Benign Intrapulmonary Schwannoma

Aspect on F-18 Fluorodeoxyglucose PET/CT

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Abstract: A 75-year-old man, with no significant symptoms, was referred after the incidental finding of a left hilar pulmonary mass of 30 × 30 × 50 mm on a chest CT. F-18 fluorodeoxyglucose (FDG) PET/CT demonstrated a heterogeneous, moderate radiotracer uptake in the mass (SUV 3.5 g/mL). Bronchoscopy revealed a discrete extrinsic compression of the superior bronchus without endobronchial lesion. Endobronchial fine-needle biopsies could not deliver a final diagnosis. The patient underwent upper lobectomy by thoracotomy. Histopathology revealed a benign intrapulmonary schwannoma. Although rare, intermediate FDG uptake in the settings of a pulmonary mass should include schwannoma in the differential diagnosis.

Key Words: F-18 fluoroxeoxyglocose, positron emission tomography, schwannoma, intrapulmonary, lung

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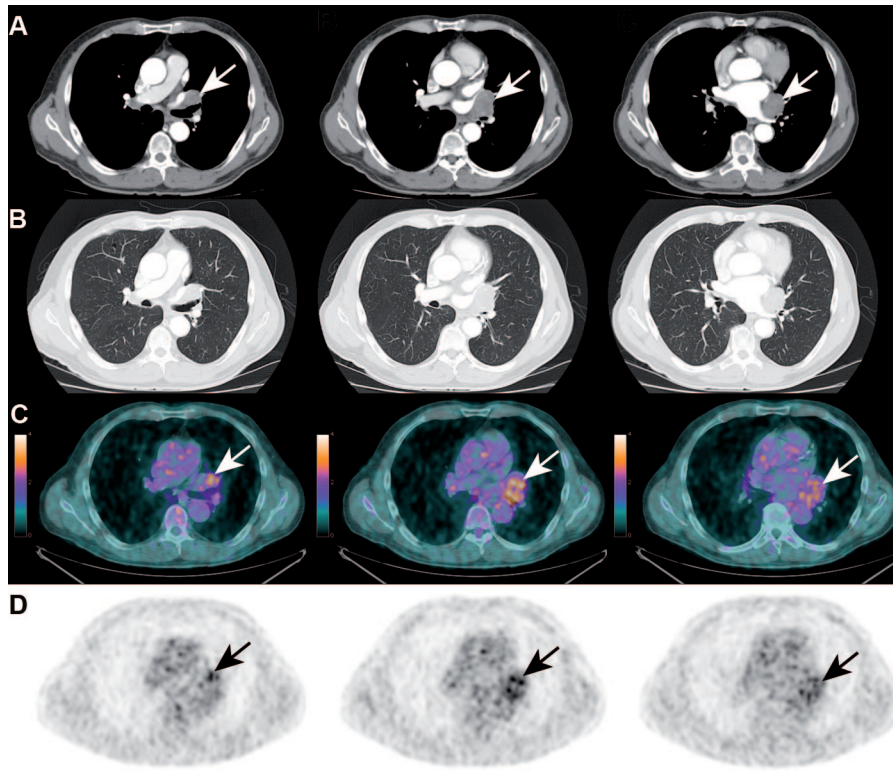

FIGURE 1. A nonsmoker 75-year-old man without any symptoms treated for atrial fibrillation and hypertension, was referred to our hospital after the incidental finding of a left pulmonary hilar mass. Transaxial-enhanced CT images in mediastinum (**A**) and lung (**B**) windows showed a solid mass (arrow) encompassing the left upper bronchus without the sign of vascular or mediastinal invasion, but with a compression of the left upper pulmonary vein. The lesion showed area of necrosis without calcifications. Flexible bronchoscopy showed a mucosal inflammation at the level of left upper bronchus with discrete extrinsic compression. Different biopsies obtained at bronchoscopy under endobronchial ultrasound (EBUS) guidance could not achieve a final diagnosis.

PET/CT acquisition was performed 71 minutes after the injection of 350 MBq of F-18 FDG (Discover LS, GEMS, Milwaukee, MI). Fused axial PET/CT (**C**) and PET images (**D**) showing heterogeneous, mildly increased FDG uptake (arrow) in the pulmonary mass with a standardized uptake value (SUV_{max}) of 3.5 g/mL. No mediastinal or distant pathologic radiotracer uptake was observed.

