CASE REPORT

Diagnostic and therapeutic approach to endobronchial metastases from extra-thoracic neoplasms: A report of three cases and brief review of literature

Approche diagnostique et thérapeutique des métastases endobronchiques de tumeurs extra-thoraciques: A propos de 3 cas et une brève revue de littérature

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Abstract

Introduction: Endobronchial metastases (EBMs) are rare, with primary tumours predominantly of breast, renal, and colorectal origin. Bronchoscopy is the diagnostic gold standard, with histological confirmation through immunohistochemical study.

Cases: We presented three cases of EBMs, one secondary to colorectal cancer and two associated with renal tumours. EBM unveiled the extra-thoracic neoplasm in colorectal cancer and was incidentally discovered during renal cancer follow-up. Bronchoscopy revealed an obstructive endobronchial mass in two cases. Histological diagnosis was established via bronchial biopsies (collecting duct renal carcinoma), computed tomography-guided transparietal lung biopsy (clear cell renal carcinoma), and endobronchial mass resection through rigid bronchoscopy (colorectal adenocarcinoma).

Conclusion: In case of an endobronchial lesion, the diagnosis of EBM should be evoked especially when the medical history reports extra-thoracic neoplasms. This diagnostic hypothesis guides the histological diagnosis and leads to an appropriate treatment.

Key words: Bronchoscopy, Case report, Colorectal cancer, Endobronchial, literature review, Metastasis, Renal cancer.

Résumé

Introduction: Les métastases endobronchiques (MEBs) sont rares. Les tumeurs primitives qui y sont associées sont dominées par l'origine mammaire, rénale et colorectale. L'endoscopie bronchique représente le moyen diagnostique de référence de ces métastases et l'examen histologique avec étude immunohistochimique est indispensable pour confirmer leur origine métastatique.

Observations: Nous rapportons trois observations de patients présentant des MEBs dont une était secondaire à un primitif colorectal et deux associées à une tumeur rénale. La MEB a révélé la néoplasie extra-thoracique dans le cas du cancer colorectal, et a été découverte au cours du suivi des deux cas de cancer rénal. A l'endoscopie bronchique, le bourgeon endobronchique était obstructif d'une bronche principale dans deux cas. Le diagnostic histologique a été fait sur biopsies bronchiques dans un cas (carcinome rénal des tubes collecteurs), sur biopsie transpariétale scannoguidée de la masse pulmonaire associée dans un cas (carcinome rénal à cellules claires) et sur le bourgeon endobronchique après résection par bronchoscopie rigide dans un cas (adénocarcinome colorectal).

Conclusion: Face à une lésion endobronchique, le diagnostic de MEB doit être évoqué particulièrement lorsque les antécédents sont en faveur, afin d'orienter le diagnostic histologique et proposer la prise en charge adaptée.

Mots clés: Bronchoscopie, Cancer colorectal, Cancer du rein, Endobronchique, Métastase, Rapport de cas, revue de la littérature.

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Introduction

The lung is a common site for metastases from extra-thoracic cancers (1). However, endobronchial growth remains a rare phenomenon (1). The most frequently associated primary tumours with endobronchial metastases (EBMs) are breast cancer, colorectal cancer, and renal cell carcinoma (1,2).
Clinically, radiologically, and endoscopically, distinguishing endobronchial metastasis from primary bronchial tumours is challenging, especially without a history of extra-thoracic neoplasia (2). Histological examination with immunohistochemical analysis is essential to establish the metastatic origin of the tumour (3). Obtaining an appropriate diagnosis relies on careful examination of patient history, and current clinical, radiological, and laboratory findings (3).
We reported three cases of patients with secondary EBMs from renal cell carcinoma in two cases and colorectal cancer in one case to describe the diagnostic and therapeutic approach, which depends on the clinical, radiological, biological, and endoscopic characteristics of each case. We also performed a brief literature review.

