

CASE REPORT

Case of pleural metastasis of prostate cancer

Koichiro Yasuda, Ai Maeda, Takuro Yukawa, Shinsuke Saisho, Riki Okita, Yuji Hiram, Katsuhiko Shimizu & Masao Nakata

Department of General Thoracic Surgery, Kawasaki Medical School, Kurashiki, Okayama, Japan

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Correspondence

Koichiro Yasuda, Department of General Thoracic Surgery, Kawasaki Medical School, Matsushima 577, Kurashiki 701-0192, Japan.

Tel: +81 86 462 1111

Fax: +81 46 464 1124

Email: koichiro1004@mail.goo.ne.jp

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Abstract

The most frequent sites of prostate cancer metastases are the bone and lung. Pleural metastasis of prostate cancer is clinically rare. We report a case with solitary pleural thickening arising from the metastasis of prostate cancer. A 71-year-old man was referred to our hospital for further examination of pleural thickening detected during a chest computed tomography (CT) examination. A video-assisted pleural biopsy was performed. The pathological findings showed that the tumor cells had spread from the parietal pleura to adipose tissue around the costal muscles. The tumor cells were positive for prostate-specific antigen (PSA) and negative for calretinin, cytokeratin (Ck5/6) and D2-40. These findings suggested that the pleural lesion was a metastasis of the prostate cancer.

Introduction

Prostate cancer frequently metastasizes to the bone, lung, liver, and adrenal gland. Pleural metastasis is reportedly observed during autopsy in around 21% of prostate cancer cases.¹ However, few cases of pleural metastasis of prostate cancer have been detected clinically.

Case report

A 71-year-old man was referred to our hospital for further examination of pleural thickening detected during a chest computed tomography (CT) examination. Two and half years earlier, he had been diagnosed as having prostate cancer with multi-pulmonary metastases (Fig. 1a) and an elevated serum prostate-specific antigen (PSA) level of 187.1 ng/mL. Anti-androgen therapy was performed. A year later, a chest CT examination showed the disappearance of the pulmonary nodules (Fig. 1b), and the serum PSA level had normalized. Three months later, pleural thickening was detected near the right 4th rib during a chest CT examination (Fig. 2). After three months, a follow-up chest CT examination showed persistent pleural thickening. The serum PSA had been slightly elevated to 17.3 ng/mL

(Fig. 3). A video-assisted pleural biopsy was performed. The pathological findings showed that the tumor cells had spread from the parietal pleura to adipose tissue around the costal muscles. The tumor cells were positive for PSA and negative for calretinin, cytokeratin (Ck5/6), and D2-40 (Fig. 4). These findings suggested that the pleural lesion was a metastasis of the prostate cancer. The patient was sent to the former hospital and multiple vertebra metastases were detected by bone scintigraphy one month after the pleural biopsy. He had been treated with anti-androgen and anti-estrogen therapy against prostate cancer for 16 months as an outpatient.

Discussion

Metastases of prostate cancer are frequently detected in several organs. Bubendorf *et al.* reported that during autopsy, hematogenous metastases were found in 35% of 1589 patients with prostate cancer and that the most frequent sites were the bone (90%), lung (46%), liver (25%), pleura (21%), and adrenal glands (13%).¹ However, solitary pleural metastasis is seldom detected clinically. In this case, the pulmonary nodules initially disappeared as a result of anti-androgen therapy; however, solitary pleural thickening