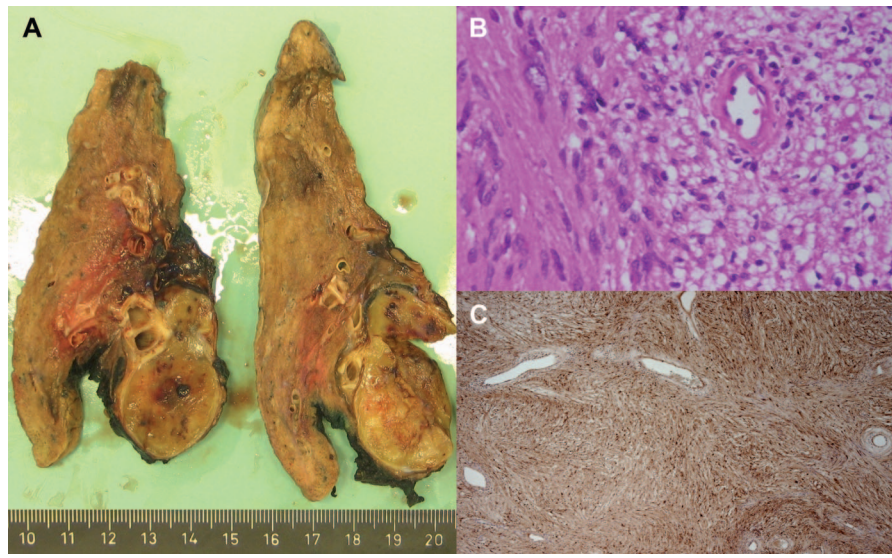

FIGURE 2. The lesion was surrounded by pulmonary parenchyma at the left upper bronchus level with tight adhesions. To achieve a tumor free margin resection of bronchus, upper sleeve lobectomy was performed, as demonstrated intraoperatively by histopathology. The postoperative course was uneventful, and the patient was discharged home on postoperative day 12. At 1-year follow-up, the patient was asymptomatic and in good health. **A,** Macroscopically, the tumor measured 30 × 30 × 50 mm. It was well encapsulated and in contact with the left upper bronchus, without sign of invasion. **B,** Microscopic examination revealed typical spindle cells proliferation, typically devoid of Antoni B areas with Verocay bodies with rare mitosis (left), as well as Antoni B areas with foamy macrophages and vascular hyalinization (right). Total 14 resected regional lymph nodes were negative for tumor. **C,** Immunohistochemistry showed intense protein S100 expression and CD-34 negativity (not shown). The final diagnosis was benign intrapulmonary schwannoma. Neurogenic tumors comprise 15% to 25% of primary mediastinal tumors.[1,2] Less than half of these tumors are schwannomas. These tumors, also known as neurilemmomas or neurinomas, although rare, are the most common peripheral nerve tumors. They occur most often in the third decade of life and may be seen in patients with neurofibromatosis type 2. Schwannoma originating from Schwann cell myelin are usually well-circumscribed and encapsulated masses arising generally from peripheral and cranial nerves. Intrapulmonary schwannomas are exceedingly rare, with less than 50 cases in total reported in the literature, representing only 0.2% of all intrapulmonary neoplasms.[2] Most symptoms result from the airway obstruction secondary to tumor size and location as bronchitis, asthma, or poststenotic pneumonia. Intrapulmonary schwannomas are classified into central or peripheral type, depending on whether the lesion can be reached by flexible bronchoscopy. The central type is subdivided in intraluminal or extraluminal type, as in our patient.

Schwannomas have been shown to have increase FDG uptake by PET, which can be quite variable, even in benign tumors.[3–7] SUV may show wide variation due to different degrees of cellularity, microvascular density, or vascular permeability.[5,7] Recently, PET has been shown to be valuable for identifying benign versus malignant peripheral nerve sheath tumors or other malignant soft tissue tumors in a retrospective study.[8] The uptake may be heterogeneous in case of cystic changes or area of necrosis. To the best of our knowledge, this case constitutes the first PET/CT description of an intrapulmonary benign extraluminal schwannoma in the literature.

The treatment of choice for endobronchial schwannoma is surgical resection, requiring bronchoplasty or sleeve resection if the location of the tumor is central.[9,10] Complete resection should be achieved to avoid local recurrence. Bronchoscopic resection may represent a reasonable treatment option for pedunculated and completely endobronchial tumors or in patients with marginal cardiopulmonary function.