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Case Report
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Metastatic Adenocarcinoma of Prostate in a 36-Year-Old Mediterranean Man

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Abstract

Background: Adenocarcinoma of the prostate is often considered an elderly disease, which shifts the attention from early-onset prostate cancer, affecting those who are younger than 55 years of age. We will be reporting a case of young age metastatic adenocarcinoma of the prostate to shed light on the importance of an early diagnosis and subsequent prognosis.

Case Presentation: A previously healthy 36-year-old policeman presented with lower urinary tract symptoms, especially afebrile dysuria for a few weeks upon clinical presentation, worsening in the next few months. On admission, prostate specific antigen was elevated at 7000 ug/nL and a pelvic MRI revealed a tumoral process infiltrating the entire prostate gland and its capsule, invading the left seminal vesicle and bladder floor, reaching the rectum, with bilateral pelvic adenopathies, and secondary bone lesions. The patient was found to have a positive BRCA1 gene.

Conclusion: The incidence of early-onset prostate cancer is increasing and should be considered as a real threat to young men. It should be differentiated from its late-onset counterpart, being more aggressive if diagnosed at an advanced stage. A clear, effective and adequate screening strategy tailored for early-onset advanced prostate cancer is an interesting subject of research for the years to come.

Keywords: Early-onset prostate cancer; Young male; Screening strategy; PSA; PLAP

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Introduction

Prostate Cancer (PCa) accounts for fifteen percent of all diagnosed cancers; it is the second most diagnosed cancer in men and has a high socio-economic burden on our society nowadays [1]. Although early-onset PCa is rare, it is an important clinical entity. In the literature, the age limits defining young-age PCa is still arbitrary and varies between 50 and 55 years [2]. Men diagnosed with prostate cancer by that age account for 10% of newly diagnosed prostate cancer patients in the United States, a percentage that is often underestimated and omitted from public health screening strategies [3]. The aim of this article is to describe a case of metastatic adenocarcinoma of the prostate in a 36 years old patient who is considered too young to have such a medical problem, in order to shed light on the importance of the early diagnosis of PCa.

Case Presentation

A previously healthy single 36-year-old policeman presented for Lower Urinary Tract Symptoms (LUTS) that started mainly with dysuria without fever or hematuria, few weeks prior to his first visit to the clinic. He is an occasional Tobacco smoker and drinks no alcohol. He also has no known food or drug allergies and takes no medications. His urinalysis was negative and a pelvic ultrasound revealed a prostate of 71 g and a considerable 156 cc post-void residue. He was then discharged on an alpha-blocker with a diagnosis of benign prostatic hypertrophy.

Three months later, the patient was admitted to another hospital where he was investigated for aggravation of his obstructive LUTS. He had normal Complete Blood Count (CBC), slightly elevated C Reactive Protein (CRP) at 51 mg/L, microscopic hematuria on urinalysis with negative urine culture and a total Prostate Specific Antigen (PSA) level of >1000 ng/mL. Sperm culture showed multiple white blood cells with few Candida non-albicans colonies. A new pelvic and renal ultrasound revealed an enlarged and irregular prostate at 88 g with a hypoechogenic structure and an important post-void residue estimated at 300 cc.

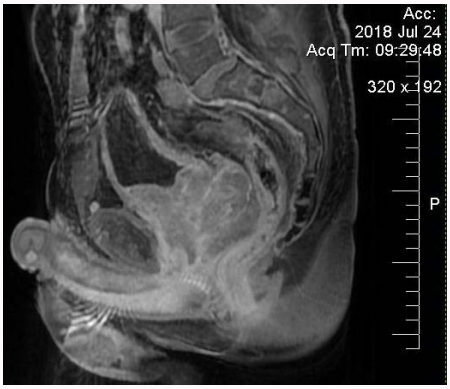

Figure 1: Pelvic MRI of the patient showing a tumoral process of 6.8 cm × 7.0 cm × 6.7 cm infiltrating the entire prostate gland and its capsule, with complete invasion of the left seminal vesicle and the bladder floor, reaching back to the rectum.

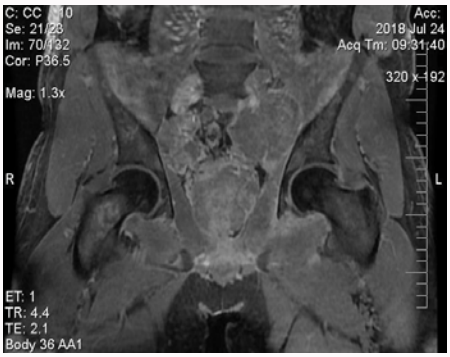

Figure 2: Multiple bilateral pelvic adenopathies revealed by the patients pelvic MRI.