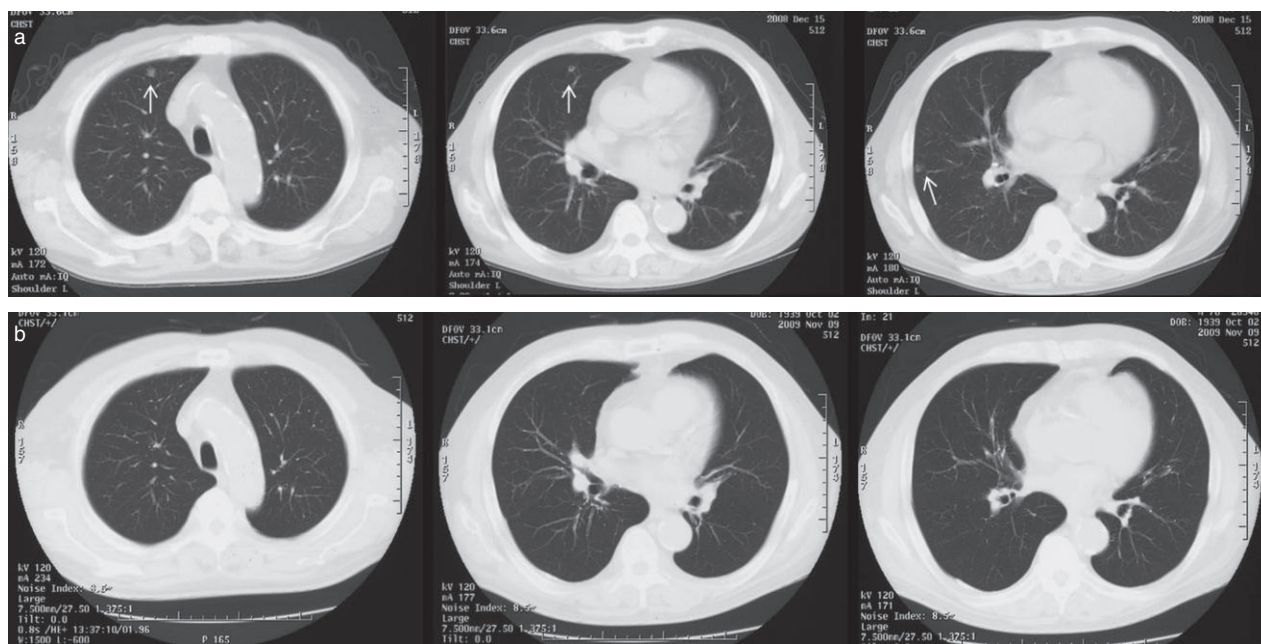


Figure 1 (a) Chest computed tomography (CT) showing multiple pulmonary nodules (arrows). (b) One year after the start of anti-androgen therapy, the pulmonary nodules have disappeared.

was subsequently detected. The pathological findings showed that the tumor cells had spread from the parietal pleura to the adipose tissue around the costal muscles. We believe these findings subsequently resulted in the appearance of pleural thickening on the chest CT examination. To our knowledge, only two clinical cases of the pleural metastasis of prostate cancer have been reported in Japanese medical literature.^{2,3}

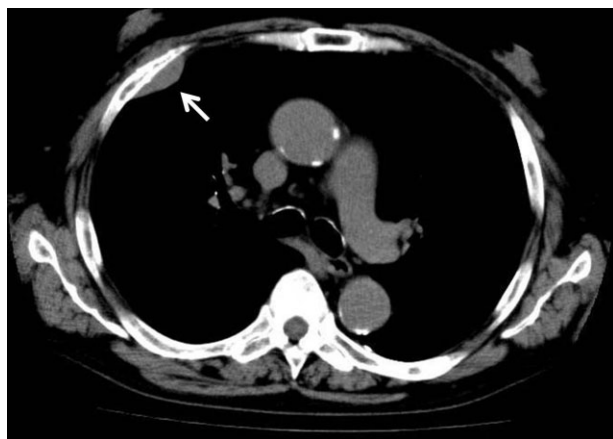


Figure 2 Chest computed tomography (CT) showing pleural thickening at the right 4th rib (arrow).

Bubendorf *et al.* also mentioned hematogenous metastatic pathways, such as (i) spine metastasis via the vertebral-vein plexus, and (ii) metastases to any other organ via the vena cava.¹ We believe that the pathway responsible for metastasis to the vicinity of the pleura is unclear.

Hierholzer *et al.* reported 43 patients with pleural thickening and concluded that the CT features most suggestive of malignant cases were mediastinal pleural involvement, circumferential pleural thickening, nodularity, irregularity of the pleural contour, and infiltration of the chest wall.⁴ In this case, none of these malignant features were observed, and we believe that a diagnosis of prostate metastasis would have been impossible without the pathological findings.

Although the solitary pleural metastasis of prostate cancer is rare, physicians should be aware of such rare occurrences when treating cases with pleural thickening.

Acknowledgment

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Disclosure

No authors report any conflict of interest.

