Endobronchial Metastasis from Prostate Cancer Mimicking Primary Lung Cancer

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Abstract

Endobronchial metastasis from prostate cancer is a rare neoplasm which metastasizes to the proximal central or subsegmental bronchus, in a bronchoscopically visible range. We present a 72-year-old man with a left superior lobar bronchus mass, intrapulmonary metastases, and bone metastases, mimicking primary lung bronchogenic carcinoma. Increasing tPSA, decreasing fPSA/tPSA level, and prostatic puncture pathology proved prostate cancer. Pathomorphology and immunohistochemistry of the mucosa specimen with P504S, PSA revealed the diagnosis of pulmonary metastases from prostate cancer. The patient was treated by hormonal treatment and chemotherapy. He was in remission thirteen months after diagnosis.

Key words: prostatic neoplasms, endobronchial metastasis


Introduction

Pulmonary metastases from prostatic carcinoma generally follow a linear interstitial pattern which shows lymphangitic spread, single or multiple intraparenchymal pulmonary nodules that reflect hematogenous spread. Endobronchial metastasis (EBM) is defined as non-pulmonary neoplasms which metastasize to the proximal central or subsegmental bronchus, in a bronchoscopically visible range (1). It is rare and presents in only 2% of patients who die of solid tumors (2). We report a case with a left superior lobar bronchus mass, intrapulmonary metastases, and bone metastases, mimicking primary lung bronchogenic carcinoma.

Case Report

A 72-year-old man underwent computed tomography in a health examination in May 2008 that revealed left pulmonary hilar mass, considered as lung cancer accompanied by obstructive disease in the lingual segment, multiple nodules and hilar and mediastinal lymph nodes metastases (Fig. 1). The patient had no history of coughing, sputum blood, dyspnea, fever, ostalgia or other discomfort. He then underwent bronchoscopy, which showed a neoplasm arising from the lingual branch of the left superior lobar bronchus (Fig. 2). Mucosa biopsy confirmed mucinous adenocarcinoma (Fig. 3), which was CK₂₀ positive, CK₇, TTF₁, SPA, CDX₂ negative. Then the patient was diagnosed as left central lung cancer complicated with intrapulmonary metastases.
and it was planned to give systemic chemotherapy. Emission Computed Tomography (ECT) showed an increased uptake in the sixth anterior rib, ninth posterior rib, T_{11}, L_{2} and bilateral pubis, considered as bone metastases. Abdominal and brain CT scan showed no evidence of metastatic tumor. Tumor markers in peripheral blood revealed that tPSA increased up to 612.34 ng/mL, and fPSA/tPSA decreased to 0.13. Prostatic ultrasound presented with prostatic hyperplasia. Prostatic puncture pathology proved prostate cancer (Gleason scores: left 4+4, right 4+3), which demonstrated the possibility of double primary cancers. Later, in a histopathologic examination of the lung mucosa specimen including P504S, PSA, the result was consistent with pulmonary metastases from prostate cancer. Finally, the correct diagnosis adopted was prostate cancer complicated with lung and bone metastases.

After six cycles of docetaxel (75 mg/m^2, intravenously, q21d), in combination with the goserelin (3.6 mg, subcutaneously, q28d) and the bicalutamide (50 mg, orally, qd), the pulmonary lesions disappeared (Fig. 4), with serum PSA level undetected. The patient was in remission as of the latest follow-up in December 2009.

**Discussion**

Endobronchial metastasis is unusual. Tumors more likely to have EBM are renal, breast, and colorectal carcinomas. Other reported malignancies include nasopharynx, thyroid, hepatocellular, pancreas, adrenal, ovarian, cervix, uterine, testicular, penis, prostate, urinary bladder carcinomas, and so on. Only seventeen cases of endobronchial metastasis from prostate cancer have been reported in the English language literature. It was more frequent in the upper lobes in those cases, and there was no difference in both sides. Four routes

![Figure 2. Flexible bronchoscopy showing a neoplasm arising from the lingual branch debouch in the left superior lobar bronchus.](image)

![Figure 3. Bronchial mucosa biopsy specimen. a, A few tumor cells were dispersedly distributed among lots of mucus (Hematoxylin and Eosin staining × 40). b, A few bronchial epithelium cells expressed CK7 (arrow), but not tumor cells did (× 200). c, High positivity of P504S in tumor cells (× 200). d, High positivity of PSA in tumor cells (× 200).](image)
for EBM are suggested by Kiryu et al (1): 1. Direct metastasis to the bronchus, 2. Bronchial invasion by a parenchymal lesion, 3. Bronchial invasion by mediastinal or hilar lymph node metastasis, 4. A peripheral lesion extended along the proximal bronchus. The radiographic findings are quite variable, including atelectasis, multiple pulmonary nodules, perihilar masses, mediastinal lymphadenopathy or normal chest X-ray (3). In the present case, there was a left pulmonary hilar mass which extended along the left superior lingular segment bronchus. Generally, in most prostatic cancer patients, lymph node and bone metastases are concomitant with pulmonary metastasis (4). Mucinous adenocarcinoma is common in digestive tract cancer, but is one of the rare variants of prostatic carcinoma. Mucinous adenocarcinoma of the prostate constitutes 0.4% of all prostate malignancies, and only about 50 cases have been reported in literature (5). Immunohistochemical studies of prostate mucinous adenocarcinoma were positive for PSA, PAP and CEA, and there is a 77.8% rate of prostate-specific antigen elevation (6). Currently, hormonal treatment is recommended for endobronchial metastases from prostate cancer (3), including androgen deprivation (Luteinising hormone releasing hormone analogues) and androgen receptor blocker (Casodex or Flutamide). However, when the patient has androgen refractory prostate cancer, surgical resection of the metastasis, chemotherapy or fractionated intraluminal 192 iridium high-dose rate brachytherapy (7) have been reported to be effective. Mucinous adenocarcinoma of the prostate has a good prognosis. Saito and Iwaki found that 50% of patients survived 3 years and 25% of 5 years (6). In the present case, it was difficult to make the correct diagnosis because the primary prostatic tumour was not known, the endobronchial location of the tumor and the subsequent bronchoscopy with a positive histologic finding simulate a primary lung bronchogenic carcinoma. Thanks to the pathomorphology and immunohistochemistry, they played an important role in clinical diagnosis and further treatment. Hormonal treatment and chemotherapy led to a good prognosis. The patient was in remission for thirteen months, with disappearance of pulmonary lesions and undetection of serum PSA level.

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References


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