Followup of a solid solitary pulmonary nodule with low metabolic activity

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An incidentally found solid solitary pulmonary nodule (SPN) was studied using FDG PET/CT. The SPN (at that time 11mm) showed only minimal FDG uptake, with a maximum standardized uptake value of 1.7 (max SUV). This suggested a benign lesion. When followup CT was performed six months later, the SPN had grown to 12mm. The patient was re-examined by FDG PET/CT five months later to exclude malignancy. The SPN was now FDG avid, and its size was 14mm. The max SUV was 12.7, consistent with a malignant disease. The patient underwent surgery, and histological examination demonstrated a solid adenocarcinoma (gradus III). The increase in glucose metabolism can be attributed to a change in the histopathologic subtype or molecular features of the SPN. The importance of a followup of nonmetabolically active SPNs is emphasized, primarily by CT (due to its convenience and low cost).
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Figure 1. 73-year-old man with solitary pulmonary nodule. FDG PET/CT images at baseline (A and B, arrows point to the SPN) and corresponding images after a followup period of 11 months (C and D).

in size of the SPN cannot explain the increase in FDG uptake, and it is of note that the effect of respiratory motion blur is small in the upper lobe.

In risk populations, the prevalence of lung cancer among nodules measuring more than 10 mm varies between 30 and 80% (12). Even though the negative predictive value of FDG PET/CT is high (13), SPNs with no-to-faint FDG uptake should be followed up, because the molecular biology of lung cancers is highly complex (5). Solid SPNs that remain unchanged on a followup CT after two years are unlikely to be malignant and do not require any further investigations (14). Recently, the Fleischner Society published recommendations for the management of subsolid SPNs detected at CT (15). These recommendations are more varied than the original Fleichner Society guidelines for the solid SPNs (14).

In conclusion, SPNs with no-to-faint tracer uptake on a FDG PET/CT should be followed up to confirm a benign diagnosis. CT is useful for this purpose, due to its convenience and low cost.

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