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IMAGE OF THE MONTH

An unusual altered biodistribution of ^{18}F-FDG on PET/CT: diffuse perimuscular uptake in the setting of acute adrenal crisis

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Abbreviations

CT	Computed tomography
^{18}F-FDG	^{18}F-Fluorodeoxyglucose
PET	Positron emission tomography

A 20-year-old woman with T-cell lymphoblastic lymphoma came for a 1-month follow-up ^{18}F-FDG PET/CT scan after completing a chemotherapy regimen consisting of vincristine, daunorubicin, pegaspargase and prednisone (2 × 60 mg/day). Prednisone was abruptly stopped 1 day prior to the examination. PET/CT was performed after the patient had fasted for 12 h (^{18}F-FDG 9.92 mCi, serum glucose 87 mg/dL).

The maximum intensity projection image (**a**) shows an unusual pattern of uptake throughout the body mimicking intramuscular uptake. Axial PET, CT, and fused images are presented at the levels of the upper chest (**b-d**) and upper thighs (**e-g**), respectively. The images show diffuse ^{18}F-FDG uptake throughout the perimuscular soft tissues with corresponding edema on the CT images (*arrows* in **b** and **g**) with sparing of the musculature and subcutaneous fat.

The patient denied any excessive muscle activity prior to the examination but mentioned diffuse joint pain/muscle weakness. The patient presented to the emergency department <24 h after the PET/CT scan with worsening symptoms and nausea. Physical examination and laboratory work-up revealed hypotension (blood pressure 86/48 mmHg), tachycardia (pulse 130 bpm) and low serum cortisol (0.6 μg/dL, normal range 4–22 μg/dL) with normal metabolites and kidney function. A diagnosis of acute adrenal crisis was made, and symptoms subsequently resolved with steroid treatment.

The 3-month follow-up PET/CT image shows resolution of findings (**e**). The initial images demonstrate an unusual distribution of ^{18}F-FDG with diffuse perimuscular soft tissue uptake on PET/CT in the setting of acute adrenal crisis. To our knowledge, this type of ^{18}F-FDG biodistribution has not been reported in the literature. This appearance should not be confused with typical physiologic intramuscular uptake [1, 2]. On encountering this unusual appearance, the radiologist should consider acute adrenal crisis. In addition, abrupt withdrawal of high-dose steroid treatment prior to PET/CT should be avoided.

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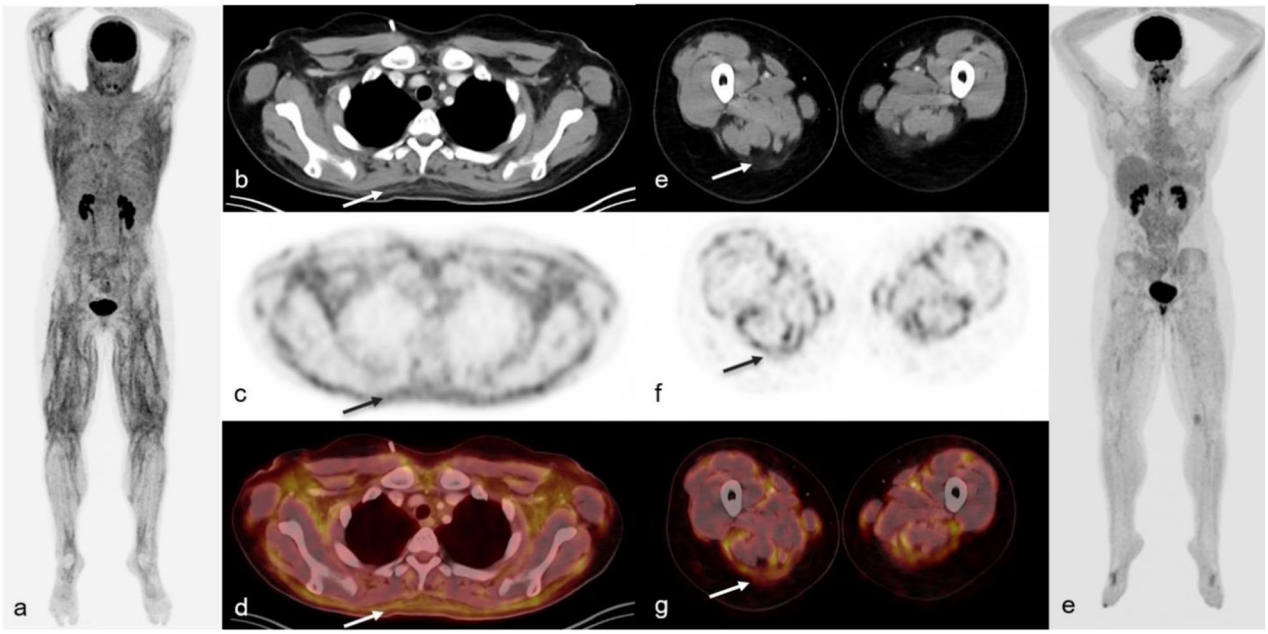

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