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CASE REPORT

Serafeim Chrysikos[1], Theodoros Karampitsakos[1], Argyrios Tzouvelekis[2], Katerina Dimakou[1]

[1]5th Pulmonology Department, Chest Hospital "Sotiria", Athens, Greece
[2]1st Academic Department of Pneumonology, Chest Hospital "Sotiria", Medical School, National and Kapodistrian University of Athens, Athens, Greece

Endobronchial metastasis from renal cell carcinoma as a reason for recurrent pulmonary infections

Abstract

Endobronchial metastases (EBM) secondary to extrathoracic malignancies are very rare. Breast cancer, colorectal cancer and renal cell carcinoma represent the most common types of cancer leading to endobronchial metastases. They usually represent a late manifestation of other types of cancer and their prognosis is generally poor averaging a survival of 1-2 years in most case series. Due to their rarity, they remain a challenge for clinicians regarding whether they are primary lung tumors or not. This case report article intends to present a case of a young man with a left nephrectomy due to Clear-Cell Renal Cell Carcinoma, who developed EBM 7 years later and to summarize available data in the field. Furthermore, the utility of diathermic snare as a treatment approach for this entity is highlighted.

Key words: endobronchial metastasis, Clear-Cell Renal Cell Carcinoma, cancer

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Introduction

Endobronchial metastases (EBM) from extrathoracic malignancies are very rare [1]. Among those solid tumors occurring as EBM, breast, colorectal and renal cell represent the most common carcinomas [1–6]. Metastases arising from prostate, uterus, nasopharynx, as well melanomas and sarcomas are less common [5]. EBM usually represent a late manifestation of other types of cancer and their prognosis is generally poor. We herein present a case of a young man with a left nephrectomy due to Clear-Cell Renal Cell Carcinoma, who developed EBM 7 years later associated with recurrent episodes of pneumonia. Furthermore, the utility of diathermic snare as a treatment approach for this entity is highlighted.

Case report

A 47-year-old man, current smoker with a smoking history of 30 pack-years, presented to our interventional bronchoscopy unit to perform a bronchoscopy due to two episodes of recurrent pulmonary infections during the last year. According to his medical history, he had undergone left nephrectomy for renal cell carcinoma 7 years ago without adjuvant treatment. He had been clinically stable for 7 years until the investigation of cough with blood-streamed sputum unveiled consolidation in right upper lobe (RUL) in chest x-ray. He received a ten-day antibiotic course which led to clinical and imaging improvement. Nonetheless, symptoms as well as radiographic findings reappeared three months later. Chest Computed Tomography (CT) demonstrated infiltration in the RUL (Fig. 1A, B). A second chest CT was performed two months later showing improvement of infiltrations; yet, a suspicious area of pathologic tissue in the right upper bronchus (RUB) (Fig. 1C, D).

The patient was completely asymptomatic on admission and in excellent physical condition. Chest X-ray on admission did not show any pulmonary infiltrates. He underwent fiberoptic bronchoscopy, which demonstrated a white polypoid mass