Observations

Case report n°1

A 58-year-old non-smoking woman with a history of unexplored anaemia, presented with a four-month history of persistent right basal thoracic pain, intermittent fever, exertional dyspnoea, and productive cough with purulent sputum. Initial chest X-ray revealed a right paracardiac alveolar opacity. Upon admission after one month of symptoms, the patient seemed pale and febrile at 39.5°C. Oxygen saturation was 93% on room air, and respiratory rate was 22 breaths per minute. Laboratory tests revealed significantly elevated inflammatory markers with a white blood cell count of 26,000/mm³ [Normal range: 4,000-10,000/mm³] and a C-reactive protein level of 327 mg/l [Normal ≤ 7mg/l]. Additionally, the patient presented with microcytic hypochromic anaemia, as indicated by a haemoglobin level of 7.4 g/dl [Normal range: 12-16 g/dl] and a mean corpuscular volume of 68 fl [Normal range: 80-100 fl]. The follow-up chest X-ray showed a hydropneumothorax. Thoracic computed tomography revealed a multiloculated right basal hydro-air collection. Ultrasound-guided pleural aspiration yielded purulent fluid without isolated organisms. The diagnosis of pyopneumothorax secondary to infectious pneumonia was established. Treatment with broad-spectrum antibiotics, ultrasound-guided pleural drainage, and respiratory physiotherapy resulted in apyrexia, improvement of inflammatory markers, and partial radiological improvement. Bronchoscopy revealed a completely obstructing pearly white mass in the intermediate bronchus (Figure 1a), biopsies of which showed necrotic purulent tissue without malignancy. Whole-body computed tomography revealed the obstructive endobronchial mass in the intermediate bronchus (Figure 1c), purulent retention downstream, bronchial dilatations in the right middle lobe, and a sigmoid colon tissue mass with a rectal base lesion. A colonoscopy confirmed a near-obstructive rectal base tumour, biopsies of which revealed moderately differentiated adenocarcinoma of colorectal origin. Suspecting a synchronous lung tumour, rigid bronchoscopy was performed successfully, relieving the obstruction in the intermediate bronchus (Figure 1b) with the extraction of a necrotic-covered fleshy mass. Histopathological examination with immunohistochemical analysis (eg; thyroid transcription factor 1 negative, cytokeratin 7 negative, cytokeratin 20 positive) confirmed the diagnosis of endobronchial metastasis from moderately differentiated colorectal adenocarcinoma. The patient was subsequently referred to medical oncology for further management. She received several courses of chemotherapy. The evolution was marked by the appearance of bone metastases one year later, necessitating morphine treatment. She subsequently died.

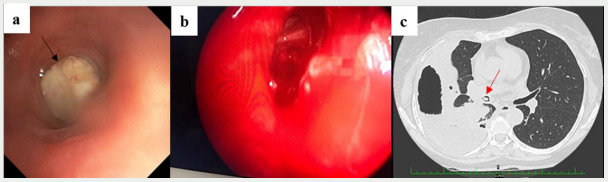

Figure 1. **(a)** White pearly polyp completely obstructing the intermediate bronchus (black arrow) (endobronchial metastasis of colorectal carcinoma). **(b)** Intermediate bronchus cleared after polyp resection via rigid endoscopy. **(c)** Axial parenchymal window slice of the thoracic computed tomography demonstrating the obstructive endobronchial polyp in the intermediate bronchus (red arrow) with purulent retention downstream.

Case report n° 2

A 73-year-old man, former smoker, with a medical history of diabetes mellitus, arterial hypertension, partial gastrectomy for complicated peptic ulcer 17 years ago, squamous cell carcinoma of the larynx treated with radiotherapy two years ago, and left nephrectomy four months ago for Bellini tubules renal cell carcinoma (ie; pathological report showing lymphatic and venous vascular emboli) without adjuvant chemotherapy, was admitted to hospital for exploration of haemoptysis of moderate abundance without hemodynamic and respiratory repercussions, as well as biological consequences like anaemia and renal failure. Flexible bronchoscopy revealed diffuse bleeding throughout the bronchial tree and a budding formation in the apical bronchus of the right upper lobe (Figure 2a), which was biopsied. Histopathological examination with immunohistochemical analysis (Cytokeratin 7 negative, Thyroid transcription factor 1 negative, and P63 protein negative) ruled out a primary lung tumour or possible metastasis from laryngeal squamous cell carcinoma and concluded an endobronchial metastasis from Bellini tubules renal cell carcinoma in a poorly differentiated form. Cervico-thoraco-abdomino-pelvic computed tomography, compared to preoperative nephrectomy scan, revealed ground-glass opacity in the right upper

