

CASE REPORT

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# Uncommon disseminated muscular metastasis from suspected lung adenocarcinoma in a 18F-FDG PET/CT study

S. Pacella

\*Correspondence:  
s.pacella89@gmail.com

Nuclear Medicine Department,  
ASST Ovest Milanese, Ospedale  
Civile Di Legnano, Milan, Italy

## Abstract

Skeletal muscle metastasis from lung cancer is a rare phenomenon. In this case report, FDG PET/CT imaging detected unexpected metastatic spread in skeletal muscles from lung cancer.

**Keywords:** Lung cancer, PET/CT, Muscle metastasis, Detection

In lung cancer, the multiple locations frequent metastases are represented by the adrenal glands, the liver, the skeleton and the brain. In this sense, PET certainly has an advantage compared to other imaging methods because the oncological tomoscintigraphic study is always performed with a total body scan (from the skull base to the proximal third of the femur) and therefore also allows an evaluation of all body districts, with the exception of the brain, to search for remote locations of the disease (M staging). Several studies have demonstrated the ability of PET to identify distant metastases with high specificity, superior to what can be achieved with conventional imaging, including CT (Baum et al. 2004).

Some authors have shown that in patients with conventional negative imaging, PET found occult metastases in 5–29% of cases. The diagnostic impact of the method has a cascade impact on patient management: Many studies have demonstrated the ability of PET to change the stage of the disease in 27–62% of cases and consequently the management of the patient in varying percentages between 25% and about 50% especially in the choice of the type of treatment (curative vs palliative) (Schrevels and Lorent 2004).

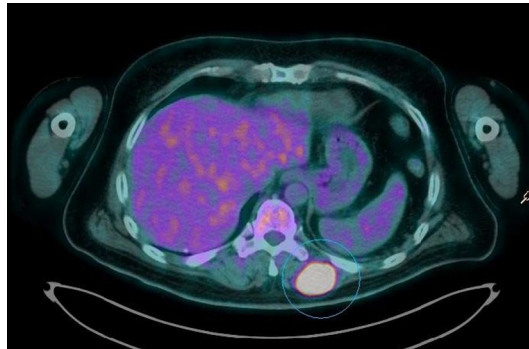
In this case report, FDG PET/CT imaging detected unexpected metastatic spread in skeletal muscles from lung cancer.

A 51-year-old man with multiple subcutaneous nodular lesions of suspected oncological origin referred to our Nuclear Medicine Department in order to find out the culprit primary lesion.

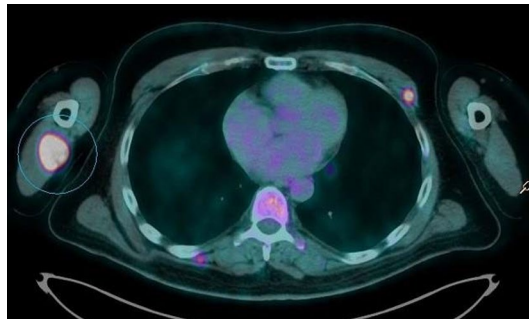
The 18F-FDG PET/CT study demonstrated an increased FDG uptake in the primary tumor located in the upper lobe of the left lung, bilateral adrenal glands metastasis,

multiple osteolytic bone lesions and multiple hypermetabolic nodular lesions in various skeletal muscle (Figs. 1, 2, 3), also of the tongue muscles (Fig. 4).

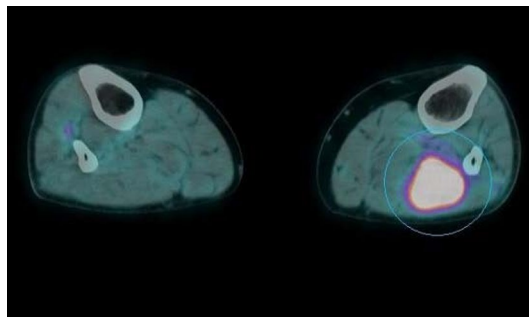
Surgical biopsy from hypermetabolic muscle mass in the posteroinferior thoracic wall revealed to be a metastatic site from adenocarcinoma of lung origin staining with cytokeratin-7, but thyroid transcription factor-1 and cytokeratin-20 were negative. Also thyroid transcription factor-1 was negative, and this factor may occur in 28% of cases with lung adenocarcinoma (Yatabe et al. 2002) (Fig. 5).



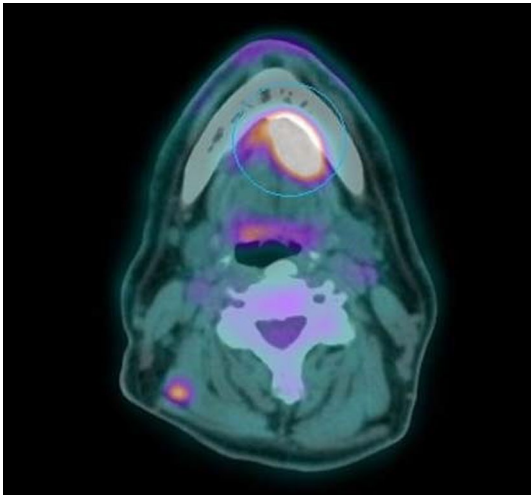
**Fig. 1** Multiple hypermetabolic nodular lesions in various skeletal muscle (image 1)



**Fig. 2** Multiple hypermetabolic nodular lesions in various skeletal muscle (image 2)



**Fig. 3** Multiple hypermetabolic nodular lesions in various skeletal muscle (image 3)



**Fig. 4** Metastatic hypermetabolic lesion of the tongue muscles



**Fig. 5** MIP image of 18F-FDG PET/CT study

## Conclusions

FDG PET/CT scan in this case demonstrated to be an excellent imaging method in detecting muscle involvements in lung cancer patients, which are a rare site of metastatic involvement from adenocarcinoma lung cancer (Giorgio et al. 2004; Kaira et al. 2009).

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## Author contributions

Only SP contributed to this paper. The author read and approved the final manuscript.

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## Availability of data and materials

Not applicable.

## Declarations

### Ethical approval and consent to participate

This article does not contain any studies with animals performed by any of the authors. All procedures performed involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the principles of the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

### Consent for publication

Consent was obtained from the patient for the anonymous publication of clinical and imaging data for scientific purposes.

### Competing interests

The author declares that she has no competing interests.

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