CASE REPORT

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Occult Bronchial Carcinoid Tumor: A Rare Case of Lung Cancer

Okült Bronşiyal Karsinoid Tümör: Nadir Bir Akciğer Kanseri Olgusu

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Abstract

Bronchial carcinoid tumors are uncommon malignant neuroendocrine tumors that account for 2% of lung cancers. The main diagnostic tools are contrast-enhanced thoracic computed tomography (CT) and bronchoscopy. Early diagnosis is crucial because surgical excision is the primary treatment. The authors report a 32-year-old male patient with the smallest typical bronchial carcinoid tumor reported in the literature. The patient presented with chest pain for one month and recurrent pneumonia. Thoracic CT revealed an unclear 1 cm perihilar mass. Positron emission tomography CT showed a non-metabolic 1.4 cm nodule in the superior segment of the right lower lobe. The tumor was visualized via fiberoptic bronchoscopy, and initial biopsies were taken. Definitive diagnosis and curative treatment were achieved via segmentectomy. Bronchoscopy should be performed on middle-aged patients without comorbidities who experience recurrent pneumonia or have small hilar or perihilar masses on imaging.

Keywords: Bronchial carcinoid, bronchoscopy, contrast-enhanced CT, FDG PET, typical carcinoid

Öz

Bronşiyal karsinoid tümörler, nadir görülen malign nöroendokrin tümörlerdir ve akciğer kanserlerinin %2'sini oluşturur. Başlıca tanı araçları, kontrastlı toraks bilgisayarlı tomografi (BT) ve bronkoskopidir. Erken tanı önemlidir, çünkü cerrahi eksizyon temel tedavi yöntemidir. Yazarlar, literatürdeki en küçük tipik bronşiyal karsinoid tümörü olan 32 yaşında bir erkek hastayı sunmaktadır. Hasta bir aydır göğüs ağrısı ve reküren pnömoni şikayetleriyle başvurdu. Toraks BT'sinde belirsiz 1 cm çapında perihiler mass görüldü. Pozitron emisyon tomografisi BT'sinde ise sağ alt lob superior segmentinde metabolik aktivite göstermeyen 1,4 cm büyüklüğünde bir nodül saptandı. Fiberoptik bronkoskopi ile tümör görüntülendi ve inisyal biyopsiler alındı. Kesin tanı ve tedavisi, segmentektomi ile sağlandı. Orta yaş grubundaki, komorbiditeleri olmayan, reküren pnömoni gelişen veya görüntülemesinde küçük hiler ve perihiler mass görülen hastalara bronkoskopi yapılmalıdır.

Anahtar kelimeler: Bronkoskopi, bronşiyal karsinoid, FDG PET, kontrastlı BT, tipik karsinoid

Introduction

Bronchial carcinoid tumors (BCTs) are rare, solitary, slow-growing malignancies arising from neuroendocrine cells of the bronchial epithelium (1). Segmental and subsegmental BCTs constitute 80-90% of all cases (2). Well-differentiated BCTs are categorized into low-grade typical carcinoids (TCs), which have a favorable prognosis, and intermediate-grade atypical carcinoids (ACs), which carry a poorer prognosis (3). TCs are more common than ACs, with a ratio of 8-10:1 (4).

Most patients present with symptoms such as cough, dyspnea, or recurrent pneumonia; however, 25-39% remain asymptomatic due to the indolent nature of these tumors (5,6).

Contrast-enhanced computed tomography (CT) is the primary imaging modality for detecting BCTs. Common CT

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findings include perihilar or hilar masses, endobronchial nodules, and signs of bronchial obstruction—such as atelectasis, post-obstructive pneumonitis, or air trapping (7,8). Perihilar and hilar masses may also be associated with hilar or mediastinal lymphadenopathy secondary to metastasis or recurrent infection (7).

