

Endobronchial localization - Arena of Two Tumors: a Case Report

Spasimir Shopov¹

¹ Department of Pathology, MBAL Uni Hospital Ltd, Panagyurishte, Bulgaria

Corresponding author: Spasimir T. Shopov, Department of Pathology, MBAL Uni Hospital Ltd, 100 Georgi Benkovski St., Panagyurishte, Bulgaria; Email: sshopov1@abv.bg; Tel.: +359 878 657 256

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Abstract

The lung is a common arena for metastases of tumors with different localization, but endobronchial localization of metastases is very rare. The most common tumors with endobronchial localization of metastasis are renal, breast, and colorectal cancer. We report a man presenting with cough and hemoptysis. Endobronchial biopsy showed renal cell carcinoma and micro-invasive bronchogenic squamous cell carcinoma. Endobronchial metastases from renal cell carcinoma are rare. The squamous cell lung cancer is one of the most common cancers in men, but the combination of renal cell carcinoma and micro-invasive squamous cell carcinoma with endobronchial localization is a casuistic case.

Keywords

bronchogenic carcinoma, casuistics, endobronchial metastasis, renal cell carcinoma

INTRODUCTION

Lung cancer is the second most common malignancy worldwide and the leading cause of death in 2020.^[1] Metastases from extrapulmonary malignancies are observed frequently in lungs, while endobronchial metastases from extrapulmonary malignancies are rare and may have distinct histopathological etiologies: primarily tumors of the kidneys, breast, colorectum, ovaries, uterus, cervix, thyroid, testes, prostate, adrenal gland, skin, and testicles.^[2] In this report, we present a case of endobronchial combination or collision between primary micro-invasive bronchogenic squamous cell carcinoma and metastatic clear cell renal cell carcinoma. Broadening the knowledge about the localization of these rare tumors could significantly aid in the early detection and management of these malignancies.

CASE REPORT

A 61-year-old man, who was a 20-pack-years active smoker, was admitted to the Thoracic Surgery Department with a two-month history of cough and hemoptysis. Five years ago, he underwent surgery of his right kidney with a nephrectomy for clear cell renal cell carcinoma. The patient was clinically stable since the surgery until the onset of cough and hemoptysis. Chest X-ray on admission showed no pulmonary infiltrates. He underwent fibro-optical bronchoscopy, which showed a white, slightly raised, and initially ulcerated plaque that did not obstruct the bronchus. Most of the tumor was removed with the use of snare diathermy. Histological examination showed a bronchial wall lined with cylindrical respiratory epithelium showing histological signs of mild to moderate dysplasia. In one area, the focus was micro-invasive squamous cell carcinoma with an adjacent erosion area and hemosiderin pigment (Figs 1a, 1b). There were subepithelial visible nests and sheets of cells with clear cytoplasm and distinct membrane with small atypical nuclei at some points.

There were no signs of keratinization in the cell composition (Figs 1a, 1c). The immunohistochemistry with CD10 and Vimentin demonstrated positivity in areas of clear cells (Fig. 2a). p40 was positive in the field of squamous cell carcinoma (Fig. 2b). TTF-1, CK 7, and Napsin A were negative in both tumor sections. The proliferative activity established with Ki 67 was 12% in the squamous cell component and 30% in the clear cell component. Our conclusion was a coexistence of two tumors in the endobronchial space, metastases of clear cell renal cell carcinoma and primary micro-invasive squamous cell carcinoma of the lung. Follow-up with PET/CT three weeks later revealed no abnormal hypermetabolic activity. The patient was referred to the Tumor Board for therapy.

DISCUSSION

Renal cell carcinoma can present with metastases, tumor embolism, arteriovenous fistulas, para-neoplastic manifestations, cough, and diaphragmatic palsy. In turn, the

metastases in the respiratory system can be endobronchial, pleural, parenchymal, nodal metastases, and pleural effusion.^[3] Breast, colorectal and renal cell carcinomas are commonly associated with endobronchial metastases (EBM). Tumors with rarer EBM are the tumors of the nasopharynx, thyroid, uterus, ovary, testis, prostate, adrenal glands, and skin.^[2] EBM is defined as a bronchoscopically visible non-pulmonary tumor engaging the proximal central bronchus or sub-segmental bronchi with a lesion histologically similar to the primary tumor.^[4] Gong et al.^[5] reported in their study that the most common sites of metastasis of RCC were the lung (45%), followed by the bones (30%), lymph nodes (22%), and liver. The essential finding in the present study was that RCC metastases to the lung have a better prognosis. Our patient presented with cough and hemoptysis five years after getting diagnosed with RCC. Recurrence of RCC after resection usually depends upon the advanced stage of the disease at the time of initial presentation. According to the four developmental modes of EBM as described by Kiryu et al., our case was type I