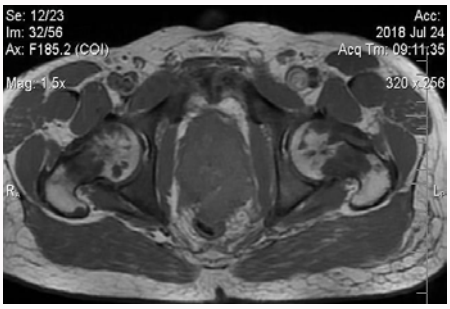

Figure 3: Secondary bone lesions mainly on the right femoral neck.

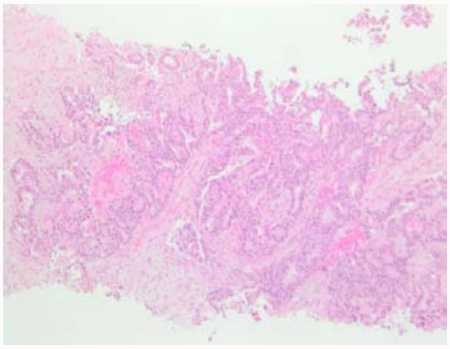

Figure 4: Microscopic view (20x) of the prostate biopsy showing adenocarcinoma formed by small back to back glands with polyadenoid structures lined by cuboidal cells with amphophilic cytoplasm finely nucleolated nuclei.

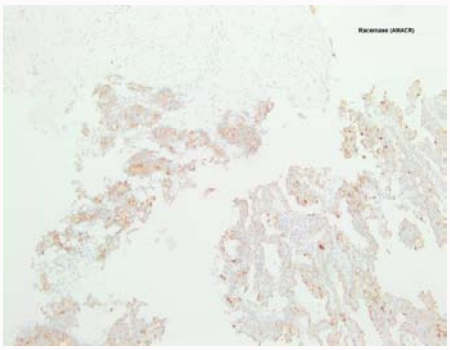

Figure 5: Tumor cells showing Racemase positivity on pathology.

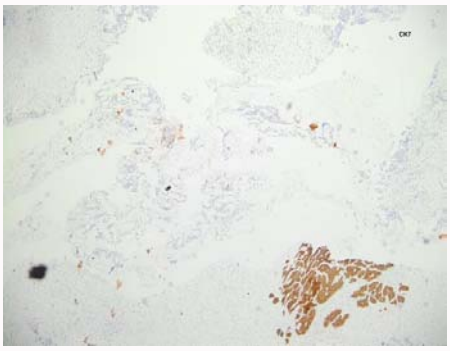

Figure 6: CK7 showing focal strong positivity on pathology.

The patient was then scheduled for an abdomen and pelvis MRI that was conducted one month later and revealed a tumoral process of 6.8 cm × 7.0 cm × 6.7 cm in width, length and height respectively, infiltrating the entire prostate gland and its capsule, with complete invasion of the left seminal vesicle and the bladder floor, reaching back to the rectum without signs of invasion (Figure 1). This process was associated with multiple bilateral pelvic adenopathies (Figure 2), and secondary bone lesions mainly on the right femoral neck, pelvis, and vertebrae (Figure 3).

Meanwhile a prostatic biopsy was done. After this transrectal biopsy, the patient suffered from a hemorrhagic shock and was transferred to the intensive care unit at the same hospital. Examination of the rectal region under anesthesia revealed a stony hard big prostate on DRE and a local bleeding that was controlled with suturing of visible vessels and wound packing. After stabilization of the patient, CT angiogram of the abdomen and pelvis showed no active internal bleeding. A thoracic CT scan revealed complete atelectasis of the lower pulmonary lobes with bilateral pleural effusion reaching both apexes and heterogenic ribcage lesions of metastatic origins.

In addition, the patient had symmetrical quadriparesis and unilateral motor limb deficit that was later attributed to medullary compressions (C2-C3 and T5-T6) by secondary bone lesions.

Treatment and follow-up: The patient was treated with dexamethasone 8 mg/6 h until full neurologic recovery 4 days later. He was also put on doxazosine 4 mg daily for symptomatic relief. Chemical castration was achieved with Bicalutamide 50 mg 3 times daily followed by Intramuscular Triptorélin 2 weeks later. A chemotherapy regimen based on docetaxel associated with

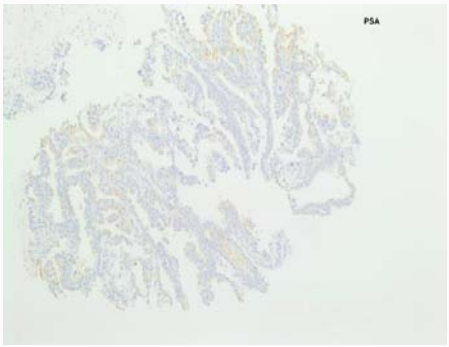

Figure 7: PSA showing apical positivity on pathology.

