nadeemy AS, Venissac N, et al. Skeletal muscle metastasis from non-small cell lung cancer. *J Thorac Oncol*. 2009;4:1236-41.
6. Berquist TH. Magnetic resonance imaging of musculoskeletal neoplasms. *Clin Orthop*. 1989;244:101-8.
7. Di Giorgio A, Sammartino P, Cardini CL, et al. Lung cancer and skeletal muscle metastases. *Ann Thorac Surg*. 2004;78:709-11.
8. Herring CL Jr, Harrelson JM, Scully SP. Metastatic carcinoma to skeletal muscle. A report of 15 patients. *Clin Orthop*. 1998;355:112-4.



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