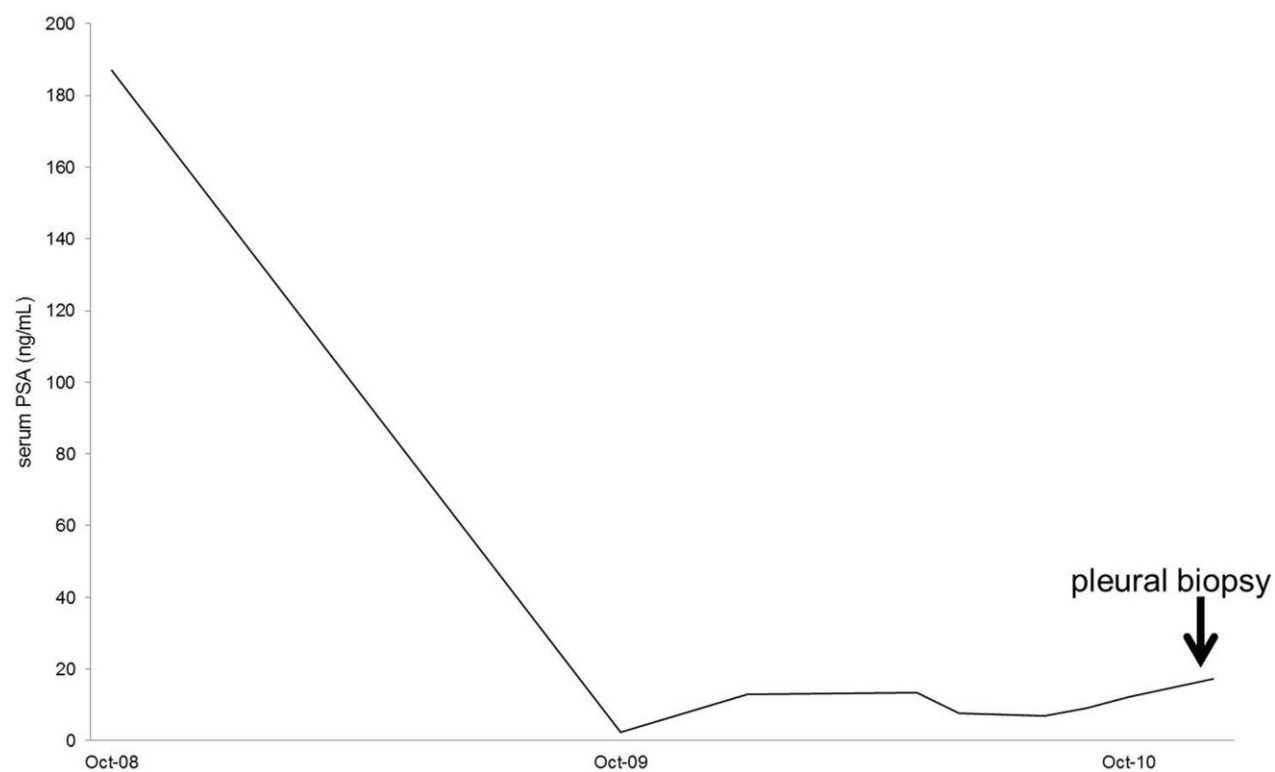


Figure 3 Changes of serum prostate-specific antigen (PSA) (ng/mL).

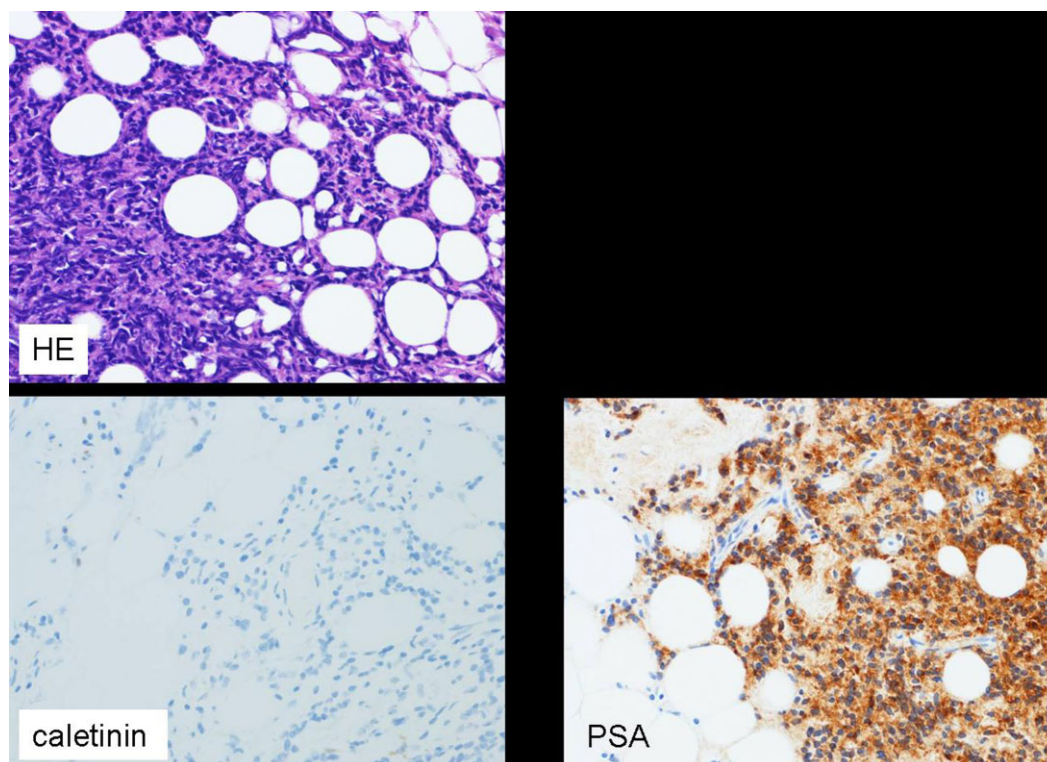


Figure 4 An immunohistochemistry examination showed that the tumor cells were positive for prostate-specific antigen (PSA) and negative for calretinin (X200).

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