lobe, corresponding to the bleeding site (Figure 2b) and the appearance of excavated pulmonary nodules with mediastinal lymphadenopathy, left renal hilar lymphadenopathy, and vertebral body densification from T6 to L5. The diagnosis was secondary pulmonary metastases from renal cell carcinoma (RCC), and the patient was referred to medical oncology for further management. The patient died after two weeks of discharge, from haemoptysis of great abundance.

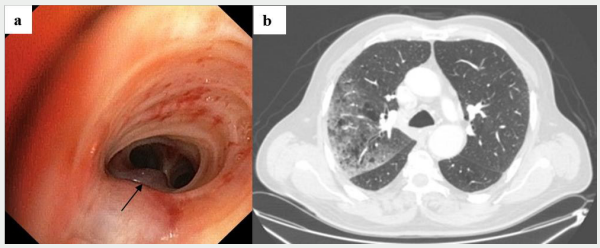

Figure 2. **(a)** Protruding polypoid formation in the right upper lobar apical bronchus (black arrow) (endo-bronchial metastasis of renal cell carcinoma). **(b)** Axial slice in lung parenchyma window of a thoracic computed tomography scan showing ground-glass opacities in the right upper lobe (site of bleeding).

Case report n° 3

A 62-year-old non-smoking woman with a medical history of arterial hypertension and left nephrectomy four years ago for a grade 3 clear cell renal carcinoma infiltrating the perirenal fat and hilar vessels, was admitted for investigation of persistent dry cough evolving over four months with associated weight loss. Chest X-ray revealed a right hilar opacity with internal limits confounded with the mediastinum and external limits appearing spiculated. Thoraco-abdomino-pelvic and cerebral computed tomography scan showed a heterogeneous tissue mass, enhanced after injection of iodinated contrast agent, measuring 9 x 8.5 x 7.5 cm, located between the middle and posterior mediastinum with its upper pole below the carina. This mass encased the right inferior pulmonary vein and right lower lobe bronchus, reaching the posterior edge of the left atrium and the right border of the thoracic oesophagus and descending aorta (Figure 3 a and b). The mass was associated with sub-centimetre pre-tracheal and hepatic pedunculated lymph nodes. The left renal loge was vacuous. Flexible bronchoscopy revealed a whitish mass obstructing the right lower lobe bronchus, with biopsies suggesting bronchial mucosal inflammation (Figure 3c). A computed tomography-guided transthoracic lung biopsy concluded with a diagnosis of invasive poorly differentiated adenocarcinoma, extensively necrotic, with an immunohistochemical profile (Cytokeratin positive, Cluster of differentiation (CD) 20 negative, Thyroid transcription factor (TTF) 1 negative) consistent with renal origin. The patient was then referred to medical oncology for further management. She received several courses of chemotherapy and died one year later by disease progression.

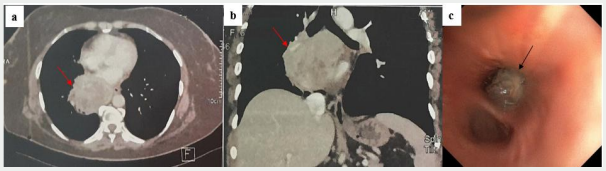

Figure 3. Axial **(a)** and coronal **(b)** slices in the mediastinal window with contrast enhancement of a thoracic computed tomography scan showing a tissue mass enhancing heterogeneously (red arrow), with its upper pole located in the subcarinal region. **(c)** Obstructive whitish bulge in the right lower lobar bronchus (black arrow) (endo-bronchial metastasis of renal cell carcinoma).

