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Isolated Testicular Metastasis from Prostate Cancer

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Patient: Male, 58
Final Diagnosis: Prostate cancer
Symptoms: Testicular mass
Medication: —
Clinical Procedure: —
Specialty: Oncology

Objective: Unusual clinical course

Background: Prostatic adenocarcinoma is the most frequently diagnosed carcinoma in the male population; the most common sites of secondary lesions are nodes, bones, and lungs. We report the clinical case of a 58-year-old man presenting with a single metastasis in the left testis after a radical prostatectomy/lymphadenectomy for prostate cancer.

Case Report: This clinical report focuses on a 58-year-old man with prostate cancer who developed an uncommon single metastasis in the left testis after radical surgery and adjuvant pelvic radiation therapy.

Conclusions: Prostate-specific antigen (PSA) levels are important in the follow-up of prostate cancer. At the same time, physical examination of all possible sites of metastasis and proper evaluation of all signs/symptoms are indispensable in the process of identifying recurrence and for the selection of patients undergoing adjuvant therapy.

MeSH Keywords: Neoplasm Metastasis • Prostatic Neoplasms • Testis

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/904521

Background

Prostatic adenocarcinoma is the most frequently diagnosed carcinoma in the male population; the most common sites of distant metastasis are nodes, bones, and lungs. Metastases to the testis are rare events with less than a 4% incidence rate [1]. This type of metastasis is usually unilateral, presenting as a palpable testicular mass, and rarely has simultaneous involvement of testis and epididymis [2].

While several studies have described dissemination of metastatic prostate cancer to testis [3], only a few studies have reported an isolated testicular metastasis from prostate cancer after radical prostatectomy [4–7]. Here, we discuss the clinical case of a man presenting with a single recurrence in the left testis after a radical prostatectomy/lymphadenectomy for prostate cancer.

Case Report

A 58-year-old man presented with a prostate-specific antigen (PSA) level of 7.6 ng/mL. His physical examination was normal, while, a digital rectal exam revealed a hard nodule in the left prostate lobe. A prostate biopsy was performed and revealed an adenocarcinoma of the prostate with Gleason score (GS) of 9 (4+5). Subsequent chest-abdomen computed tomography (CT) and bone scan confirmed the prostate lesion with no evidence of distant metastasis; the patient was treated with a radical prostatectomy/lymphadenectomy. The pathologic stage was pT3b R1 (with positive margin) pN0 (0/7) cM0, GS 9 (4+5). Although serum PSA levels at one and three months after surgery were undetectable, the patient started adjuvant radiation therapy with volumetric modulated arc therapy (VMAT) and simultaneous integrated boost (SIB) technique [8] on the prostatic bed (30 fractions of 2.3 Gy up to 69 Gy) and on the pelvic lymph nodes (30 fraction of 1.75 Gy up to 54.25 Gy) for the positivity of the margin (R1). As the patient was considered "high risk", adjuvant hormone-therapy with androgen deprivation therapy was proposed, but the patient declined consent to treatment. Regular follow-up was carried out without signs of biochemical or clinical relapse until the 32 months' visit; at this time-point, a biochemical progression was seen, with a PSA of 0.61 ng/mL. The re-staging exams (pelvic magnetic resonance imaging (MRI), C-11 choline positron emission tomography (PET) scan) were negative; however, a mass of 1.5 cm was clinically detected in the left testis. After radical orchiectomy, the pathology report confirmed the presence of a metastatic lesion from the prostatic adenocarcinoma (GS 5+4). The patient declined consent to adjuvant hormone-therapy and was reviewed at regular intervals for follow-up. Five years from the metastasis' resection, the patient is still disease-free with a PSA of 0.01 ng/mL.

