Coincident detection of lung metastasis of prostate cancer and primary lung cancer: A case report

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Abstract

We report an extremely rare case of 79-year-old man, who was discovered with coincidental lung metastasis of prostate cancer and primary lung cancer. The patient presented with low prostate-specific antigen and two lung lesions: one in the right lower lobe, and one in the right upper lobe, 3 years after he was treated with external beam radiotherapy for Gleason score 4+3=7, cT3aN0M0 prostate cancer. A computed tomography-guided needle biopsy of a nodule in the right lower lobe revealed suspicious metastasis of prostate cancer. Thoracoscopic excisions of both lesions were performed, and each lung lesion was diagnosed as being metastatic prostate cancer and primary lung cancer.

Introduction

Prostate cancer may metastasize to any organ, including bone, lymph node, and lung. Although lung metastasis has been reported in more than 40% of cases of prostate cancer,1,2 cases of isolated lung metastases without concurrent bone or lymph node metastases are limited. There have been some reports of isolated lung metastases of prostate cancer in the past, but none have reported solitary metastases and primary lung cancer discovered coincidentally. We describe a unique case of two lung lesions: one diagnosed as lung metastasis of prostate cancer and one as primary lung cancer after thoracoscopic resection.

Case presentation

The patient first presented with dysuria (International Prostate Symptom Score 16, Quality of Life 5) in 1995 and has been followed with an alpha-blocker since then with a diagnosis of benign prostatic hypertrophy. His prostate-specific antigen (PSA) level stayed around 7 to 8 ng/mL; due to symp-
Detection of lung metastasis

Discussion

Lung metastases of prostate cancer are seen in some terminal patients with multiple metastases. However, isolated lung metastases, without concurrent bone or lymph node metastases, are extremely rare. It has been reported that isolated lung metastases are found in less than 1% of autopsy cases of metastatic prostate cancer. In a clinical study of 1290 patients diagnosed with prostate cancer, 48 patients had lung metastases, with only 11 patients (0.86%) having solitary nodule. There have been several reports of isolated multiple pulmonary metastases; however, none have reported lung metastases of prostate cancer and primary lung cancer detected at the same time. Our case is the first to present these unique characteristics.

The most conventional treatment option for metastatic prostate cancer is androgen-deprivation therapy, but pulmonary metastatectomy is an option for isolated lung metastases...
without bone and lymph node involvement. Both surgical excision and androgen-deprivation therapy have resulted in some regression or resolution of pulmonary nodules.\(^5\) It was reported, in a case report, that the resection of a solitary lung metastasis of prostate cancer resulted in 12 years of biochemical remission without additional therapy.\(^6\) These findings suggest that although lung metastases are usually regarded as a manifestation of systemic disease, their early removal may be a management option for prostate cancer patients with pulmonary nodules.

The National Comprehensive Cancer Network guideline recommends radiologic surveillance for pulmonary nodules less than 8 mm, and either biopsy or surgical resection for nodules over 8 mm with either biopsy or surgical resection.\(^7\) In our case, because two intrathoracic lesions were ipsilateral, we decided to resect the S8 lesion as diagnostic therapy and at the same time resect S1 lesion to treat possible lung cancer. PSA following metastatectomy remains undetectable, but long-term follow-up is needed as there are studies reporting a high incidence of recurrence following lung metastatectomy.\(^8\)

In our case, chest imaging was not performed after PSA started showing an upward trend after EBRT and CAB; therefore, it is hard to speculate when the lung metastasis first appeared. However, PSA was at its maximum level of only 0.95 ng/mL after EBRT, so it can be said that the prostate cancer metastasized to a distant organ while the PSA level was low. Metastatic prostate cancer patients with PSA less than 10 ng/mL are almost always poorly differentiated or undifferentiated.\(^9\) The type of differentiation in our case was moderately differentiated at the time of prostate needle biopsy, but it may have changed during the course of treatment.

**Conclusion**

We present a rare patient with prostate cancer with low PSA, who was diagnosed with a solitary lung metastasis and primary lung cancer at the same time, without concurrent bone or lymph node metastases. Complete excisions of both lesions were carried out. Monitoring PSA for the follow-up of prostate cancer patients has limitations. Although lung metastases are not common, our case demonstrates that chest imaging plus a tissue diagnosis can lead to a surgical resection as a way to treat prostate cancer patients with pulmonary nodules.

**Competing interests:** The authors all declare no competing financial or personal interests.

**References**


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