Discussion

Three cases of EBMs were presented: one secondary to colorectal cancer and two associated with renal tumours. These cases underscore the diagnostic role of bronchoscopy in identifying obstructive endobronchial masses. The metastases revealed extra-thoracic neoplasms in colorectal cancer and were incidentally discovered during follow-up for renal cancer. Histological diagnoses were done via bronchial biopsies in the case of duct renal carcinoma, via computed tomography-guided needle biopsy in the case of clear cell renal carcinoma, and via rigid bronchoscopy in the case of colorectal adenocarcinoma.

The lung represents a common site for metastatic spread from extra-thoracic cancer (1), and 20–50% of primary extrapulmonary solid malignancies show pulmonary metastases during their biological course (1). However, endobronchial growth remains a rare phenomenon (1). Epidemiological studies have reported an incidence of these EBMs ranging from 2% to 50% (1). Primary tumours are predominantly breast cancer (30%), colorectal cancer (24%), renal cancer (14%), stomach cancer (6%), prostate cancer (5%), and melanoma (4.5%) (1). In most cases, the primary tumour site is known before the diagnosis of EBMs (ie; metachronous metastases) in 89% of cases, while in 6% of cases, the diagnosis is made simultaneously (ie; synchronous metastases). Rarely, in 5% of cases, the endobronchial metastasis can reveal an occult extra-thoracic tumour (ie; anachronous metastases) (1). Approximately, 50% of anachronous metastases are associated with renal cell carcinoma (RCC) (1). In our patients, the endobronchial tumour revealed the extra-thoracic neoplasm (ie; colorectal cancer) in one case and was discovered during the follow-up of the primary tumour (ie; renal cell carcinoma) in two cases.

While searching the English open-access medical literature via PubMed, focusing on case reports over the past 20 years (ie; 2004-2024), we found 14 cases of colorectal adenocarcinoma (Table 1) and 8 cases of RCC (Table 2) in which EBMs were identified either metachronous or synchronous.

The clinical and endoscopic presentation of EBMs can mimic that of a primary lung tumour (1,4,10). Symptomatology, when present, is dominated by cough, dyspnoea, and haemoptysis, and up to a third of patients with EBMs are asymptomatic at the time of diagnosis (1,2,15,16). The presenting complaint for our patients was haemoptysis in one case, persistent cough in the second case and infectious symptoms in the third.

Table 1. Reported cases of EBMs identified as synchronous or metachronous with the diagnosis of colorectal adenocarcinoma (period: 2004-2024).