Discussion

The most frequent site of metastasis for prostate cancer is the bone (84% of the cases), followed by distant lymph nodes (10.6%), liver (10.2%), and lungs (9.1%) [3]. Testicular metastases from primary prostate carcinoma are very rare, ranging between 0.18% and 0.5%, and their diagnosis can pose great difficulties [9]. In fact, they are often an incidental finding during therapeutic orchiectomy in patients with advanced prostatic cancer or during autopsy. Moreover, with the advent of luteinizing hormone-releasing hormone (LH/RH) analogues, the orchiectomy has been almost completely abandoned and therefore detection of this type of incidental secondary has become even rarer; morphological changes of the testes or related signs and symptoms are the only findings that may help in the diagnostic process. Several authors believe that a solitary metastasis to the testis from prostate cancer could be facilitated by the unique lymphatic anatomic connections between the prostate and the testicle [5] or could originate from malignant lesions of the prostatic urethra by retrograde venous extension [6,10,11].

The histological features of testicular metastases from prostate cancer are similar to those of primary prostate cancers; rarely, however, histology may show a more aggressive phenotype [12] with high risk of further cancer spreading [13] and, thus, decreased survival. Weitzner et al. and Lu et al. [14,15] reported a median survival of about 12 months in patients with newly diagnosed testicular metastases from prostate cancer. On the other hand, other studies have reported a survival longer than two years in the absence of biochemical relapses. Therefore, the prognostic role of testicular metastases from prostate cancer is still unknown, mainly as a consequence of the rarity of the event [6]. In the current case, the patient is still alive after five years, with no evidence of disease and undetectable PSA levels after monolateral orchiectomy, and without undergoing any adjuvant systemic therapy.

In the literature, a few studies have reported an isolated metastasis from prostate cancer after radical prostatectomy [4–7]. Most of these published cases described high GS prostate cancers [4,6]. In line with these data, our patient presented with GS 9 prostate cancer. It is well known that the GS serves as a predictor of the final pathological stage and prognosis [16]. However, it is difficult to define GS predictive role in the case of isolated testis metastases from prostate cancer after radical prostatectomy.

Due to disease stage and R1, our patient underwent adjuvant radiation therapy, as previously reported in a similar case [6]. In addition, although our patient declined consent to adjuvant hormone-therapy, the role of this approach in the prevention of isolated testis metastasis is unclear [6,7].

PSA levels are commonly considered the most accurate marker of recurrence and/or progression and therefore strictly monitored in follow-up [17]. In line with this, our patient showed an increase in PSA levels, as reported in other published case reports [5,7]. Unfortunately it remains difficult to confirm whether a specific trend in the rising of PSA could suggest the possibility of an isolated metastasis to the testis.

Finally, literature data showed that the time from radical prostatectomy to diagnosis of isolated testis metastasis may range from 6 months [4] to several years [7]; (32 months from previous radical surgery in our case).

The best therapeutic approach after orchiectomy in the absence of other metastases is still controversial. It is conceivable that a solitary secondary localization to the testis from prostate cancer could possibly have limited spreading potential; on the other hand, it may constitute an intermediate phase in the pathway to the acquisition of the characteristics of invasiveness which would lead to systemic dissemination. In particular, it is unknown if a strict monitoring-only policy would be safe after a clinical and biochemical complete remission or if administration of "adjuvant" treatment is necessary, as recommended by Kwon et al. [6]. Additionally, the role of other local therapy in the form of radiotherapy remains particularly controversial as there is not enough evidence due to the rarity of the situation.

To help with the decision-making process and patient management, we feel it is important to consider the clinical-pathological features along with the underlying molecular aberrations of the tumor on a case-to-case basis. An appropriate approach certainly requires a careful analysis which should take into account the clinical status, the biological characteristics of the tumor and the PSA levels during the course of the disease, before and after the orchiectomy.

Conclusions

PSA level monitoring plays an essential part in the follow-up of prostate cancer patients. However, to help with the decision-making process and patient management, we feel it is important to consider the clinical-pathological features, together with the biological characteristics of the tumor, in parallel with the progress of the PSA levels during the course of the disease. Nonetheless, physical examination of all sites of metastasis and accurate evaluation of all signs/symptoms during the clinical visit remains crucial to the diagnosis of recurrence. Testicular metastases need to be considered as a sign of prostate cancer progression and an adequate therapy, tailored to suit each patient's needs, is required.

Conflict of interest

None.

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