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Pure small cell carcinoma of the prostate preceded by acute zonal occult outer retinopathy: A case report



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ABSTRACT

INTRODUCTION: Pure small cell prostate cancer (SCPC) cases are very rare. Acute zonal occult outer retinopathy (AZOOR) has been described as a non-neoplastic retinopathy. We report the first case of pure SCPC preceded by AZOOR in the literature.

CASE REPORT: A 59 year old gentleman presented with an obstructed infected urinary system. He had a diagnosis of AZOOR 6 months ago that was investigated with full body imaging without any suspicious findings. However, the most recent CT findings demonstrated extensive disease dissemination. The patient underwent rigid cystoscopy and resection that confirmed a diagnosis of pure SCPC.

DISCUSSION: AZOOR is a clinical syndrome of photopsia and rapid zonal field loss. The exact aetiology remains unknown and its association with malignancy remains contentious. Paraneoplastic manifestations of unexplained visual loss in SCPC are rare with only 2 cases reported in the literature. There are no cases demonstrating an association between AZOOR and SCPC.

CONCLUSION: Pure SCPC is an aggressive malignancy with most cases presenting with extensive disease dissemination on diagnosis. Early detection has a role in improving prognosis but is challenging. Further research is required to establish a standard treatment protocol.

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1. Introduction

Cancer of the prostate is usually acinar adenocarcinoma. Small cell prostate cancers (SCPC) when they occur often present with coexisting prostate adenocarcinoma. Pure SCPC cases are very rare. Paraneoplastic syndromes are frequently observed but visual impairment is unusual. Furthermore, acute zonal occult outer retinopathy (AZOOR) has been described as a non-neoplastic retinopathy. We report the first case of pure small cell carcinoma of the prostate preceded by AZOOR in the literature.

2. Case report

A previously fit and healthy 59 year old Caucasian male presented to the emergency department with 1 day history of anuria, on a background of 2 weeks gradual diminishing urine output. His bloods showed acute kidney injury with elevated inflammatory markers, consistent with an obstructed infected urinary system.

A non-contrast Computed Tomography (CT) performed showed bilateral hydronephrosis, multiple diffuse enlarged pelvic and abdominal lymph nodes and a mixture of osteoblastic/osteolytic bone lesions throughout the spine (Fig. 1). His immediate management involved bilateral nephrostomies and intravenous antibiotics. Further bedside investigations included a digital rectal exam (DRE) that was not suspicious for malignancy and a low age specific prostate specific antigen (PSA) of 2.4.

This gentleman had no history of any genitourinary tract symptoms. His only past medical history was a recent diagnosis of AZOOR by the ophthalmologist 6 months ago and he was on prednisolone 4 mg once daily. Due to the possible association between AZOOR and malignancy, the ophthalmology team had previously requested a Magnetic Resonance Imaging (MRI) head and a full body CT. Those scans had returned without any suspicious findings. However, the most recent CT findings demonstrated extensive disease dissemination.

On day 3 post admission, a rigid cystoscopy demonstrated an enlarged, highly vascular and friable median lobe of the prostate that extended into the bladder. The cystoscopy findings were characteristic of obstructive uropathy. A transurethral resection of the prostate was performed, with chips sent for

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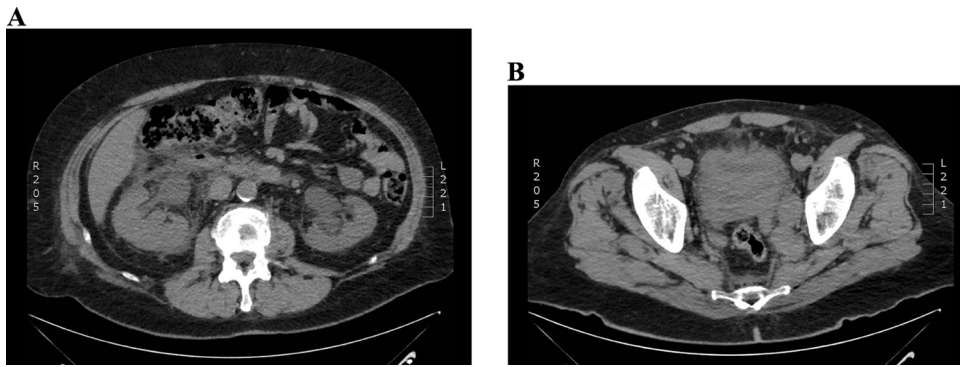


Fig. 1. CT scan images of the patient's abdomen and pelvis. (A) Bilateral hydronephrosis. (B) Extensive disease dissemination with lymph node involvement.