Definitive diagnosis relies on histopathological and immunohistochemical evaluation of tissue samples. Bronchoscopy remains an essential tool for confirming diagnosis, assessing bronchial wall invasion, and enabling therapeutic removal of endobronchial lesions, which may resolve associated atelectasis (9).

Here, we present what to our knowledge is the smallest TC reported in the literature—undetectable as a discrete perihilar mass on non-contrast CT yet clearly visualized by fiber-optic bronchoscopy (FOB).

Case Report

A 32-year-old man was referred to our pulmonology clinic for evaluation of recurrent pneumonia over the preceding year. He reported one month of chest pain. His medical history was unremarkable, and he smoked three cigarettes daily for 10 years. Family history included an unspecified malignancy in a grandparent. Physical examination and laboratory tests were normal.

Non-contrast CT performed at an outside facility revealed a 1-cm right perihilar lesion, initially suspected to represent a lymph node (Figure 1), prompting a positron emission tomography-CT (PET-CT). PET-CT demonstrated a small, slightly hyperdense 1.4-cm nodular lesion in the superior segment of the right lower lobe (RLL) without ^{18}F-fluorodeoxyglucose (18F-FDG) uptake (Figure 2). Contrast-enhanced brain magnetic resonance imaging showed no metastatic disease.

FOB revealed near-complete obliteration of the superior segmental bronchus of the RLL by a smooth, hypervascular, cherry-red polypoid mass (Figure 3). Multiple punch biopsies were obtained, and histopathology indicated a carcinoid tumor, favoring TC. The patient subsequently underwent segmentectomy with bronchoplasty after multidisciplinary surgical review. Pathology confirmed a 1.4×1.1×0.9 cm TC. The sampled right hilar and infrahilar lymph nodes showed no involvement. No recurrence was detected during three years of postoperative follow-up, and he remains under annual surveillance.

Discussion

BCTs are more common in females and white patients, affecting individuals across all age groups. Mean age at diagnosis is approximately 55 years for ACs and 45 years for TCs (10). Although BCTs are not classically linked to carcinogen exposure, smoking is associated with their occurrence (11). Our patient's demographic profile—middle-aged, white, and a smoker—aligns with known epidemiologic patterns.

Typical symptoms include chest pain, recurrent pneumonia, hemoptysis, and wheezing due to bronchial obstruction (7). Carcinoid syndrome is rare and typically