Author Country (year) Study type/ Sample size	Age (years) Sex	Treatment of primary tumour	Respiratory Symptoms	Interval of metastasis	Radiologic findings	Endoscopic aspect	Treatment of EBMs	Follow-up/ Outcomes
Coriat et al. (3) France 2007 Retrospective study 7	From 50 to 66 5 M/2F	1. 3rd-line chemotherapy 2. 3rd-line chemotherapy 3. 3rd-line chemotherapy 4. None 5. 2nd-line chemotherapy 6. 4th-line chemotherapy 7. None	Cough 4 Dyspnoea 2 Pneumonia 1	Metachronous 4 Synchronous 3	N/D	1. Endobronchial polypoid 2. Haemorrhagic mass 3. Pediculate tumour and blocking bronchus 4. Endobronchial polypoid haemorrhagic mass 5. Pediculate tumour 6. Endobronchial polypoid haemorrhagic mass 7. Pediculate tumour	1. Chemotherapy radiotherapy 2. Chemotherapy ET 3. Curietherapy ET 4. Surgery 5. ET 6. ET 7. Radiotherapy	1. No recurrence alive 2. 2 recurrences dead 3. 1 recurrence dead 4. No recurrence alive 5. 3 recurrences dead 6. 1 recurrence dead 7. No recurrence dead
Kim et al. (4) USA 2009 Case Report 1	49 M	Low anterior resection with colorectostomy + postoperative chemoradiation therapy	Chronic cough	7 years	N/D	**Flexible bronchoscopy** exophytic lesion obstructing the right upper lobe orifice	Right upper lobe sleeve lobectomy with mediastinal lymphadenectomy	Alive three months after surgery
Rosado Dawid et al. (5) Madrid 2016 Case report 1	76 F	Neoadjuvant radio-chemotherapy Rectal surgery and adjuvant chemotherapy Pulmonary resection of metastases	Intermittent inspiratory stridor Dyspnoea	1 year	* Multiple bilateral nodules + loss of right lung volume. ** A 15 mm solid lesion located 5 mm below the vocal cords +similar lesion blocking the right main bronchus + many small nodules	**Rigid bronchoscopy**: An obstruction of 90% of the tracheobronchial lumen and multiple 2-3 mm sessile metastases	Nd:YAG laser and argon plasma coagulation via rigid bronchoscopy	N/D
Turner et al. (6) USA 2014 Case report 1	31 M		Pneumonia	Synchronous	**Right lower lobe infiltrates and mucous plugging	**Bronchoscopy:** Broad-based mass completely obstructing the bronchus intermedius	Photoablation + mechanical debulking	N/D
Kho et al. (7) Malaysia 2018 Case report 1	56 F		Dyspnoea Wheezing	Synchronous	* Lingular mass with hyperinflated left lung **enlarging lingular mass with endobronchial extension into the left main bronchus	**Flexible bronchoscopy:** Left main bronchus partially occluded by the intraluminal tumour in a ball valve manner	Mechanical debulking + argon plasma coagulation Palliative chemotherapy	N/D
Serbanescu et Anghel, (8) Romania 2017 Case report 1	62 M	**2011:** Surgical intervention + adjuvant chemoradiation therapy **2013**: Incomplete surgical resection of 2 lung nodules + chemotherapy associated with Bevacizumab		2 years	**2015:** **nodule in the right upper lobe **Postoperative** **: Intratracheal tissue mass and multiple metastases in the right lung	**Bronchoscopy:** A 4-5 mm lesion in the right primary bronchus **Postoperative bronchoscopy** 2 endotracheal lesions	Surgical intervention Resection of tracheal lesion + local laser therapy for the other three lesions Chemotherapy +radiotherapy	N/D
Charpidou et al. (9) Greece 2007 Case report 2	72 M		Haemoptysis	Synchronous	* Lung infiltration and a solitary nodular lesion in the right lung. ** Multiple nodules+ post-obstructive pneumonitis	**Flexible bronchoscopy:** Polypoid lesion covered with necrotic tissue causing tubular obstruction	N/D	N/D
	58 F	Excision of a sigmoid tumour	Chest pain	8 years	* Bilateral nodules. ** multiple nodules + enlarged mediastinum lymph nodes + pericardial and right pleural effusion	**Flexible bronchoscopy:** Easily bleeding polypoid lesion in the lower third of the trachea	N/D	N/D
Our case report n °1	58 F		Chest pain Dyspnoea Productive cough	synchronous	*Hydropneumothorax ** Obstructive endobronchial mass in the intermediate bronchus, purulent retention downstream	**Flexible bronchoscopy**: Completely obstructing pearly white mass in the intermediate bronchus	**Rigid bronchoscopy:** Mechanical extraction of a necrotic-covered fleshy mass Chemotherapy	Died 1 year after from disease progression

CT: Computed tomography, **EBMs**: Endobronchial Metastases, **ET**: Endobronchial therapy, **F**: Female, **M**: Male, **N/D**: Not documented, **Nd**:YAG: Neodymium-doped Yttrium Aluminum Garnet.
* Chest X-Ray ** Chest CT scan

Table 2. Reported cases of EBMs identified as synchronous or metachronous with the diagnosis of RCC (period: 2004-2024).

