Case 11217

Typical bronchial carcinoid
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Section: Chest imaging
Area of Interest: Thorax Lung
Procedure: Diagnostic procedure
Imaging Technique: CT
Imaging Technique: PACS
Special Focus: Neoplasia Case Type: Clinical Cases
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Patient: 51 years, female

Clinical History:
Asymptomatic 51-year-old woman with prior history of Hodgkin lymphoma underwent MDCT for clinical follow-up. There was no clinical evidence of recurrence.

Imaging Findings:
Routine post-contrast thoracic CT obtained with 5 mm slice demonstrated a well-defined 13 mm nodular lesion located at the origin of the right medial basilar bronchus (B7). The nodule was homogeneous and with attenuation numbers similar to thoracic vessels (Fig. 1). There was no lymphadenopathy, pleural effusion or other radiological findings. The nodule had no calcifications. Following the MDCT examination a conventional bronchoscopy was carried out, which demonstrated a vascular endobronchial lesion in the basal pyramid covered with bronchial epithelium (Fig. 2). The biopsy confirmed the diagnosis of neuroendocrine carcinoid tumour. Before surgery another CT was performed including an arterial phase, looking for other carcinoids or metastases with no additional findings. Retrospectively the nodule was present at least 5 years before diagnosis with no significative growth. A lobectomy was performed and on follow-up CT there was no evidence of relapse (Fig. 3).

Discussion:
Bronchial carcinoid is a neuroendocrine neoplasm originating from Kulchitzky cells in bronchial and bronchiolar wall. Carcinoids can arise at different sites through the body including thymus, lung, gastrointestinal tract and ovaries, with the lung representing the second most common location [1] after gastrointestinal tract, accounting for up to 2% of all pulmonary neoplasms [2]; 75% arise in a lobar bronchus, 10% in the main stem bronchi and 15% originate in the periphery of the lung. Histologically there are two different types: The first and most common is referred to as typical carcinoid, it is a low-grade tumour with 10-year survival rates approaching 90% [1], it is capable of local invasion but rarely develops metastases. The second type or atypical carcinoid is much more aggressive with 5-year survival rates from 25-70% [1, 2, 3]. Typical carcinoids are found more commonly centrally within the major bronchi whereas atypical carcinoids arise in peripheral and central locations with equal frequency. The most common onset includes lobar obstruction, haemoptysis, dyspnoea, cough and lobar pneumonia secondary to obstruction, 25% are asymptomatic; rarely patients may exhibit syndromes related to ectopic hormone production like ACTH. Carcinoid syndrome is not frequent (2-4%) and occurs only when liver metastases are present [1, 3]. Radiological findings include hilar and perihilar masses, endobronchial nodules, mediastinal nodes and findings
related to bronchial obstruction [1]. Both typical and atypical carcinoid have the same radiological features, although atypical carcinoids are more likely to occur in the lung periphery [3]. On CT central carcinoids appear as well-defined round nodules frequently lobulated within the lumen of a bronchus. Carcinoids tend to be vascular and may enhance intensely after iv contrast. Calcification occurs in up to 30% of cases [1, 2]. The main differential diagnosis includes hypervascular lesions such as metastases of melanoma, thyroid, breast and renal carcinoma, and pulmonary artery aneurysm, and also bronchial malignancies like mucoepidermoid and adenoid cystic carcinoma. Metastases usually show a more aggressive behaviour compared to the primary tumour. To diagnose aneurysm a thin slice multiplanar reconstruction following the artery has to be done. Malignancies such as mucoepidermoid and adenoid cystic carcinoma are not normally hypervascular. Carcinoid is treated surgically with sleeve resection, segmentectomy, lobectomy or pneumonectomy, the approach depending on the size and location; intraluminal typical carcinoid may be removed by bronchoscopy [1]. The prognosis is related to the pathological grade and stage of the tumour. Typical carcinoids have and excellent outcome even with mediastinal lymph node metastases.

Differential Diagnosis List: Typical bronchial carcinoid, Metastases from melanoma and breast and renal carcinoma, Adenoid cystic carcinoma, Mucoepidermoid carcinoma, Pulmonary artery aneurysm

Final Diagnosis: Typical bronchial carcinoid

References:

Figure 1

Description: Post-contrast 2006 axial CT on mediastinal window. Retrospectively the lesion was already seen. Origin: Department of Radiology. Clinica Universidad de Navarra. Pamplona. Spain
Description: Post-contrast axial CT on mediastinal window 7 years later (2013) showing the same lesion grossly unchanged. Origin: Department of Radiology. Clinica Universidad de Navarra. Pamplona. Spain
Description: Bronchoscopy showing the nodular lesion protruding into pyramid basal bronchi. Origin: Department of Pneumology. Clínica Universidad de Navarra. Pamplona. Spain
Figure 3

Description: Lung window post-lobectomy image showing no sign of relapse. Origin: Radiology department. Clinica Universidad de Navarra