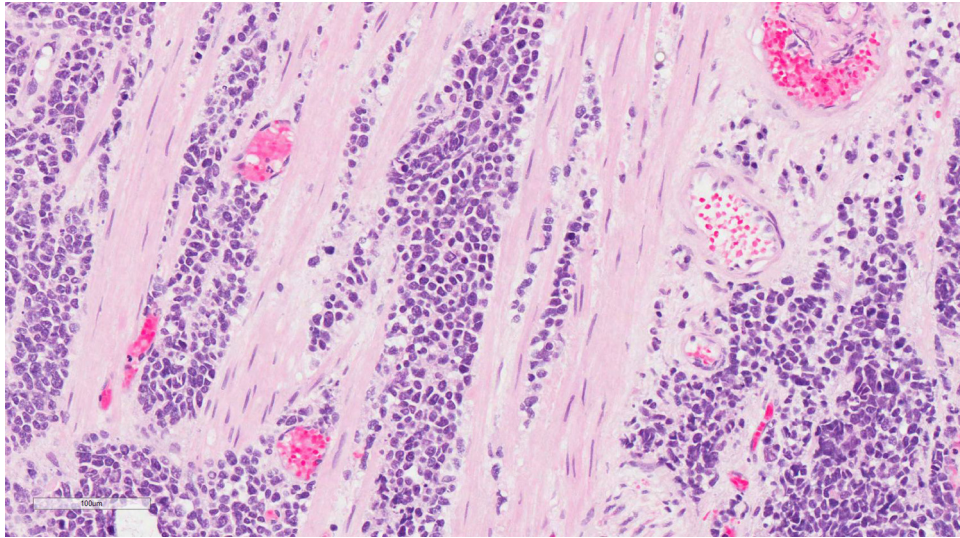


Fig. 2. Haematoxylin and eosin stain demonstrating small cells infiltrating muscle. Characteristically, the cells have fine granular chromatin and scant cytoplasm.

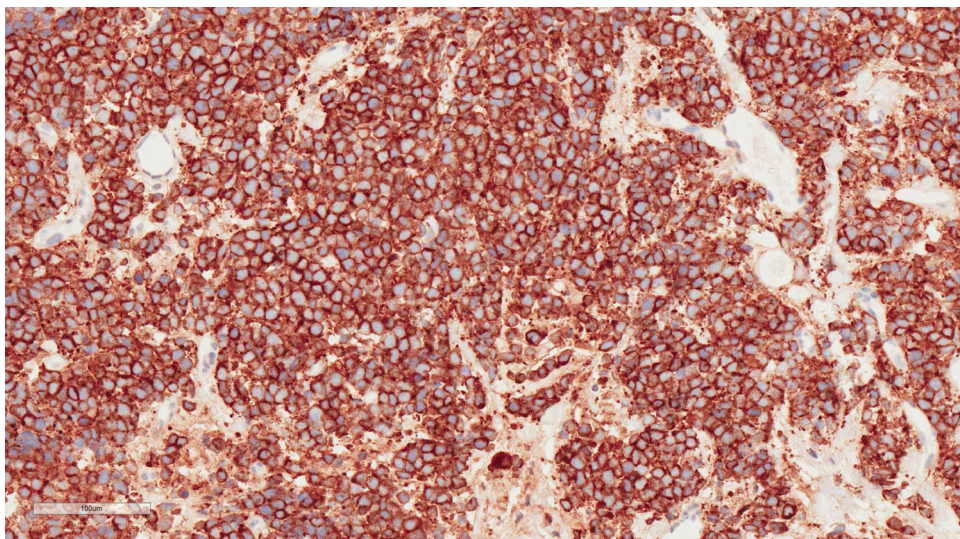


Fig. 3. Strong cytoplasmic staining for synaptophysin confirming neuroendocrine cells.

histopathological analysis. No abnormalities were noted in the bladder. Additional investigations included a bone scan, contrast CT chest/abdomen/pelvis and a MRI spine, all of which delineated widespread metastasis of bone, liver and lymph nodes.

