Interesting image

Tumor thrombosis detected on PET/CT scanning in a patient with metastatic melanoma

Trombosis tumoral detectada en el estudio PET/TC en un paciente con melanoma metastático

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A 69-year-old woman surgically treated for a melanoma in the left leg with inguinal lymph node involvement in 2004 was admitted to our hospital due to seizures.

Two months before, a follow-up body CT showed a filling defect in a pulmonary artery of the right lower lobe (RLL) and under the suspicion of pulmonary embolism, anticoagulant therapy was initiated. In the same period, MRI demonstrated a solitary brain metastasis (not shown).

During the current admission, she underwent an 18F-FDG-PET/CT (PET/CT) (Figs. 1 and 3) as a presurgical evaluation of brain metastasis.

**Fig. 1.** PET/CT images in axial (a, b), coronal (c) and sagital (d) planes. Focal 18-FDG uptakes coincident with the tumor thrombosis in a right lower lobe pulmonary artery (green arrows) and in the left femoral vein (yellow arrows).

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Fig. 2. Enhanced CT images depict filling defect in the right lower lobe (green arrow) and in the left femoral vein (yellow arrow) that increase the size of the vessels involved. Appreciate that femoral thrombus appears iso-hyperdense compared with muscles, thus it shows enhancement.

Fig. 3. Volume rendering reconstruction shows the tumoral thrombosis in right lower lobe (green arrow) and in the left femoral vein (yellow arrow). Note two additional focal 18-FDG uptake which correspond to subcutaneous metastases (blue arrows).

A metastasis. PET/CT showed a focal 18F-FDG uptake with a maximum Standardized Uptake Value (SUVmax) of 4.3 in the same location where the pulmonary embolism was previously detected in the RLL. Besides that, coincident with the left femoral vein, a pathological intense lineal uptake with a SUVmax of 11.8 was found. Under the suspicion of persistent pulmonary embolism in a properly anticoagulated patient, an enhanced body CT was performed (Fig. 2). It demonstrated a mild increase of the pulmonary filling defect, and a new one in the left femoral vein, which showed slight enhancement. Thus, a tumor thrombosis was suspected and later confirmed by a fine-needle aspiration cytology performed in the left femoral vein which showed malignant melanoma cells.

Tumor thrombosis is a rare complication of solid cancers that occurs when neoplastic tissue is transported or extended from a primary tumor into bloodstream. Direct invasion is the most common mechanism and many cases have been reported, but the remote tumor thrombosis is very much a rare phenomenon. In the latter setting it is important to rule out bland thrombus, but the differentiation between bland and tumor thrombus may be difficult because imaging findings of both entities may overlap.

Although only limited data exists in the literature, it appears that PET/CT may be helpful in discriminating between benign and malignant thrombus by showing a linear 18-FDG uptake along the line of the involved vessel in cases of tumor thrombosis. Davidson et al. reached a 100% accuracy to differentiate between tumor and bland thrombosis. An 18F-FDG uptake in the tumor thrombus results from the high metabolic neoplastic activity and from hypervascularization, although we must keep in mind that inflammatory and septic venous thrombi could appear hypermetabolic as well.

Tumor thrombosis should be considered in oncologic patients with recurrent thrombotic disease or when it persists despite anticoagulant therapy.

To our knowledge, this case is the first report of a remote tumor thrombosis affecting both venous and arterial vessels, demonstrated by 18F-PET/CT and confirmed histopathologically.

References