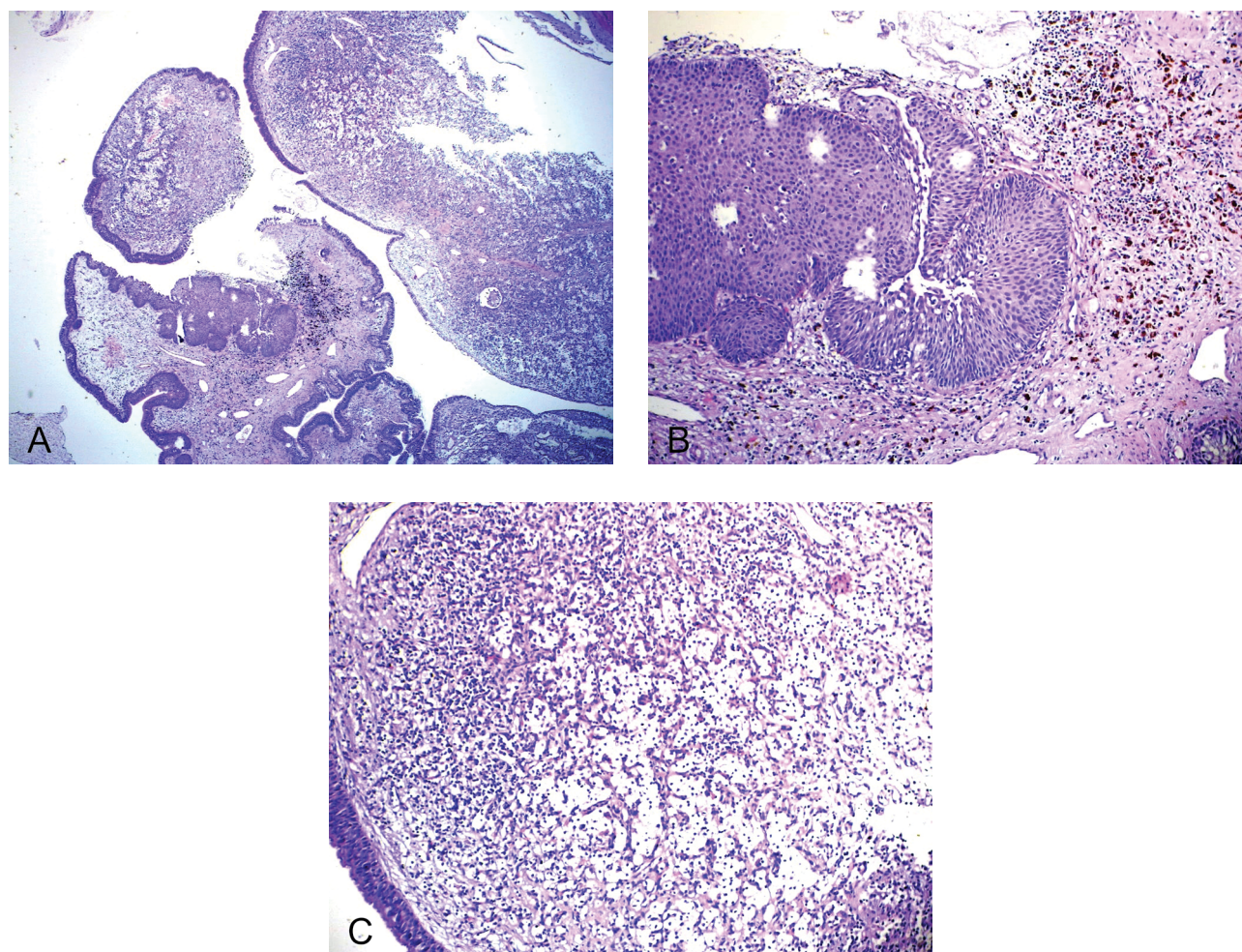


Figure 1. Histology (H&E): **A.** Histological view showing focus from micro-invasive squamous cell carcinoma with an erosion area and hemosiderin pigment adjacent. Subepithelial visible nests and sheets of cells with clear cytoplasm and distinct membrane with small in places atypical nuclei (magnification $\times 25$); **B.** Micro-invasive squamous cell carcinoma with an erosion area and hemosiderin pigment adjacent (magnification $\times 100$); **C.** Nests and sheets of cells with clear cytoplasm and distinct membrane with small in places atypical nuclei (magnification $\times 100$).

