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High-Grade Metastatic Prostate Cancer in a 37-Year-Old Man: A Case Report

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ABSTRACT

Prostate cancer is a significant public health problem with African ancestry and increasing age being significant risk and prognostic factors. Quite rare before the age of 40 years, challenges of prostate cancer at this age group includes disease detection at advanced stage and a poor relative 5-year survival. We describe a case of high-grade prostate cancer in a male under 40 years old with metastatic disease at the time of diagnosis, and highlight the need for thorough investigation of urinary and erectile symptoms at this age. We further advocate for increased primordial and primary prevention strategies in the fight against cancers.

Keywords

Metastases, Prostate cancer, Young male.

Introduction

Prostate cancer is a major health problem for men. In 2020, prostate cancer was the second most commonly diagnosed cancer and the fifth cause of cancer deaths among men worldwide [1]. Global incidence in 2020 was estimated at 1,414,000 new cases and the number of deaths was 375,304 [2]. The highest age-standardized incidence rates in 2020 was reported in Europe, the Caribbean, Australia/New Zealand and Northern America, and ranged from 73 to 83.4 cases per 100,000 [3]. Southern, Middle and Western Africa had reported age-standardized incidence rates of 65.9-, 40.8- and 33.1-cases per 100,000 respectively [3]. Amongst these three African regions, age-standardized mortality was highest for the Middle African Region.

There is an established correlation between age and the occurrence of prostate cancer. Quite rare before the age of 40 years, there is a substantial increase in the incidence between the ages of 50 and 55 years, with a steep upward climb thereafter as age increases [4]. Despite a variation in the frequency of prostate cancer in different populations across different geographic areas, the age-related trend is nevertheless a constant. For example, autopsy studies have reported a prostate cancer incidence of men below the age of 30 at 5% (95% confidence interval: 3 to 8%), increasing per decade by an odds ratio of 1.7 (1.6 to 1.8) [5].

Men of African ancestry have the highest rates of prostate cancer globally, and they constitute the risk group with the most unfavorable outcomes. This has been attributed to a combination of factors including biological susceptibilities, environmental and social factors, and access to healthcare care [6]. Early detection is key to the management of prostate cancer, as it permits disease detection at an early stage that is potentially curable. However, variations in screening practices using prostate-specific antigen (PSA) testing and differing recommendations might influence detection rates. Prostate cancer screening with PSA is recommended for men as from the age of 55 by the European and North American urology associations [4]. This recommendation might underscore the need for testing younger men for whom disease might only be detected following the onset of symptoms.

Case Description

A 37-year old male patient presented with a clinical picture of acute urinary retention. The consultant urologist placed a bladder catheter and performed a cystoscopy, which was negative. An ultrasound scan was performed which revealed prostate hypertrophy. The patient was placed on treatment and discharged with a diagnosis of benign prostate hypertrophy.

He returned one year later with complaints of back and waist pain. A lumbar radiograph was requested, following which a computed tomography (CT) scan was recommended. For a comprehensive assessment, contrast-enhanced CT of the chest, abdomen and pelvis was performed with a Philips Brilliance Big Bore 16-slice scanner. Data acquisition was volumetric and triphasic, with windowing and post-processing image treatment algorithms. CT showed extensive osteoblastic changes at multiple thoracic and lumbar vertebrae, some completely sclerosed giving a characteristic "ivory vertebrae" appearance. The sacrum, coxal bones and femur also showed complete sclerosis. Other affected bones included the clavicles, scapulae, humeri and sternum. The lungs, pleura, abdominal viscera and nodes appeared normal (Figure 1).

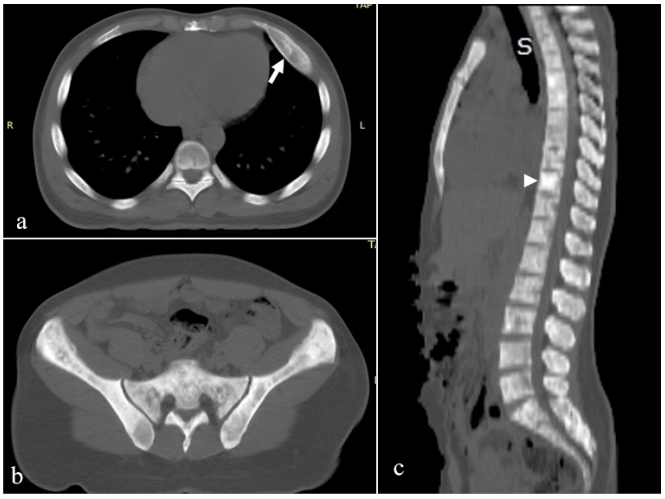

Figure 1: (a) Axial unenhanced CT, bone window of the chest showing focal rib expansion (white arrow). (b) and (c) show osteoblastic changes at the sacrum, iliac bones, sternum and vertebrae. Ivory vertebra depicted by arrowhead.

PSA testing was done and the value was 31ng/ml, and digital rectal examination of the prostate shoed a nodular surface. An ultrasound-guided prostate biopsy was performed, and histopathologic analysis reported an adenocarcinoma with perineural encasement, without vascular embolism. The Gleason score was 8 (4+4). A bone marrow smear did not reveal any hematologic malignancy, antinuclear antibodies were negative and anti-DNA IgG antibody titer was normal. The definitive diagnosis was prostate adenocarcinoma with extensive metastatic bone disease. After a tumor board presentation, the patient was placed on luteinizing hormone-releasing hormone analogues, erythropoietin, and a hematinic with folic acid. Palliative radiotherapy to the pelvis was envisaged with a cumulative dose of 30Gy, to be administered at 3Gy per session and 5 sessions a week. PSA at 6 and 9 months after diagnosis and initiation of treatment was 0.15ng/ml and 15.2ng/ml respectively. This was indicative of resistance to medical castration. The clinical course remained marked by asthenia, dysuria and constipation.

Discussion

The diagnosis of prostate cancer in younger men can be particularly challenging. The range of symptoms can be vast and unsuspecting. These might include erectile and ejaculatory dysfunction, sudden increase in urinary frequency (more than 6-7 times per day), painful urination with a burning sensation, urinary incontinence, difficulty controlling urine flow, and blood in the urine [7]. In a series reporting on prostate cancer in men under 50 years of African ancestry in Togo, the average age at diagnosis was 45 years (range: 35 to 49 years) and the clinical presentation was acute urinary retention and prostate hypertrophy [8]. The presentation of the patient we describe showed a similar pattern.

The incidence of prostate cancer in men under 40 years has increased steadily at a rate of 2% per year since 1990, and this age group is six (6) times more likely to have metastatic disease at diagnosis compared to older men [9]. It is of necessity that urinary and erectile symptoms amongst men of this age and of African ancestry be given full consideration. With this approach, there is a higher chance of early disease diagnosis, as routine screening with PSA might not be sustainable in some settings.

The five-year relative survival for this group was also reportedly lower in the United States [9]. Even though high-end technological surgical advances for high-grade prostate cancer could improve upon the prognosis and quality of life in young men [10], these remain largely unavailable in sub-Saharan settings where the prognosis is expected to be poorer. Emphasis therefore must be placed on preventive measures that seek to minimize some risk factors such as obesity, physical inactivity, human papilloma virus infection, substance exposure and environmental carcinogens [9].

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