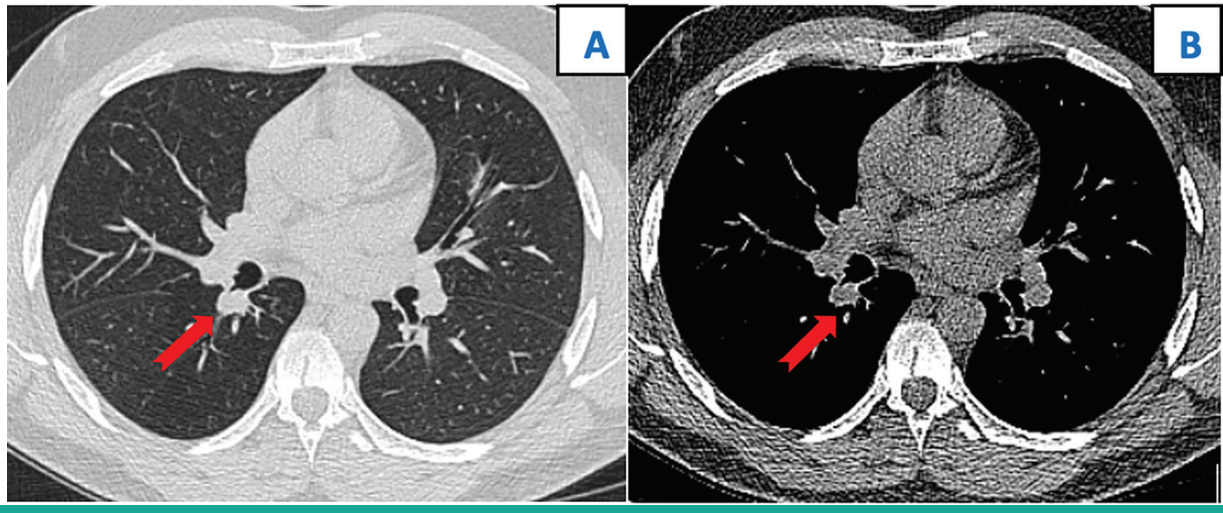

Figure 1. A 1 cm lesion in the right lung perihilar area on a non-contrast CT scan taken at an external center (signed with a red arrow). A: Parenchymal image, B: Mediastinal image

CT: Computed tomography

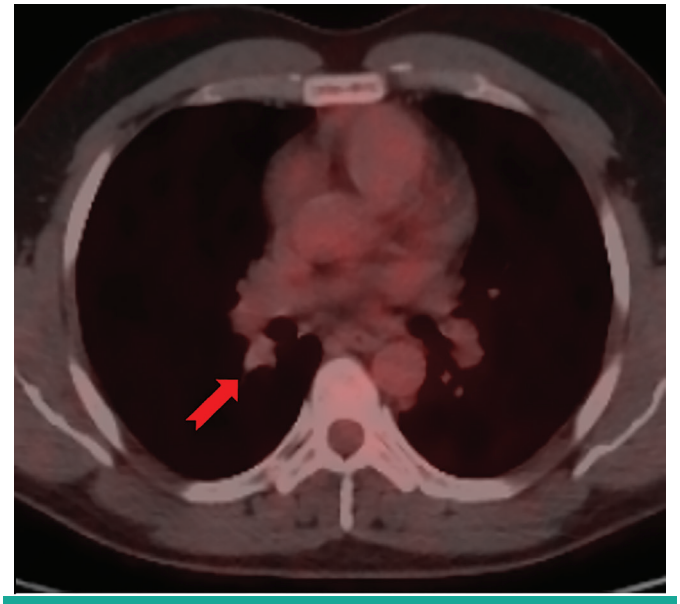

Figure 2. A 1.4 cm nodule in the right lung lower lobe superior segment with no 18F-fluorodeoxyglucose uptake on PET-CT (signed with a red arrow)

PET-CT: Positron emission tomography-computed tomography

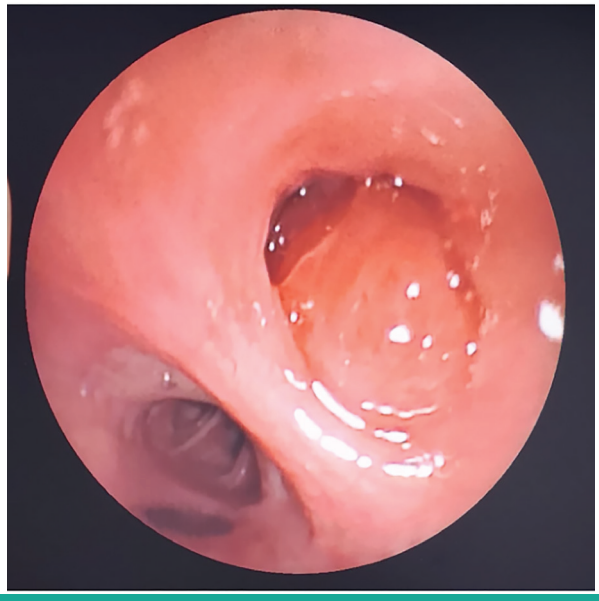

Figure 3. Bronchoscopy image of a smooth-surfaced, cherry-red, polypoid, typical carcinoid tumor obliterating the entrance of the right lung lower lobe superior segment bronchus

associated with metastatic disease. The mediastinal lymph nodes are the most common metastatic site (12). Consistent with prior studies, the patient with localized TC presented with chest pain and recurrent pneumonia without features of carcinoid syndrome. The diagnosis is often delayed, even when symptoms are apparent. For example, patients with recurrent pneumonia may undergo years of evaluations before receiving a definitive diagnosis (13). Similarly, our patient sought care at multiple facilities for recurrent pneumonia and was treated with several courses of antibiotics over the span of a year before the TC was ultimately identified at our center.