Histopathology specimens confirmed a diagnosis of high grade small cell prostate carcinoma without any evidence of coexisting urothelial carcinoma or prostatic adenocarcinoma (Figs. 2 and 3). The case was discussed at the urology multidisciplinary team (MDT) meeting. Upon diagnosis, the oncology team commenced chemotherapy complemented with radiotherapy to the spinal lesions.

3. Discussion

AZOR is a rare eye disease characterised by focal degeneration of photoreceptors [1]. It is a clinical syndrome of photopsia and rapid zonal field loss [2]. The exact aetiology remains unknown and has been reported to be associated with various ocular and systemic diseases [1]. However its association with malignancy remains contentious, and a review by Rahimy et al. described AZOR as a non-paraneoplastic retinopathy [3].

Carcinoma of the prostate can be divided into two groups: acinar and non-acinar. Small cell carcinomas (also known as neuroendocrine tumours) are of the non-acinar subgroup. Overall non-acinar tumours account for approximately 5–10% of prostate neoplasms, with SCPC ranging between 0.3–1% of all prostatic tumours [4].

It is worth noting that half of all SCPC cases were pure small cell but the remaining were mixed adenocarcinomas. In fact, up to one third of patients with SCPC had a prior diagnosis of prostate adenocarcinoma [5,6]. The majority of cases are diagnosed in their sixth to seventh decade, with an age range of 24–90 [7]. Studies have shown that the incidence of metastasis on diagnosis to be as high as 60.5% and the median survival observed was just 11 months (a range of 5–17.5 months) [8].

There are distinctive differences between SCPC and adenocarcinoma in terms of clinical presentation. The most frequent symptoms of SCPC are related to obstructive uropathy and disease dissemination [7]. Pure SCPC may secrete little or no PSA, or have a PSA not in proportion to tumour size. Another unique feature is the presentation of paraneoplastic syndromes including: Cushing's syndrome, hypercalcaemia and syndrome of inappropriate antidiuretic hormone [9]. However, paraneoplastic manifestations of unexplained visual loss are decidedly rare – only 2 cases found in the literature [10,11]. Moreover there are no cases reported in the literature demonstrating an association between AZOR and SCPC. Nevertheless, due to the presentation of AZOR and SCPC 6 months apart in a previously fit and well gentleman with negative imaging results, it would be plausible to suggest AZOR as a paraneoplastic manifestation for SCPC.

Due to the rare nature of this condition, there is a lack of evidence guiding treatment for SCPC. Treatment modalities including surgery, chemotherapy and radiotherapy mainly depend on the stage of disease. Chemotherapy (particularly cisplatin and etoposide) is the mainstay of treatment [12,13], due to the aggressive nature of the disease. Survival closely associates with response to treatment.

Radical surgical resection in combination with other treatment modalities may have a role in increasing survival rate [14]. Radiotherapy can also be used to control local disease or alleviate metastatic symptoms [15]. The role of hormonal therapy is not recommended in pure SCPC and remains controversial in mixed histologies. It has also been associated with the development of neuroendocrine differentiation in other forms of prostate cancer [15,16].

4. Conclusion

Pure SCPC is an aggressive malignancy with most cases presenting with extensive disease dissemination on diagnosis. Early detection has a role in improving prognosis but is challenging. Further research is required to establish a standard treatment protocol.

Conflicts of interest

All authors declare that there is no conflict of interest.

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Ethical approval

Not applicable.

Consent

Written informed consent was obtained from the patient for their anonymised information to be published in this article.

Author contribution

DC researched literature and conceived the study. DC wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

Guarantor

MB is the guarantor of the study.

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