Author Country (year) Study type/ Sample size	Age (years) Gender	Treatment of primary tumour	Respiratory Symptoms	Interval of metastasis (years)	Radiologic findings	Endoscopic aspect	Confirmation/ Treatment of EBMs	Follow-up/ Outcomes
Park et al. (10) South Korea 2004 Retrospective study 4	From 64 to 80 3M/1F		Haemoptysis 3 Cough 3 Dyspnoea 1	Range from 2 to 9 years	N/D	N/D	Right upper lobectomy 1 Percutaneous needle biopsy or a bronchoscopic biopsy 3	N/D
Poh et al. (11) Malaysia 2013 Case report 1	63 M	Radical left nephrectomy	Haemoptysis Dyspnoea	Five years	* Complete left lung collapse. ** Left lung collapse and a left main bronchus endobronchial lesion	**Flexible bronchoscopy:** White polypoidal mass occluding the left main bronchus	Excision by diathermy using a snare around the base of the tumour Pazopanib: An angiogenesis inhibitor	N/D
Kim et al. (12) Korea 2021 Case report 1	71 M	Right nephrectomy	Fever Cough Sputum	20 years	* Nodular opacity+ ill-defined patchy increased opacity in the right lower lung zone ** multiple centrilobular nodules with ground glass opacities + elongated mass whose long axis ran parallel to the bronchus		Right lower lobectomy Chemotherapy: Sunitinib	No evidence of recurrent disease after a follow of 2 years
Zhang et al. (13) China 2021 Case report 1	69 M	Resection of the left renal mass	Cough Expectoration Haemoptysis	Many years	** Large irregular inhomogeneous lesion presenting as an obstructive mass at the origin of the left main bronchus	**Bronchoscopy+ biopsy**: Angiogenic tumour	Radical left pneumonectomy Chemotherapy: Sunitinib	N/D
Abdul Rahman et al. (14) Syria 2023 Case report 1	67 M		Haemoptysis Productive cough	Synchronous	** soft-tissue mass within the left main bronchus and atelectasis of the anterior segment of the left upper lobe	**Flexible bronchoscopy:** Hypervascular lesion occluding the left upper lobe bronchus	Left upper lobectomy + right radical nephrectomy three weeks later	N/D
Our case report n °2	73 M	Left nephrectomy (Bellini tubules renal cell carcinoma) Adjuvant chemotherapy	Haemoptysis	Four months	** Ground-glass opacity in the right upper lobe + excavated pulmonary nodules with mediastinal lymphadenopathy	**Flexible bronchoscopy:** Diffuse bleeding + a budding formation in the apical bronchus of the right upper lobe	Bronchial biopsies	Died two weeks after discharge
Our case report n °3	62 F	Left nephrectomy	Dry cough	Four years	* Right hilar spiculated opacity ** Heterogeneous tissue mass, located between the middle and posterior mediastinum with its upper pole below the carina.		Percutaneous needle biopsy Chemotherapy	Died one year later due to disease progression

CT: Computed tomography, EBMs: Endobronchial Metastases, **F**: Female, **M**: Male, **N/D**: Not documented, **RCC**: Renal cell carcinoma, **VEGFR**: Vascular endothelial growth factor receptor. *Chest X-Ray ** Chest CT scan

EBMs can occur at any airway level; however, its predilection is still uncertain (1). A series of 174 cases analysed by Marchioni et al. (1) showed that EBMs affects mostly the right side. In a series of 43 patients with EBMs who underwent bronchoscopic biopsies, Lee et al. (16) reported that 48.8% had metastases in the left bronchus and 65.1% in the right bronchus. In our three cases, EBMs occurred on the right side.

In two series of EBMs (one with 43 cases and the other with 11 cases), chest X-ray revealed that hilar mass was the most frequent finding, followed by single and multiple visible tumours or lung nodules, atelectasis (17) or lung collapse in cases of voluminous metastases, consolidation, effusion, and hilar or mediastinal lymphadenopathy (2,3,11–13,15,16). Normal radiological findings were observed in 9.3% of cases (2). In one of our cases, the endobronchial mass led to atelectasis of the middle and lower right lobes.