TCs commonly appear as well-circumscribed ovoid or round opacities on CT, with 75-77% located centrally in the main, lobar, or segmental bronchi (14). TCs commonly arise in the right lung and middle lobe (13). The tumor in this case originated in the segmental bronchus of the RLL, consistent with these findings. Most BCTs measure 2-5 cm (7), whereas the tumor in our patient was significantly smaller and among the smallest reported. Although contrast-enhanced CT can detect small carcinoids, the initial non-contrast CT contributed to diagnostic difficulty.

PET-CT is a widely used imaging technique to assess thoracic cancers. PET-CT generally has limited value for well-differentiated BCTs, with sensitivity increasing with higher grade, from TCs to ACs (15). The absence of 18F-FDG uptake in this case aligns with expectations for TC.

Bronchoscopy remains crucial for evaluating BCTs, enabling direct visualization and biopsy. The tumor's appearance—hypervascular, fragile, and polypoid—is characteristic of TC (9). Due to inadequate sampling and small size, more than 30% of BCTs require surgical resection for definitive diagnosis (16), as occurred in this patient.

Early detection is vital because surgical resection provides excellent outcomes in localized BCTs (17). Although TCs are less aggressive than ACs, they metastasize to regional lymph nodes in 4-20% of cases (18). Prognosis correlates more strongly with nodal status than with histologic subtype; 5-year survival reaches 100% in N0 patients for both TC and AC, while it decreases to 90% and 78.8% in N1 patients for TC and AC, respectively (19). Tumor size <3 cm also correlates with better outcomes (20). The patient with a small N0 TC underwent a segmentectomy and experienced an uneventful postoperative course with no recurrence at three years.

Conclusion

Clinicians should be aware of BCTs in middle-aged smokers without comorbidities presenting with recurrent pneumonia. Early diagnosis of BCTs is crucial, as surgical excision is curative for localized carcinoids. Contrast-enhanced thoracic CT is the mainstay of imaging for detecting carcinoids; however, small TCs may be radiologically occult. We recommend that physicians

carefully examine the hilar and perihilar areas on CT scans and perform FOB to identify potential endobronchial tumors.

Ethics

Informed Consent: Written informed consent was obtained from the patient for the publication of the article and the images related to the report.

Footnotes

The case report was presented as an E-poster at the 27th Annual Congress of the Turkish Thoracic Organization (29 April-3 May 2024, Girne).

Authorship Contributions

Surgical and Medical Practices: H.A., Concept: H.A., A.İ., Ç.S., S.G., F.T.A., Design: H.A., Data Collection or Processing: H.A., A.İ., Ç.S., S.G., F.T.A., Analysis or Interpretation: H.A., A.İ., Ç.S., S.G., F.T.A., Literature Search: H.A., Writing: H.A.

