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Penile Metastasis Originating from Prostate Adenocarcinoma: An Unusual Presentation with Penile Curvature

Mohammadali Mohamadzadeh Rezaei,[1] Mostafa Sadeghi,[2] Alireza Ghoreifi,[1,*] Shaghayegh Beshtar,[2] and Mousa Abolhasani[3]

[1]Department of Urology, Mashhad University of Medical Sciences, Mashhad, IR Iran
[2]Student Research Committee, School of Paramedical Sciences, Iran University of Medical Sciences, Tehran, IR Iran
[3]Student Research Committee, School of Nursing and Midwifery, Shahroud University of Medical Sciences, Shahroud, IR Iran

[*]*Corresponding author*: Alireza Ghoreifi, Assistant Professor of Urology, Urology Department, Imam Reza Hospital, Mashhad University of Medical Sciences, Ebne Sina St, Mashhad, Iran. Tel: +98-9151190179, E-mail: aghoreifi@yahoo.com; Ghoreifina@mums.ac.ir

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Abstract

Despite the high rate of prostate cancer, the incidence of penile metastasis originating from prostate cancer is extremely rare, especially in the form of Peyronie's disease. Moreover, brain metastasis, which is caused by prostate cancer, is not a common phenomenon and occurs mostly in older patients. Herein, we report a case of a middle-aged man with penile and brain metastasis originating from prostate cancer. The patient was presented with signs and symptoms of Peyronie's disease without a significant increase in prostate specific antigen (PSA). The final pathological result was prostate adenocarcinoma with a Gleason score of 5 + 5 = 10 and neuroendocrine features.

Keywords: Prostate Adenocarcinoma, Peyronie's Disease, Brain, Metastasis

1. Introduction

Prostate cancer (PC) is the 2nd most common type of cancer and the 6th leading cause of cancer related deaths worldwide. It is rarely diagnosed in men under 50 years of age, accounting for approximately 2% - 3% of all cases (1). In the pre-PSA era, patients with PC are commonly presented with lower urinary tract symptoms or urinary retention, back pain, and hematuria. Currently, with PSA screening, most PCs are diagnosed in an asymptomatic stage (2). Lymph nodes and the skeleton are two common sites of metastasis in PC, whereas brain and penile metastasis are rarely reported (3, 4). On the other hand, Peyronie's disease (PD) is a connective tissue disorder, characterized by the formation of a fibrotic lesion or plaque in the tunica albuginea leading to penile deformity (5). The association between prostate cancer and Peyronie's disease has not been thoroughly described in the literature and only a few authors have reported PD in PC patients following radical prostatectomy (6). Herein, we report an unusual case of penile metastatic PC in a middle-aged man with no significant increase in PSA level, initially presenting in the form of PD.

2. Case Presentation

A 47-year-old patient presented with complaints of penile curvature during erection. Physical examination revealed a Peyronie plaque in the dorsal aspect of the corpora cavernosa. The detected plaque's characteristics differed in appearance with typical Peyronie plaques; being smoother with an irregular shape.

The patient also complained of obstructive symptoms in the lower urinary tract. Accordingly, we decided to do a digital rectal examination (DRE). In the DRE a hard nodule in the prostate was detected; PSA was requested showing no significant increase. The initial PSA level was 4.5 μg/L, which increased to 4.8 μg/L in the 2nd test. In the next step, a transrectal ultrasound guided 12-core needle biopsy was done, in which an adenocarcinoma of the prostate with neuroendocrine features was reported. The histopathological diagnosis showed a Gleason score of 5 + 5 = 10.

The patient was referred for a metastasis workup. Ultrasound study and CT scan of the abdomen and pelvic cavity did not reveal any specific findings. His bone scan also showed physiological distribution of the tracer throughout the skeleton with no evidence of bone metastasis.

Therefore, he was referred to an oncologist and androgen deprivation therapy was started. During treatment, the penile curvature and plaque size decreased significantly, however, the patient demonstrated symptoms of increased intracranial pressure. Due to the patient's critical condition, a biopsy from the penile lesion could not be performed. Eventually, a brain CT scan was performed indicating metastasis in the frontal lobe. One year after the initial

diagnosis the patient died due to being in a coma and other complications caused by increased intracranial pressure.

3. Discussion

Prostate cancer (PC) is the most common non-cutaneous cancer diagnosed in men; it is the 2nd most common cause of cancer-related death with a 2% - 3% lifetime risk of mortality. Statistics suggest that its incidence and death rate are rapidly increasing, despite improved detection techniques. Screening of asymptomatic individuals using PSA is an effective way to reduce the rate of mortality in such patients (1, 2).

Prior to the PSA era, the mean age at diagnosis was 70 years; it has dropped to 67 years over the past decade, with 60% - 65% of cases diagnosed after the age of 65. Only 2% - 3% of PCs are diagnosed in men less than 50 years of age (7). In our case, the age at the time of diagnosis was 47 years.

Although in the pre-PSA era, patients with PC were commonly presented with urinary and skeletal symptoms, nowadays, with widespread PSA screening, most of them are diagnosed when still asymptomatic. PC presentation in the form of penile curvature or Peyronie's disease (PD) has not been reported in the literature. The coincidence of PD with PC is rare and only reported in PC patients after radical prostatectomy (RP). For example, Tal et al. reported that men presented with sexual dysfunction after RP have a higher PD incidence than the general population. Therefore, they should be routinely evaluated for PD. They also stated that younger men and men of the white race are at an increased risk for PD (6). On the other hand, we should keep in mind that, although rare, penile metastasis of PC may occur and it is one of the differential diagnoses for penile lesions in PC patients. Nodule sensation over the penis, priapism, pain during erection, and dysuria are the most common chief complaints in patients with penile metastases due to prostate cancer (4, 8). In our patient, although metastasis was one of our differential diagnoses, a penile biopsy could not be performed due to the patient's condition. Decrease in the penile curvature and the size of plaque during treatment for prostate cancer was indicative of a relationship between penile metastasis due to PC and PD.

Lymph nodes and the skeleton are 2 common sites of metastasis in PC while liver, lungs, and the bladder are less frequent metastasis sites (3, 4). The incidence of brain metastases originating from prostate adenocarcinoma is 0.4% to 4.4%. Brain metastasis in this subset of patients usually occurs in the end stages of the disease and following metastases to other common sites. The incidence of brain metastasis in adenocarcinoma is less frequent than other histological types, e.g. small cell carcinoma and cribriform or transitional cell carcinoma, despite their high prevalence rate (9). Prostate cancer progression and metastasis to other parts of the body without an increase in the PSA level is a rare phenomenon, however, it may happen. One of the reasons for such phenomenon may be the neuroendocrine differentiation of adenocarcinoma, which was seen in our patient. Neuroendocrine differentiation of PC may represent a subset of prostate adenocarcinomas with poor prognosis. It is currently thought that the degree of neuroendocrine differentiation increases with PC disease progression and in response to ADT. Furthermore, it may not be associated with a significant elevation in serum PSA, which may be one of the main reasons why some of such patients are present with distant metastasis and have a low mean survival (10). Physical examination and radiographic imaging should be considered more carefully in this group of patients as most of them may not manifest major symptoms.

3.1. Conclusions

Prostate cancer should be considered and screened in all men, especially in those over 50 years and are presented with any type (even unusual) of urological complaint. Although metastatic prostate cancers have a low survival rate, palliative therapies should be started as soon as possible in these patients.

Footnote

Conflict of Interest: None declared.

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