Address for correspondence: Serafeim Chrysikos, 5th Pulmonology Department, Athens Chest Hospital "Sotiria", Greece, e-mail: makischr@hotmail.com
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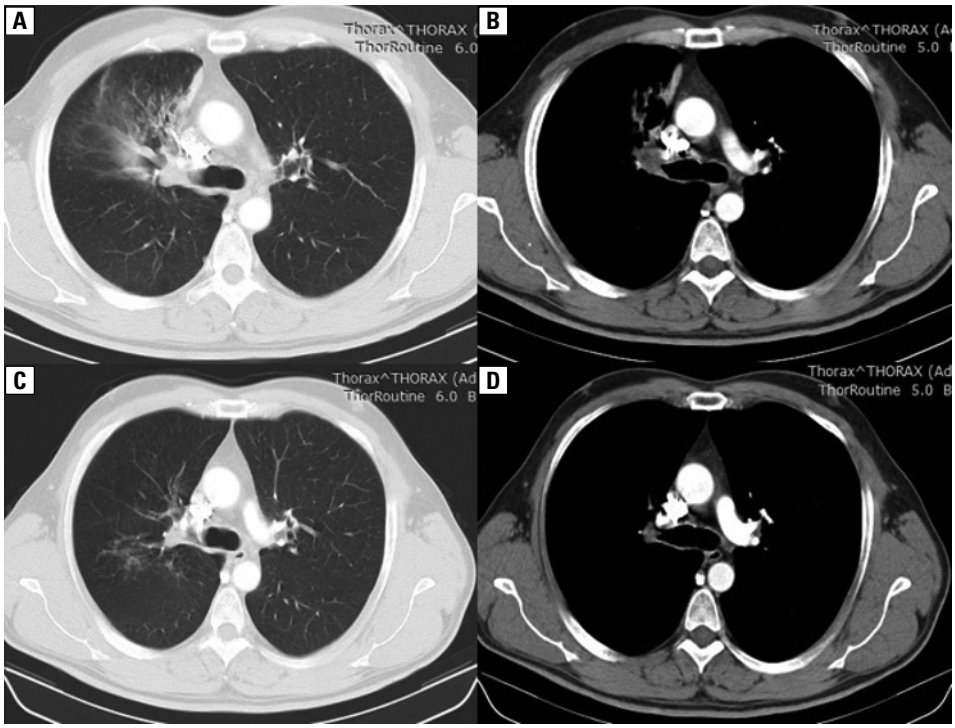

Figure 1. Chest Computed Tomography (CT) demonstrating infiltration in the right upper lobe (**A**, **B**). A second chest CT was performed two months later showing improvement of infiltrations; yet, a suspicious area of pathologic tissue in the right upper bronchus (**C**, **D**)

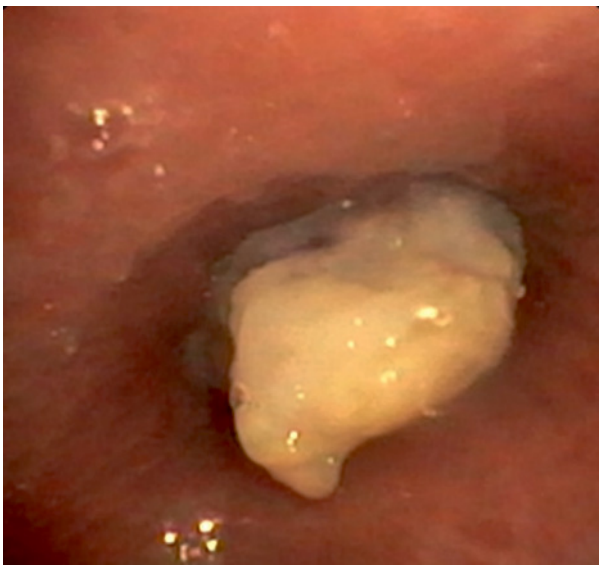

Figure 2. Bronchoscopy demonstrating a white polypoid mass almost occluding right upper lobe

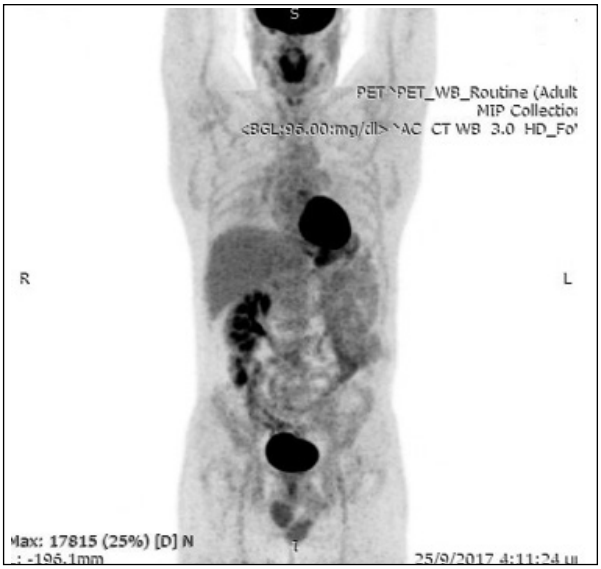

Figure 3. PET/CT did not reveal any abnormal hypermetabolic activity

almost occluding RUB (Fig. 2). Most of the tumor was removed with the use of snare diathermy.

