Minimally Invasive But Maximally Obstructive: Carcinoma In Situ Obstructing a Mainstem Bronchus

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Abstract

Here we report a case of mainstem bronchus obstruction due to a carcinoma in situ. Preinvasive lesions, such as carcinoma in situ, are usually small and limited to the bronchial wall. This exceptional presentation shows a tumor growth large enough to completely occlude the right mainstem bronchus. The endoluminal lesion was removed using rigid bronchoscopy. The patient, not eligible for a local treatment, has been treated with surgery.

Reference


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CASE REPORT

Minimally Invasive But Maximally Obstructive Carcinoma In Situ Obstructing a Mainstem Bronchus

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CASE PRESENTATION

A 59-year-old man, active smoker, presented with dyspnea and hemoptysis. Chest radiograph revealed partial atelectasis of the right lung (Fig. 1A). A computed tomography scan of the chest showed an obstruction of the right mainstem bronchus (RMSB) (Fig. 1B) as the likely cause of the atelectasis. Bronchoscopy confirmed the complete obstruction of the RMSB due to a highly vascularized tumor (Fig. 1C).

The lesion was successfully removed using rigid bronchoscopy assisted with laser. Postprocedure chest radiograph showed complete reexpansion of the right lung (Figs. 1D, E). Complete patency of the RMSB and of the right upper lobe (RUL) bronchus was established (Fig. 1F). The base of the tumor was located in the anterior segmental bronchus of the RUL (RB3). Histologic analysis confirmed a keratinizing squamous cell carcinoma, cytokeratin 5/6 positive and thyroid transcription factor 1 negative. Its invasive character could not be assessed due to the limited nature of the sampling by bronchoscopy.

Subsequently, staging by positron emission tomography did not reveal any evidence of local spread or distant metastasis. Brain magnetic resonance imaging demonstrated no lesion. Two weeks later a control bronchoscopy was performed using autofluorescence (AF) (Safe 3000, Pentax, Japan). White light and AF did not find any abnormality of the RMSB, RUL bronchus, RB1, and RB2. AF did, however, show an abnormal area in the posterior wall of RB3, extending distally, which was biopsied (Fig. 2). Pathologic examination was one more time unable to affirm with certitude an absence of mucosal invasion.

The patient underwent a right upper sleeve lobectomy. There was no macroscopic evidence of invasion of the bronchial wall of RB3 (Fig. 3A). No abnormality was observed in mediastinal lymph nodes. Histologic examination concluded the presence of a diffuse carcinoma in situ (CIS) of RB3 and the subsegmental bronchi (Fig. 3B). The tumor was then classified TisN0M0.

DISCUSSION

We report a rare case of mainstem bronchus obstruction due to a CIS. Preinvasive lesions, such as CIS, are usually small, limited to the bronchial wall, and difficult to visualize using conventional white light bronchoscopy. Because of its intraluminal growth, rarely, airway obstruction can occur but it is usually very limited. In this case, the lesion arose from the RB3, without invasion of the mucosa and grew large enough to completely occlude RMSB.

AF bronchoscopy detected abnormalities in RB3 suggestive of CIS, but the lack of invasion could only be ascertained after the surgery. In addition, surgery was the best option given high suspicion of the extension in the subsegmental bronchi, which was eventually established on microscopic examination. Endoscopic treatments (photodynamic therapy, brachytherapy, electrocautery, cryotherapy, and Nd-YAG laser therapy) for CIS are recommended in situations in which treatment of the whole lesion can be
FIGURE 1. Chest radiograph before resection (A) showing partial atelectasis of the right lung (black arrow); and after resection (D) showing almost complete resolution of the atelectasis. Chest computed tomography before resection (B) showing complete obstruction of RMSB (black arrow); and after resection (E) showing completely patent RMSB without residual lesion in the right upper lobe. Endoscopic image before resection (C) showing complete obstruction of the RMSB by a vascularized tumor; and after resection (F) showing completely patent RMSB and the right upper lobe bronchus. RMSB indicates right mainstem bronchus; RUL, right upper lobe.
expected, such as subsegmental, proximal bronchi or trachea lesions, bronchoscopically visible peripheral margin, and tumor size <2 cm in greatest dimension. To evaluate the possibility of a local treatment, radial EBUS could have been a good method to assess the invasion of the lesion in the bronchial wall, but our center does not possess this technology so far. In addition, the impossibility to visualize the distal margins of the lesion did not allow for a curative strictly endoscopic treatment.

The decision to undertake a sleeve lobectomy rather than a conventional lobectomy was based on the risk of an extension to the RMSB since the initial clinical presentation.

Histology revealed a total absence of lesions at the RMSB, suggesting an exceptional tumor growth large enough to completely occlude the RMSB without any mucosal invasion.

REFERENCES