Interesting image

Multiple distant muscular metastases from non-small cell lung carcinoma evidenced by $^{18}$F-FDG PET/CT

Múltiples metástasis musculares a distancia de carcinoma de pulmón demostrada con $^{18}$F-FDG PET/TC

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$^{18}$F-FDG PET/CT is widely known to be able to detect unsuspected metastatic lesions such as multiple metastatic muscle involvements in various types of cancer. Moreover, $^{18}$F-FDG PET/CT has been demonstrated to show a metastatic muscle involvement before any definite morphologic changes. The adenocarcinoma of the lung is the most common primary tumor site when a muscular metastatic lesion is present and $^{18}$F-FDG PET/CT imaging is useful in detecting muscle involvements in lung cancer patients.

Many physiological factors like tissue blood flow, pressure and metabolism have been cited possible reasons why skeletal muscle metastasis from lung cancer is a rare finding: in most cases only single metastases are reported, while multiple muscular metastases from lung carcinoma are even more exceptional and only two cases can be found in literature. Thigh, iliopsoas, and paraspinous muscles are the most frequent sites of reported clinical involvement. The metastatic muscular involvement is demonstrated to correlate with a poor survival, which is consistent with the fact that it generally occurs as a feature of systemic spread.

The most frequent presentation of skeletal muscle metastasis from lung carcinoma is pain with or without swelling and diagnosis of this condition, even with radiographic imaging, can be challenging as metastatic lesions could be misdiagnosed as abscesses or soft tissue tumors.

A 59-year-old woman came to our observation for staging purposes after the detection of a lung mass on a standard chest scan. The patient was asymptomatic. $^{18}$F-FDG PET/CT showed an intense pathological uptake (SUVmax 15) in the primary tumor located in the posterior segment of the upper lobe of the right lung (Fig. 1) and in multiple mediastinal lymph nodes. Furthermore, multiple hypermetabolic foci were detected in various skeletal muscle localizations such as paravertebral muscles and right gluteal muscle (Fig. 1B); in particular, a large lesion was found on the muscles of the right lower limb, extensively involving also right femur. The lesion had no typical pathological aspect on CT (Fig. 1C).

A biopsy on the lesion of the right lower limb was performed, and confirmed the hypothesis of metastasis from lung carcinoma. In particular, thyroid transcription factor-1 was positive.

In our case, $^{18}$F-FDG PET/CT along with bioptic examination could provide the definite diagnosis of multiple skeletal muscle metastases from primary lung cancer.
Fig. 1. (A) Transaxial PET/CT fused image showing an intense uptake in the upper lobe of the right lung. A pathological uptake in a mediastinal lymph node is also evident. (B) Transaxial, sagittal and coronal PET/CT fused images showing hypermetabolic lesions on paravertebral muscles and right gluteal muscle. (C) Comparison between PET and CT alone, transaxial images, showing a large lesion on the right lower limb.

References