On thoracic computed tomography scan, in contrast to primary bronchial carcinoma, an EBM appears as a highly enhanced mass with its long axis running parallel to the bronchus and a branching pattern adapting to the airway (12), thus looking like a gloved finger (10). It is accompanied by reticular lesions and ground-glass opacities in the corresponding lung lobe (10). This may be attributed to recurrent haemorrhage from the highly vascularized endobronchial tumour (10), as observed in one of our patients. Other features described include

a polypoid appearance and thickening of the bronchial wall (10). Unlike pulmonary metastases, visible in 95% of cases on thoracic CT, EBMs are detected in only 55% (15). Hence, the fluorodeoxyglucose positron emission tomography (FDG-PET) scan is a useful imaging modality for scanning and monitoring tumours and metastases. Despite not being recommended by the European Society for Medical Oncology guidelines, FDG-PET scan can be considered in postoperative surveillance of RCC when conventional imaging is inconclusive (14).

The diagnostic procedures of EBMs vary and include flexible bronchoscopy with biopsy, surgical biopsy, bronchial brushing, endobronchial ultrasound-guided transbronchial needle aspiration, and bronchoalveolar lavage (13). Flexible bronchoscopy is the gold standard diagnostic method for confirming EBMs (3,15). It typically reveals various growth patterns, including protruding polypoid or pedunculated masses, multiple nodular outgrowths, necrotic or haemorrhagic lesions, and infiltrating tumours that completely or partially occluded the bronchus (3,15,16).

In comparison, surgical biopsy has a higher yield but it is less preferable as it is more invasive and more expensive (13). Another diagnostic modality is bronchial brushing, which is an acceptable method with a reported sensitivity of 94% for non-hematologic metastases and an overall sensitivity of 85% (18). However, this result was built on a single study conducted by Ikemura et al. (18) and further studies on its efficiency are required. In our patients, flexible bronchoscopy identified a haemorrhagic polypoid lesion in one case and necrotic lesions in the other two. Histological diagnosis was confirmed by bronchial biopsy in two cases, performed via flexible bronchoscopy in one case and rigid bronchoscopy in another. In the remaining case, diagnosis was obtained through transthoracic biopsy.

Few studies have described the histological changes observed in the bronchus at the site of metastatic involvement (2). The earliest changes typically involve infiltration of the mucosal lymphatics by malignant cells, resulting in their dilation and fusion, forming solid tumour masses beneath the bronchial epithelium (2). In more advanced stages, the tumour ulcerates through the epithelial layer, forming a polypoid mass within the bronchial lumen (2). Additionally, tumour cells may reach the bronchial lumen through bronchial arteries (2).

Regarding the developmental modes of EBMs, four types are proposed: Type I involves direct metastasis to the bronchus, Type II is characterized by bronchial invasion from a parenchymal lesion, Type III involves bronchial invasion by mediastinal or hilar lymph node metastases, and Type IV is the extension of peripheral lesions along the proximal bronchus (14). Our first patient most likely had type I involvement, the second had type II, and the third had type III.

Histologically, distinguishing between EBMs and primary bronchial tumours poses challenges due to the limited clinical and radiological manifestations for definitive diagnosis and their shared histopathological features (18). Additional immunohistochemical studies are necessary for confirmation (13,18).

Therapeutic approaches for endobronchial tumours are tailored based on primary tumour characteristics, histological type, anatomical localization, presence of other metastases, symptoms, and overall patient health (2,5,11). Some patients with early-stage EBM and a single lesion or confined metastatic lesions are eligible for radical surgical therapies like pneumonectomy and lobectomy with good tolerance of the procedure and in the absence of other metastases (except for liver metastases) (4). This surgical treatment can improve five-year survival from 38.3% to 63.7% (4). Favourable prognostic indicators and surgical criteria include having fewer than seven metastases, absence of hilar or mediastinal nodal involvement, pulmonary metastases smaller than 4 cm, and disease confined to a single lung (13).