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References

1. Borczuk AC. Pulmonary neuroendocrine tumors. Surg Pathol Clin. 2020;13(1):35-55.
2. Hage R, de la Rivière AB, Seldenrijk CA, van den Bosch JMM. Update in pulmonary carcinoid tumors: a review article. Ann Surg Oncol 2003;10(6):697-704.
3. Pericleous M, Karpathakis A, Toumpanakis C, Lumgair H, Reiner J, Marelli L, et al. Well-differentiated bronchial neuroendocrine tumors: clinical management and outcomes in 105 patients. Clin Respir J. 2018;12(3):904-914.
4. Caplin ME, Baudin E, Ferolla P, Filosso P, Garcia-Yuste M, Lim E, et al. ENETS consensus conference participants. Pulmonary neuroendocrine (carcinoid) tumors: European Neuroendocrine Tumor Society expert consensus and recommendations for best practice for typical and atypical pulmonary carcinoids. Ann Oncol. 2015;26(8):1604-1620.
5. van der Heijden EHFM. Bronchial carcinoid? Interventional pulmonologist first! Respiration. 2018;95(4):217-219.
6. Chong S, Lee KS, Chung MJ, Han J, Kwon OJ, Kim TS. Neuroendocrine tumors of the lung: clinical, pathologic, and imaging findings. Radiographics. 2006;26(1):41-57; discussion 57-58.
7. Jeung MY, Gasser B, Gangi A, Charneau D, Ducroq X, Kessler R, et al. Bronchial carcinoid tumors of the thorax: spectrum of radiologic findings. Radiographics. 2002;22(2):351-365.
8. Strange CD, Strange TA, Erasmus LT, Patel S, Ahuja J, Shroff GS, et al. Imaging in lung cancer staging. Clin Chest Med. 2024;45(2):295-305.
9. Papaporfyriou A, Domayer J, Meilinger M, Firlinger I, Funk GC, Setinek U, et al. Bronchoscopic diagnosis and treatment of endobronchial carcinoid: case report and review of the literature. Eur Respir Rev. 2021;30(159):200115.
10. Brisset C, Roumy M, Lacour B, Hescot S, Bras ML, Dijoud F, et al. Bronchial carcinoid tumors in children and adolescents. Pediatr Blood Cancer. 2025;72(8):e31822.
11. Mindaye ET, Kassahun M, Tigiye G. Bronchial carcinoid tumor in the era of covid-19 pandemic: a case report. Int J Surg Case Rep. 2021;80:105703.
12. Kapoor R, Mandelia A, Farzana N, Nigam N, Dabadghao P, Sharma SP, et al. Bronchial carcinoid tumor in an adolescent female: diagnosis and management by a multi-disciplinary team. J Indian Assoc Pediatr Surg. 2022;27(4):500-502.
13. Fink G, Krelbaum T, Yellin A, Bendayan D, Saute M, Glazer M, et al. Pulmonary carcinoid: presentation, diagnosis, and outcome in 142 cases in Israel and review of 640 cases from the literature. Chest. 2001;119(6):1647-1651.
14. Kaifi JT, Kayser G, Ruf J, Passlick B. The diagnosis and treatment of bronchopulmonary carcinoid. Dtsch Arztebl Int. 2015;112(27-28):479-485.
15. Venkitaraman B, Karunanithi S, Kumar A, Khilnani GC, Kumar R. Role of 68Ga-DOTATOC PET/CT in initial evaluation of patients with suspected bronchopulmonary carcinoid. Eur J Nucl Med Mol Imaging. 2014;41(5):856-864.
16. Detterbeck FC. Management of carcinoid tumors. Ann Thorac Surg. 2010;89(3):998-1005.
17. Reuling EMBP, Dickhoff C, Plaisier PW, Bonjer HJ, Daniels JMA. Endobronchial and surgical treatment of pulmonary carcinoid tumors: a systematic literature review. Lung Cancer. 2019;134:85-95.
18. Morandi U, Casali C, Rossi G. Bronchial typical carcinoid tumors. Semin Thorac Cardiovasc Surg. 2006;18(3):191-198.
19. Cardillo G, Sera F, Di Martino M, Graziano P, Giunti R, Carbone L, et al. Bronchial carcinoid tumors: nodal status and long-term survival after resection. Ann Thorac Surg. 2004;77(5):1781-1785.
20. Yang Z, Wang Z, Duan Y, Xu S. Clinicopathological characteristics and prognosis of resected cases of carcinoid tumors of the lung. Thorac Cancer. 2016;7(6):633-638.