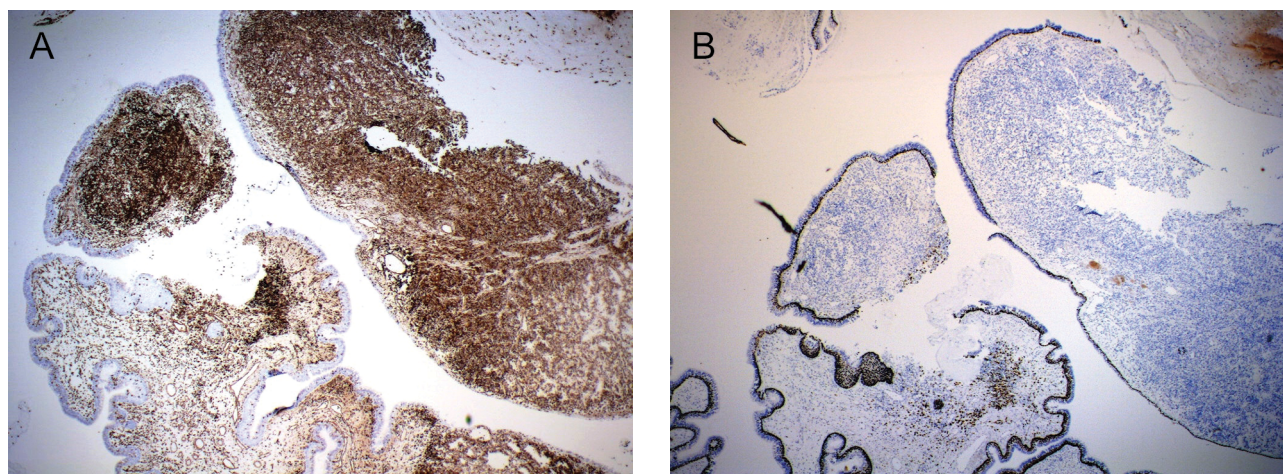


Figure 2. Immunohistochemistry: **A.** Positive expression of CD10 in areas of clear cells for renal cell carcinoma - clear cell type (magnification $\times 25$); **B.** Positive expression of p40 in the field of squamous cell carcinoma (magnification $\times 25$).

with direct metastasis to the bronchus. The other modes are type II, in which the bronchial invasion is by a parenchymal lesion, type III, in which the bronchial invasion is by mediastinal or hilar lymph node metastasis, and type IV, in which the peripheral lesions extend along the proximal bronchus.^[4] The peculiarity of our case is the simultaneous coexistence of renal cell carcinoma and primary microinvasive bronchogenic squamous cell carcinoma in the endobronchial space. A search in Medline PubMed database using the terms 'EBM', 'renal cell carcinoma', 'Primary microinvasive squamous cell carcinoma in the endobronchial space', and 'two tumors in the endobronchial space' yielded no findings of published reported cases of coexistence in the same site of two or more tumors. We therefore concluded that the case presented herein was probably the first reported case of coexistence of two tumors in the endobronchial space, namely metastases of renal cell carcinoma and primary microinvasive squamous cell bronchogenic carcinoma. At the same time, we were faced with the dilemma of whether this coexistence of two tumors in the endobronchial space belongs to the group of composite or collision tumors. A collision tumor represents the coexistence of two adjacent but histologically different neoplasms occurring in the same organ with completely different basal layers or stroma.^[6] Guided by the definition so cited, we assume that it is a composite tumor in the endobronchial space. The cause of the pulmonary collapse in our practice is more often due to primary damage to the endobronchial space than to the damage caused by endobronchial metastasis. Clinical suspicion should always be present with the case presented of EBM especially in patients with previous neoplasms, which requires a thorough history, clinical and paraclinical examination. Our case emphasizes the importance of distinguishing between EBM and primary lung

cancer because the methods of treatment differ significantly, but always keep in mind the rare possibility of composite and collision tumors in an organ.

CONCLUSIONS

Endobronchial metastases occur in various types of malignancies. They should always be differentiated from primary lung carcinomas as they carry a poor prognosis and demand a different treatment protocol when compared to that of primary lung tumors. The course and approach to the treatment of composite and collisional tumors have not yet been sufficiently studied.

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Эндобронхиальная локализация – арена двух опухолей – клинический случай

Спасимир Шопов¹

¹ Отделение патологии, МБАЛ „Уни Хоспитал“ ЕООО, Панагюрище, Болгария

Адрес для корреспонденции: Спасимир Шопов, Отделение патологии, МБАЛ „Уни Хоспитал“ ЕООО, ул. „Георги Бенковски“ № 100, Панагюрище, Болгария; E-mail: sshopov1@abv.bg; Тел.: +359 878 657 256

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Резюме

Лёгкие являются общей ареной метастазов опухолей различной локализации, однако эндобронхиальная локализация метастазов встречается очень редко. Наиболее частыми опухолями с эндобронхиальной локализацией метастазирования являются рак почки, молочной железы и колоректальный рак. Мы сообщаем о мужчине с кашлем и кровохарканьем. Эндобронхиальная биопсия показала почечно-клеточный рак и микроинвазивный бронхогенный плоскоклеточный рак. Эндобронхиальные метастазы почечно-клеточного рака встречаются редко. Плоскоклеточный рак лёгкого является одним из наиболее частых онкологических заболеваний у мужчин, однако сочетание почечно-клеточного рака и микроинвазивного плоскоклеточного рака с эндобронхиальной локализацией является казуистическим случаем.

Ключевые слова

бронхогенный рак, казуистика, эндобронхиальное метастазирование, почечно-клеточный рак