In the presence of extensive metastatic disease, the prognosis is poor with mediocre survival (4). However, these patients may benefit from palliative endoscopic management. Rigid bronchoscopy is preferred over flexible bronchoscopy because it offers superior airway control and facilitates the use of multiple instruments for therapeutic procedures (7). It is an effective palliative intervention for relieving endobronchial obstruction, thereby alleviating symptoms and improving quality of life (11). Endoscopic techniques include endoscopic resection followed by cryotherapy if the lesion is localized, haemostatic techniques such as Neodymium-doped Yttrium Aluminum Garnet (Nd:Yag) laser debulking therapy for haemorrhagic lesions, or placement of an endoprosthesis for extrinsic compression by lymphadenopathy (15). Other available techniques include electrocautery, argon plasma coagulation, diathermic snares, grasping with forceps under a rigid bronchoscope, endobronchial radiation (brachytherapy), photodynamic therapy, electrocoagulation, prosthetic stents, and intratumoural ethanol injections (6,13,19,20). In our first case, rigid bronchoscopy successfully relieved intermediate bronchus obstruction by extracting a necrotic-covered fleshy mass.

In a retrospective study of eleven patients with RCC presenting with EBMs, twenty-two interventional procedures were performed (20). Apart from one patient, all underwent endobronchial treatment (20). Argon plasma coagulation was predominantly used for the management of EBM (n=10, 100%) (20). Mechanical resection (n=6, 60%), laser therapy (n=5, 50%), cryoextraction (n=5, 50%), and cryotherapy (n=4, 40%) were employed in addition to argon plasma coagulation (20).

This local treatment is generally simple, effective, and well-tolerated, and leads to a notable improvement in pulmonary symptoms (15,19). However, mortality associated with this procedure has been reported in 0.8 to 3% of cases (2). Indeed, interventional bronchoscopy can be complicated by massive haemorrhage, endobronchial burns (with thermal methods), airway release failure, asphyxia, trachea-oesophageal fistula, mediastinal emphysema, pneumothorax, bronchospasm, bronchial rupture, and cardiac arrhythmia (20). The endoscopic resection performed in our patient proceeded without incidents, and bleeding was successfully controlled.

Our study has several strengths. It includes various primary cancers (colorectal and renal cell carcinoma), highlighting the variability in clinical presentation and the diagnostic challenges of EBMs from extra-thoracic neoplasms. We employed diverse diagnostic tools, such as chest X-rays, CT scans, bronchoscopy, and histopathological analysis with immunohistochemical staining. Additionally, the detailed descriptions and images enhance the educational value for clinicians and medical students. However, the study has limitations. The small sample size of three patients limits generalizability. The cases are restricted to colorectal and renal cell carcinoma, excluding a broader range of primary tumours. Furthermore, the focus is less on therapeutic outcomes and patient responses. Lastly, the case selection may introduce bias, representing more unusual or complex presentations that may not reflect the broader patient population with EBMs.

Conclusion

EBM from extra-thoracic tumours remain a challenging disease due to its rarity. The radio-clinical and endoscopic presentations can closely mimic those of a primary lung tumour, highlighting the importance of thorough interrogation and examination to identify any history of neoplasia or extra-thoracic signs that may guide histopathological studies. Therefore, physicians must consider the possibility of EBMs when encountering endobronchial lesions.

In this manuscript, we report three rare cases of EBMs. These metastases revealed extra-thoracic neoplasms in colorectal cancer and were incidentally discovered during follow-up for renal cancer. We also review the existing literature and discuss diagnostic and therapeutic methods to draw more attention to this underdiagnosed entity. The prognosis for these patients is often guarded, but palliative management through interventional endoscopy can improve quality of life.

Patient perspective

The first patient's perspective reflects a struggle with advanced disease, experiencing temporary improvements from chemotherapy and pain management, but ultimately facing a fatal outcome due to disease progression. The second patient likely felt frustration upon discovering pulmonary metastases despite previous treatment and struggled with severe complications such as massive haemoptysis, leading to a rapid death. The third patient's perspective may have been marked by disappointment with the rapid progression of the disease despite therapeutic efforts, with temporary improvement but eventual death a year later. These perspectives highlight the emotional and practical challenges associated with advanced cancer treatments, including temporary relief, frustration with disease progression, and the struggle with terminal outcomes.

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