Zoledronic acid was initiated and lead to a significant decrease in PSA and testosterone level.

Pathology report: The transrectal ultrasound guided prostate biopsy result was consistent with prostatic adenocarcinoma with a Gleason score 8 (4+4), involving 90% of the tissue. All biopsied cores showed invasive adenocarcinoma that is made of cribriform glands with perineural invasion (Figure 4). Tumor cells were focally positive for TTF-1 and Racemase (Figure 5). They were also positive for PSA (Figure 6) and CK7 (Figure 7). Results were negative for CK20, CDX-2, CD30, AFP and PLAP.

Differential diagnosis: The pathology report was consistent with prostatic adenocarcinoma. The only reservation was the young age of the patient. As stated earlier, immunostains to exclude germ cell tumors and colorectal adenocarcinoma (more common in his age group) were performed and were negative. The differential diagnosis may also include seminal vesicle adenocarcinoma, but it is unlikely with focally positive Racemase.

Genetic studies: The patient underwent genetic studies and was found to have a positive BRCA1 gene. He had no brothers and his father was deceased from prostate cancer at 66 years old.

Discussion

The scientific community regards prostatic cancer as an elderly disease. Few researchers have addressed the issue of early-onset prostate cancer and associated material is scarce. After a rigorous literature review, we found that around 30 cases of young prostate cancer patients of less than 40 years of age were reported and discussed worldwide [4], hence the importance of our case report in broadening current knowledge of prostate cancer demographics. In their review of a series of 29 articles on autopsies conducted on deceased patients, written between the years 1948 and 2013, Katy Bell et al., reported a prevalence of prostate cancer of 5% (95% Confidence Interval: 3% to 8%) in young individuals of less than thirty years of age. This meta-analysis raises the concern of the prevalence of undetected prostate cancer in young people that are not included in current screening strategies. The percentage of patients having PCa increases by an odds ratio of 1.7 (1.6 to 1.8) per decade, reaching a prevalence of 59% (48% to 71%) by 79 years and older [5].

Concerning early-onset prostate cancer incidence, current trend studies show a sharp increase compared to all other age groups. Although the median age of diagnosis shifted from 72 years in 1986 to 67 years of age in a study conducted in 2009 [6], this increase in early-onset prostate cancer incidence could not be justified. Some attributed it to the introduction of the Prostate Specific Antigen (PSA) screening methods, but generally speaking, no conclusive causative relation can be established. On a more positive note, diagnosing a disease in an early stage yields a better survival rate; these patients will be treated with a more aggressive and curative strategy since their usual lack of comorbid conditions allows it [7,8]. Numerous studies agreed that severe disease at the age of presentation of advanced stage early-onset prostate cancer is associated with poor prognosis [9], patient's age being an independent prognostic factor for metastatic prostate cancer. Hiroyuki Shimada et al. published a case in 1980 of an eleven-year-old boy with prostatic cancer and stated the clinical and pathological characteristics of prostatic carcinoma in infants and adolescents. This case report attributed the aggressive behavior of prostate cancer in young individuals to undifferentiated histology [10]. In our case, the patient's initial presentation with a metastatic disease is indicative of poor prognosis and thus a poor survival rate.

Prostate cancer was recently associated with the patient's ethnic and racial background and their family history, arguing in favor of a genetic predisposition [11]. In contrast, only 9% of prostate cancer patients have a true hereditary disease transmission, defined as three or more affected relatives, or at least two relatives who have developed early-onset prostatic cancer [12].

BRCA1, BRCA2 and HOXB13 have been identified as possible prostate cancer-related genes [13]; our patient had positive BRCA1 gene expression. Germline mutations in these genes were linked to higher risk of occurrence. In such cases, targeted genomic analysis is a possible screening solution to identify families at high risk [13,14]. Studies also revealed the presence of a hundred common susceptibility loci contributing to the risk of prostate cancer, accounting for 38.9% of the familial risk for this disease [15]. In our case, the patient had no brothers and no uncles, thus familial screening was not conducted.

Conclusion

The incidence of early-onset prostate cancer is increasing and should be considered as a real threat to young men. It should be differentiated from its late-onset counterpart, and considered as a subtype on its own, because it is more aggressive if diagnosed at an advanced stage in the natural history of the disease. A clear, effective and adequate screening strategy tailored for early-onset advanced prostate cancer is an interesting subject of research for the years to come, especially with the lack of scientific data regarding this issue.

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