Abstract. Background: The prognosis of prostate cancer (PC) is mainly determined by the presence or absence of metastases. An isolated testicular metastasis of PC is rare. Case Report: A 71-year-old patient with PC presented with an increased serum prostate-specific antigen (PSA) level of 2.07 ng/ml two and a half years after radical prostatectomy. Assuming a local recurrence in the prostatic fossa, local radiotherapy with 64.8 Gy was performed. Unfortunately, the PSA level rose again, accompanied by a swelling of the left testis approximately one month after radiotherapy. A unilateral orchiectomy was then performed, presenting a testicular metastasis of the PC. After orchiectomy, the PSA decreased to <0.07 ng/ml. Two years later, the patient is still tumour-free. Conclusion: Careful clinical follow-up of patients with rising serum PSA level is important to recognize isolated, locally treatable metastatic disease. In particular, rare metastatic sites such as the testis or the epididymis should be taken into account before treatment of biochemical recurrence is initiated.

Prostate cancer continues to be a major health problem in developed countries. Approved approaches to prostate cancer include radical prostatectomy, radiotherapy, endocrine treatment, and watchful waiting, depending on the risk category (1, 2).

The prognosis of prostate cancer is mainly determined by the presence or absence of metastases. In particular, prostate cancer synchronously or metachronously metastasizing to the testis is unusual and reports of these kinds of metastasis were more frequent in the past, when this kind of neoplasm was often treated with bilateral orchiectomy (3). The metastatic spread of prostate cancer to the testis is commonly accepted as a sign of advanced disease and is often accompanied by multiple metastases to other organs, especially to the skeletal system (4).

We report the case of a 71-year-old patient who presented with a solitary testicular metastasis of prostate cancer two and a half years after prostatectomy. The patient remains free of disease two years after unilateral orchiectomy.

Case Report

A 71-year-old Caucasian male consulted his family doctor complaining of haematospermia. Because of a rising serum prostate-specific antigen (PSA) level of 7.66 ng/ml a prostate biopsy was performed one month later and a locally advanced prostate tumour was detected. Neoadjuvant androgen deprivation (goserelin 10.8 mg monthly injection, additional bicalutamide 50 mg/d for the first three weeks) was then started for three months, followed by a radical prostatectomy including pelvic lymphadenectomy. Histopathology showed a cribriform adenocarcinoma of the prostate with a Gleason score of 3+3=6. Because of an infiltration of the left seminal vesicle and the surrounding fat tissue, the tumour stage was pT3b pN0 M0 G2 R0, corresponding to an UICC stage III. Surgery was complicated by a deep venous thrombosis of the vena poplitea, and anticoagulation with phenprocoumon was initiated for six months.

Two and a half years later, the PSA level rose from <0.07 ng/ml to 2.07 ng/ml, indicating a biochemical recurrence. Because no metastases were detected at this time, external beam radiotherapy of the prostatic fossa was performed, with a total dose of 64.8 Gy (1.8 Gy, five times a week). Besides mild acute irradiation side-effects, the treatment was well tolerated.

One month after completing radiotherapy, the PSA level rose to 3.08 ng/ml. At this time, the patient complained of a progressive, painful swelling of his left testicle. He had no urinary symptoms. The lower pole of the left testicle was painful on palpation. The scrotal skin showed no evidence of inflammation. The ultrasound of the testis (Figure 1) revealed...
a 31.5×18×19.5 mm mass at the lower pole of the left testicle, with solid and liquid formations. A unilateral orchiectomy was then performed. Macroscopic examination of the operative specimen revealed a greyish-white irregular tumour in the testis, without extension to the periorchial tissues. At histological examination, an adenocarcinoma with focally cribriform pattern of growth was found which revealed mainly an in situ extension in the testicular tubuli (Figure 2). Focally, however, invasive growth through the tunica albuginea and into surrounding tissues was found. Initially, a primary tumour of the testis was discussed, but immunohistochemistry with an antibody for PSA revealed strong positivity in the tumour cells (Figure 3), and the diagnosis of metastasis of prostate cancer in the testis was established. The epididymis and the spermatic cord showed no infiltration.

After orchiectomy, a computer tomography of the chest and abdomen revealed no other metastatic lesions. The PSA level dropped to 0.07 ng/ml (Figure 4), and the patient remains free of biochemical and clinical recurrence after two years.

Discussion

Testicular metastases of prostate cancer are unusual. The first reported case of local metastasis was described in 1935. In a large autopsy study of patients older than 40 years, 19316 routine autopsies were performed from 1967 to 1995 (5). Bubendorf et al. analysed the reports from the 1589 patients with prostate cancer: 35% of them had haematogenous metastases, most frequently involving the bone (90%), lung (46%) and liver (25%); metastases in the testes were found in 0.5% only (5). Nevertheless, prostate cancer is the most common tumour which metastasizes to the testis (15%); infrequently lung tumours, melanomas and colon or kidney tumours also spread to the testis. About 15% of testicular metastases occur bilaterally (6).

Routes of metastatic spread to the testis are discussed controversially. Bubendorf et al. suggest that there might be a backward metastatic pathway through veins from the prostate additionally to the classical haematogenous tumour spread via the vena cava. Overall, there are four proposed mechanisms for the spread of the lesions to the testis: a retrograde venous extension, a retrograde lymphatic extension, arterial embolism, and through the lumen of the vas deferens (5). The occurrence of a deep vein thrombosis, although after surgery, could possibly indicate a pathway through retrograde venous extension in the presented case.

Most cases of prostate carcinoma in the literature describe other metastatic sites besides the testis, for instance in the skeletal system or disseminated locations (5). But there are also cases of solitary metastasis to the testis or epididymis without any other metastases (7, 8).

As there are numerous definitions of biochemical recurrence after radical prostatectomy (9), we followed the recommendation of the American Urological Association Prostate Guideline Panel which defines a biochemical recurrence as two consecutive PSA level values above 0.2 ng/ml after radical prostatectomy. Particularly in cases of raised but low PSA levels, salvage radiotherapy of the prostatic fossa increases biochemical control and disease-free survival of patients with biochemical recurrence (1). In this case of a PSA level above 2 ng/ml, radiotherapy of the prostatic fossa was carried out because we had no evidence of any metastases at that time and the patient explicitly wished to be treated with irradiation.

In our case, diagnostics showed no evidence of other tumour spreading at the time of diagnosis of the testicular metastasis. The persisting low serum PSA level below the cut-off level, the lack of clinical symptoms and the patient’s good general condition confirmed the long-lasting tumour-free status.
This case report highlights the need for careful clinical follow-up of patients with prostatic cancer. As well as a local recurrence after prostatectomy or metastasis in the typical locations, one should also include rare metastatic sites such as the testis and para-testicular structures in follow-up evaluation when the serum PSA level rises. Therefore, the involvement of an urologist is mandatory in the follow-up of prostate cancer patients.

References