Histologic examination showed neoplasmatic large cells with eosinophilic and clear cytoplasm, areas of necrosis and no keratinization. Further immunohistochemistry demonstrated Cytokeratin 8/18 [+], Vimentin [+], Epithelial Membrane Antigen (EMA) [+], Thyroid Transcription Factor-1 (TTF-1) [–], CD10 [-], Cytokeratin 7 [–]. According to our pathologists, these features were in favor of metastatic Clear-Cell Renal Cell Carcinoma. Cultures for bacteria, fungi and Mycobacterium tuberculosis were negative.

Follow up with PET/CT four weeks later did not reveal any abnormal hypermetabolic activity (Fig. 3). Subsequently, Sunitinib, an angiogenesis

inhibitor, was prescribed as adjuvant regimen. To this end, 12 months later, the patient is stable without any recurrence.

Discussion

Lung metastases from extrathoracic malignancies are frequently identified, yet endobronchial metastases are very uncommon [1, 2]. Their prevalence varies depending on definition criteria [3]. In autopsy series, inclusion of only direct metastasis in the bronchus itself resulted into a prevalence ranging between 2–5% [1, 3]. Nevertheless, prevalence was much higher in cases where investigators defined EBM as invasion of the bronchial wall from parenchymal lesions or metastatic lymph nodes [2, 3]. EBM may mimic bronchogenic carcinoma, rendering its differential diagnosis from primary lung carcinoma a challenging task [4].

Most common symptoms are cough, hemoptysis, dyspnea and wheezing in the context of recurrent pulmonary infections due to local atelectasis [1–5, 7]. In rare cases, patients with EBM may be totally asymptomatic [10]. With regards to radiographic findings, chest x-ray may reveal abnormalities such as solitary or multiple nodules, masses and obstructive atelectasis [1–5, 8]. CT is a valuable diagnostic tool demonstrating EBM as polypoid, finger glove or bronchial wall thickening lesions [9]. Furthermore, findings such as nodules, masses, consolidation, peribronchial density, atelectasis and hilar or mediastinal lymphadenopathy may be present [3, 5, 6].

Bronchial biopsies through bronchoscopy represent the gold-standard for disease diagnosis [1, 4, 5, 9, 10]. Lesions can be located anywhere in the tracheobronchial tree with a predilection for the right lung in most of cases [5]. With regards to immunohistochemistry of renal cell carcinomas, almost all stain positive for CK18, while 14–40% are also positive for CK8 [11]. EMA/ MUC1 is seen in 77–100% of cases and its overexpression is correlated with tumor grade [12]. Immunoreactivity for CK7 and CK19 is less common [11].

Depending on the awareness of the treating doctor the mean reported time between initial diagnosis of the primary malignancy and the diagnosis of EBM ranges between 0 and 112 months [3–6, 8]. Reported median survival also ranges from 1 to 39 months, depending on the biological behavior of the primary tumor and the latency time of diagnosis [3, 4, 6, 8].

Treatment approach of EBM should be individualized on the basis of histology, biological behavior, anatomic location and patient's performance status [4, 10]. Systemic chemotherapy may be an option as well external radiation particularly in located obstructive lesions [4, 10]. Interventional endoscopic procedures such as electrocoagulation, forceps, cryotherapy, diathermic snares, Nd-YAG laser, photodynamic therapy can be applied as palliative therapeutic strategies [7, 10].

Conclusion

Our case report underlines the need for vigilance for early referral of patients with extrathoracic malignancies and persistent respiratory symptoms to a pulmonologist for further evaluation, regardless of radiographic findings. Interventional endoscopic procedures such as snare diathermy may represent fruitful and relatively safe therapeutic approaches for EBM presenting with small base attachment and especially from renal cell carcinoma which are highly vascularized and consequently hemorrhagic tumor lesions [13, 14].

Conflict of interest

The authors declare no conflict of interest.

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