

## Resection of two metachronous solitary pulmonary metastases of prostate cancer after radical prostatectomy: an exceptional case

A. Alberts, MD<sup>1</sup>, S. Joniau, MD, PhD<sup>1</sup>, H. van Poppel, MD, PhD<sup>1</sup>

**A solitary pulmonary metastasis of prostate cancer is not considered a surgical lesion. However, growing evidence supports that highly selected patients could benefit from metastasectomy of a solitary pulmonary metastasis. We present an exceptional case of resection of two metachronous pulmonary metastases of prostate cancer after previous radical prostatectomy, resulting in nearly undetectable prostate-specific antigen (0.04 ng/ml).**

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### Introduction

In several malignancies other than prostate cancer (PCa), long term cancer-free survival has been reported after surgery for a solitary pulmonary metastasis. This includes sarcomas, renal cell, colonic and breast cancer.<sup>1-4</sup> Therefore the question arises whether selected patients with a solitary pulmonary metastasis of PCa could benefit from surgery. Only a few case reports on resection of a solitary pulmonary metastasis after previous radical prostatectomy (RP) have been published.<sup>5-11</sup> A case report on resection of two metachronous pulmonary metastases had not yet been published.

### Case report

A 56 year-old man underwent a non-nerve-sparing RP with limited pelvic lymph node dissection (PLND) for a cT2c PCa on MRI scan. The preoperative PSA level was 16.9 ng/ml and prostate biopsies revealed a Gleason 7 PCa. Pathologic examination of the resection specimen revealed a pT3a Gleason 7 adenocarcinoma of the prostate with bilateral extracapsular extension and perineural invasion. Lymph nodes and surgical margins were negative. Biochemical recurrence occurred

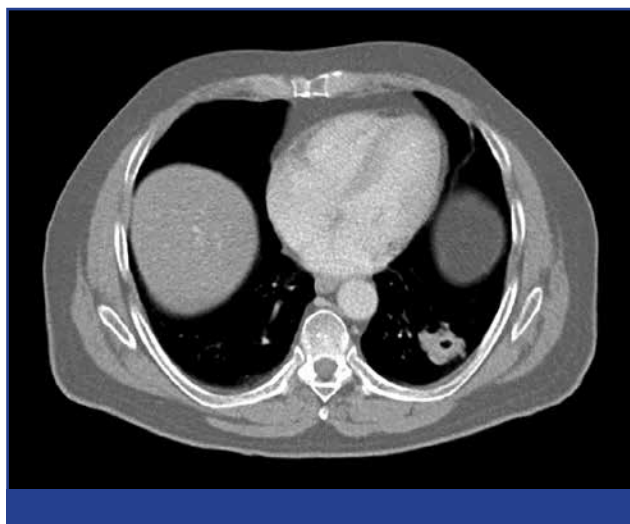
only three years postoperative. Six years after RP, the PSA level was 0.27 ng/ml and salvage radiotherapy (RT) with a dose of 66 Gy was given. Further rise of the PSA level was observed and three and a half years after the RT, at a PSA level of 1.03 ng/ml, androgen deprivation therapy (ADT) with bicalutamide was started. Four years after starting with bicalutamide, leuprolide was associated. Five years after starting with ADT and fifteen years after RP, the PSA level had risen to 5.03 ng/ml. Bone scintigraphy was negative for bone metastases. CT scan showed a multinodular lesion of 3 cm posterobasal in the lower lobe of the left lung (*Figure 1*). PET scan showed hypercaptation of the known lesion in the left lower lobe without mediastinal adenopathies or distant metastases. Endobronchial ultrasound (EBUS)-guided biopsies of the lesion were taken. Pathologic examination with specific immunohistochemical staining could not differentiate between a metastasis of PCa and a bronchioloalveolar carcinoma. Resection of the nodular lesion was performed by thoracotomy with lobectomy. Immunohistochemical staining of PSA on the resection specimen was positive, confirming the diagnosis of a single pulmonary metastasis of PCa (*Figure 3*). After

<sup>1</sup>Department of Urology, University Hospitals Leuven, Leuven, Belgium.

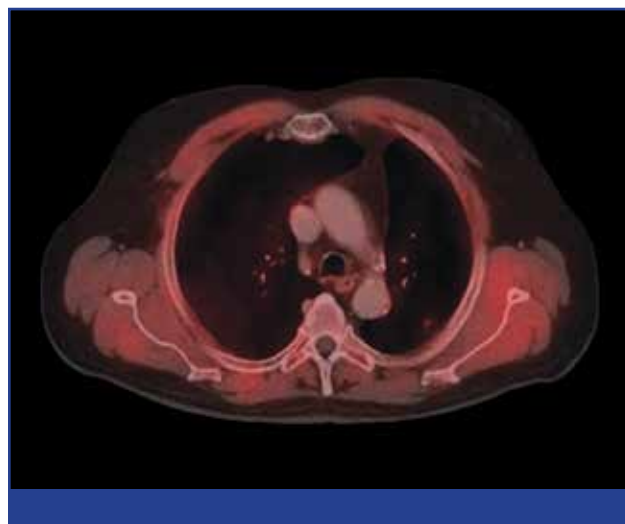
Please send all correspondence to: A. Alberts, MD, Warmoeskade 33, 2771 NE Boskoop, The Netherlands, tel: +31 651 25 70 53, email: amoutalberts@hotmail.com.

