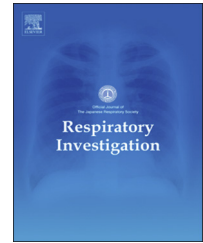


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Original article

Bronchoscopic palliation to treat endobronchial metastasis of the tracheobronchial tree



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ABSTRACT

Background: Endobronchial metastases (EBM) are rarely observed, but they are caused by a number of different tumors. Bronchoscopy is the main approach for both differential diagnosis and to maintain endoluminal palliation. In this study, consecutive EBM cases that had been diagnosed and treated were evaluated in a retrospective cohort.

Methods: In total, 18 pathologically verified patients with EBM originating from extrathoracic tumors who were referred to our interventional pulmonology unit with respiratory symptoms were retrospectively evaluated. Tumor type, metastasis location, treatment method and frequency, and complications were evaluated.

Results: In total, there were 18 patients (13 women) with EBM enrolled in this study. All were diagnosed by a bronchial biopsy. The mean age of the patients was 48 ± 15.24 years (range: 24–76 years). The most frequent sites of origin of the metastases were the bone (5) and kidney. Obstructions were observed in the tracheas of 12 patients, in the right main bronchi of 10, and in the left main bronchi of 11. Twelve airway stents were placed in nine patients. The removal of the obstruction was effective in the remaining patients. The mean number of treatment applications was 1.47 (range: 1–3). Hemorrhage, mucostasis, and granulation were observed. The median follow-up duration was 528 days (range: 62–1177 days). The median survival time for the patients who died was 122 days (range: 2–885 days).

Conclusions: EBM is rare, and bronchoscopy is the primary method of diagnosis, followed by palliation, if necessary.

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1. Introduction

Pulmonary metastases are common in tumors with a high level of systemic venous drainage. Most endobronchial lesions develop secondary to primary lung malignancies. The incidence rate of endobronchial metastases (EBM) from extrapulmonary malignant tumors varies in the published literature [1,2]. The type of EBM originating from extrathoracic malignancies depends on the prevalence of the primary tumor, the histopathology of the tumor, and the stage of the tumor at presentation. Although EBMs develop because of different causes, they manifest similar symptoms, including cough, dyspnea, sputum, and hemoptysis. Diagnosis is simple when an airway obstruction has developed at the location of the lesion, and respiratory symptoms are evaluated together with radiological and bronchoscopic findings.

Because EBMs are rare, most studies are retrospective in design or are case reports. In this study, we evaluated patients who were consecutively admitted over a 9-year period to our interventional bronchoscopy unit with EBM caused by primary tumors. We treated them with interventional methods, including bronchoscopy. Bronchoscopic palliation can increase survival independent of systemic and radiation therapy when applied in the early stages of the disease. We aimed to emphasize the importance of the management of this rare clinical situation by using bronchoscopic methods.

2. Patients and methods

From January 2005 to January 2013, 943 consecutive patients who underwent rigid bronchoscopy under general anesthesia in our unit were evaluated. Of these, 18 cases with an endobronchial lesion caused by EBM were diagnosed and evaluated. These patients were all symptomatic due to central airway obstruction with a primary extrathoracic tumor. Airway obstruction was detected in these patients by computed thorax tomography and fiberoptic bronchoscopy. These patients were followed and referred to our interventional bronchology unit. Baseline characteristics, clinical symptoms, pre-treatment, radiological findings, applied methods, complications, and survival characteristics were evaluated retrospectively from the patients' medical records. Institutional Review Board approval (IRB: 0023-051212-061212-0023) was obtained to allow the use of retrospective data from the medical records.

Histopathological diagnosis was confirmed in all cases by biopsy. Primary lung cancer, lymphoma, and esophageal cancer cases were excluded because these cancers can invade the tracheobronchial tree directly.

All of the patients were evaluated by chest X-ray before and after the procedure. Each patient underwent a rigid bronchoscopy under general anesthesia for treatment in the Interventional Pulmonology Unit. All of the patients, except one, were hospitalized after the procedure. The patient who was not hospitalized was treated as an outpatient.

Dumon (Novatech, Paris, France) stents were inserted using the appropriate equipment.

A diode laser, operating at a wavelength of 980 nm and using 4–25 W in pulsed mode (Biolitec, Ceralas D 25; Jena, Germany), was used for the endobronchial treatment. Argon plasma coagulation (40 W, blended mode-continuous flow) was applied using an instrument manufactured by ERBE Elektromedizin GmbH (Tübingen, Germany). Standardized protocols for selecting the appropriate power were used in accordance with the manufacturer's recommendations.

Cryotherapy was performed using the ERBOKRYO system (Elektromedizin GmbH).

All patients were intubated by a rigid bronchoscope (Efer Endoscopy, Paris, France) under general anesthesia using standardized techniques, and mechanical debridement was applied when necessary. All patients had symptomatic relief after endobronchial treatment and stenting.

3. Results

Among the 943 consecutive patients who underwent rigid bronchoscopy under general anesthesia in our unit, 18 (1.9%) had EDM. All patients had respiratory symptoms, including dyspnea, cough, or hemoptysis. The 18 patients included 5 (27.8%) men and 13 (72.2%) women. The mean age of the patients was 48 ± 15.24 years (range: 24–76 years). The most sites of primary tumors were bone ($n=5$, 27.7%) and kidney ($n=4$, 22.2%); others were soft tissue ($n=3$, 16.7%), breast ($n=2$, 11.1%), and one case each of malignant melanoma, nasopharynx, cervix, and testis (Table 1). A representative image from one patient with chondrosarcoma who underwent bronchoscopic removal is shown in Fig. 1.

Obstructions were observed in the trachea in 12 patients, in the right main bronchus in 10 patients, in the left main bronchus in 11 patients, and in the left upper lobe entrance in 1 patient. Mechanical dilatation was performed during every session. The obstruction was removed using a hot mechanical device (a diode laser or argon plasma coagulation). If bleeding occurred after the removal of the obstruction, the hot device was used to control the bleeding. The hot device was used on the base of the tumor to delay recurrence or to eradicate the tumor.

Once the endoscopic debulking was complete, the patient was considered for stent insertion. Stents were inserted when bulging extrinsic compression was present or the luminal compromise was greater than 50%. In total, 12 stents were

Table 1 – Demographic characteristics of the cases and origins of the primary tumors ($n=18$).

| Demographical data of the patients | n |
|------------------------------------|-------------------------------|
| Gender (male/female) (%) | 5/13, (27.8%/72.2%) |
| Age (y) | 48 ± 15.24 (range: 24–76) |
| Bone (n) (%) | 5 (27.7%) |
| Kidney (n) (%) | 4 (22.2%) |
| Soft tissue (n) (%) | 3 (16.7%) |
| Breast (n) (%) | 2 (11.1%) |
| Malignant melanoma (n) (%) | 1 (5.6%) |
| Nasopharynx (n) (%) | 1 (5.6%) |
| Cervix (n) (%) | 1 (5.6%) |
| Testis (n) (%) | 1 (5.6%) |

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