Interesting image

Synchronous bilateral bronchial carcinoid diagnosed with combined dual tracer (18F-FDG and 68Ga-DOTATOC) PET/CT scans

Tumor carcinoide bronquial bilateral diagnostocado mediante el uso combinado de PET-TC con doble trazador (18F-FDG y 68Ga-DOTATOC)

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A 38-year-old non-smoker female with unremarkable history presented with an insidious onset of dry cough. Computed tomography revealed two solid round pulmonary lesions, curiously symmetrically located in the middle lobe and in the lingular segment, respectively (Fig. 1). Trans-bronchial needle biopsy was limited by a profuse bleeding and the diagnosis was inconclusive. The radiological differential diagnosis consisted of non-neoplastic disease, synchronous/multifocal bronchial carcinoids and pulmonary metastases from unknown neoplasm.

Thus, after a multidisciplinary discussion, a dual tracer PET/CT evaluation was planned in order to characterize the nature of the pulmonary lesions. 18F-FDG PET/CT (Fig. 2A and B) and 68Ga-DOTATOC (Fig. 2C and D) showed both an abnormal radiopharmaceutical uptake in the bilateral pulmonary nodules. No other areas of abnormal radiopharmaceutical uptake were detected. These findings were suspicious for bilateral synchronous bronchial carcinoids; therefore, the patient underwent sequential surgical procedures (middle lobe lobectomy and typical

Fig. 1. CT scan showing two solid round pulmonary lesions, curiously evident in the same axial section and symmetrically located in the middle lobe (diameter of 27 mm × 25 mm) and in the lingula (diameter of 25 mm × 23 mm), respectively.

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Fig. 2. $^{18}$F-FDG PET (A and B) and $^{68}$Ga-DOTATOC PET scan (C and D) showing increased tracer uptake in both pulmonary lesions (SUVmax of 5.2 using $^{18}$F-FDG and 6.8 using $^{68}$Ga-DOTATOC for the right lesion and 4.2 using $^{18}$F-FDG and 27 using $^{68}$Ga-DOTATOC for the left lesion). Hematoxylin and eosin stain (E) and immunohistochemistry positive for chromogranin (F) demonstrated the presence of a bilateral pulmonary neuroendocrine tumor.

Segmentectomy of the lingula with bilateral mediastinal nodal sampling. Histopathology evaluation using hematoxylin/eosin stain (Fig. 2E) and immunohistochemistry for chromogranin (Fig. 2EF) confirmed the diagnosis of synchronous typical carcinoids, both staged as p-Ia.

Some authors have suggested to perform dual tracer PET/CT using $^{18}$F-FDG and somatostatin analogs in patients with suspicious bronchial carcinoids. In our case, the combined metabolic findings of a dual tracer PET/CT scan have been useful in the challenging diagnostic evaluation of an uncommon case of bilateral synchronous bronchial carcinoma.

**References**