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**Figure 1.** Multinodular lesion in the left lower lobe on CT-scan.



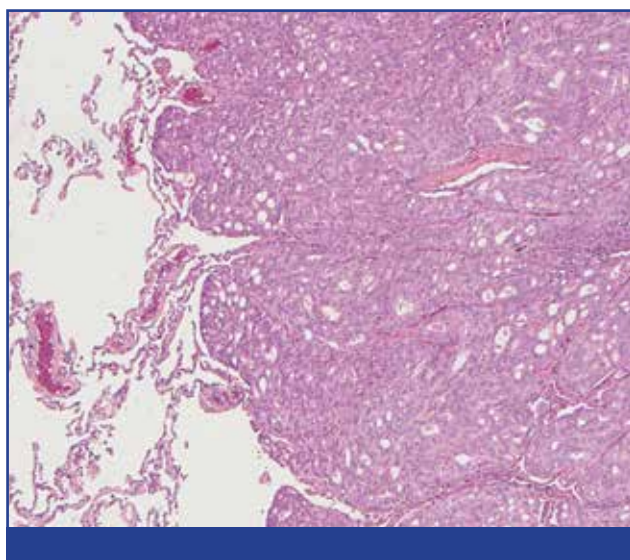
**Figure 2.** Hypercaptation nodules in the left upper lobe on PET-scan.

resection of the metastasis the PSA level dropped to 0.02 ng/ml. The ADT was stopped because of adverse effects. Three years after resection of the metastasis and no less than eighteen and a half years after RP, a new PET-CT scan was performed at a PSA level of 0.14 ng/ml. A new hypercaptation nodular lesion of 7 mm was seen posterior in the upper lobe of the left lung (*Figure 2*). Video assisted wedge excision of the nodular lesion was performed. Although negative immunohistochemical staining of PSA, staining of prostate-specific acid phosphatase (PSAP) on the resection specimen was positive, confirming the diagnosis of a second pulmonary metastasis of PCa (*Figure 4*). Nineteen years after RP, the PSA

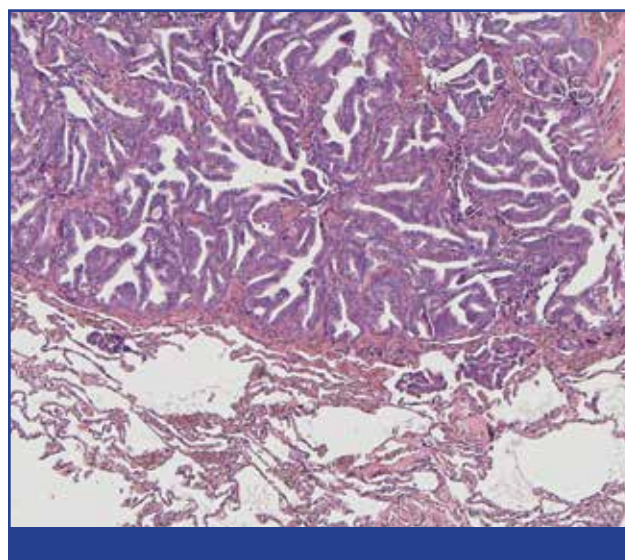
level after the second resection of a pulmonary metastasis was only 0.04 ng/ml.

### Conclusion

Metastatic PCa is considered a systemic disease that is amenable to surgical treatment. However, growing evidence supports the effectiveness of surgery in selected cases of metastatic PCa. PLND of metastatic lymph nodes can achieve biochemical and clinical long-term cancer-free survival.<sup>12,13</sup> Although resection of metastatic lymph nodes is more or less accepted, a solitary pulmonary metastasis of PCa is definitely not considered a surgical lesion. A pulmonary metastasis of PCa usually



**Figure 3.** Resection specimen of pulmonary metastasis of known PCa in left lower lobe.



**Figure 4.** Resection specimen of pulmonary metastasis of known PCa in left upper lobe.

means disseminated disease with synchronous bone metastases. An isolated pulmonary metastasis is a rare phenomenon. In autopsy series of patients with metastatic PCa, isolated pulmonary metastasis has been documented in less than 1% of cases.<sup>14,15</sup> However, several case reports on PCa patients with a solitary pulmonary metastasis have been published, proving that these patients do exist in clinical practice.<sup>5-11</sup> In our exceptional case, the PSA level was nearly undetectable (0.04 ng/ml) after resection of two metachronous pulmonary metastases and nineteen years after RP. This strongly suggests that highly selected patients could benefit from resection of a solitary pulmonary metastasis of PCa after RP.

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