



Oncology

Small Cell Carcinoma of the Prostate: A Case Report and Brief Review of the Literature

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ARTICLE INFO

Article history:

Received 15 September 2016

Accepted 19 October 2016

Keywords:

Small Cell Carcinoma

Prostate Cancer

Pure Small Cell

ABSTRACT

Small cell carcinoma of the prostate (SCCP) is a rare disorder. We present here a case of SCCP exhibiting multiple unique clinical findings, demonstrating the variability of SCCP at presentation.

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Introduction

Small cell carcinoma of the prostate (SCCP) is a rare disorder accounting for less than 1% of all prostate cancers. SCCP is a high-grade malignant neoplasm with neuroendocrine differentiation, morphologically and histologically distinct from the far more common prostatic adenocarcinomas. SCCP can present as *pure* small cell (~50%) or *mixed* with elements of adenocarcinoma (~25%–50%).¹ We present here a case of SCCP exhibiting multiple unique clinical findings, demonstrating the variability of SCCP at presentation.

Case presentation

A 66-year-old male initially presented with abdominal pain and failure to thrive. The patient reported an unintentional 40 pound weight loss as well as nausea and vomiting. ROS was otherwise negative. He was referred to a gastroenterologist at which time an abdominal/pelvic CT scan was significant for an enlarged prostate, heterogeneous masses of the liver and spinal lesions. Digital rectal examination (DRE) detected an abnormal prostate gland four times larger than normal with a firm, irregular nodule at its border. His prostate specific antigen (PSA) was 6.36 ng/mL, and a comprehensive metabolic panel and CBC were within normal limits. Trans-rectal ultrasound-guided prostate biopsy demonstrated small cell carcinoma of the prostate. Representative medium power examination of involved parenchyma revealed sheets and nests of

hyperchromatic cells (Fig. 1). High power evaluation demonstrated small-medium-sized cells with fine chromatin, a high nuclear to cytoplasmic ratio, occasional molding, apoptotic bodies, and mitotic activity (Fig. 2). Lesional cells were immunoreactive for the neuroendocrine markers synaptophysin (Fig. 3), chromogranin A, and CD56 (not shown) demonstrating findings consistent with primary prostatic small cell carcinoma. No conventional prostatic adenocarcinoma or high-grade prostatic intraepithelial neoplasia was present. Additional metastatic workup did not reveal evidence of brain metastasis, but confirmed identical histopathologic

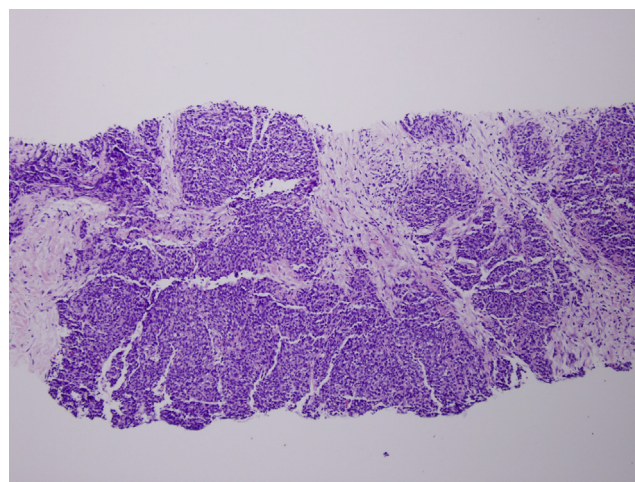


Figure 1. H&E × 100.

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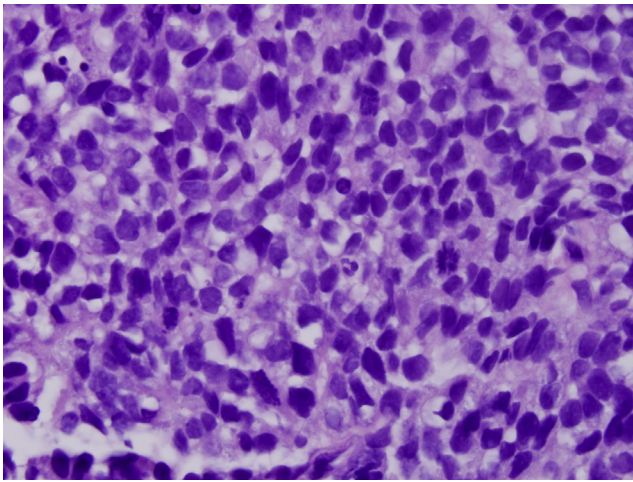


Figure 2. H&E $\times 1000$ (oil immersion).

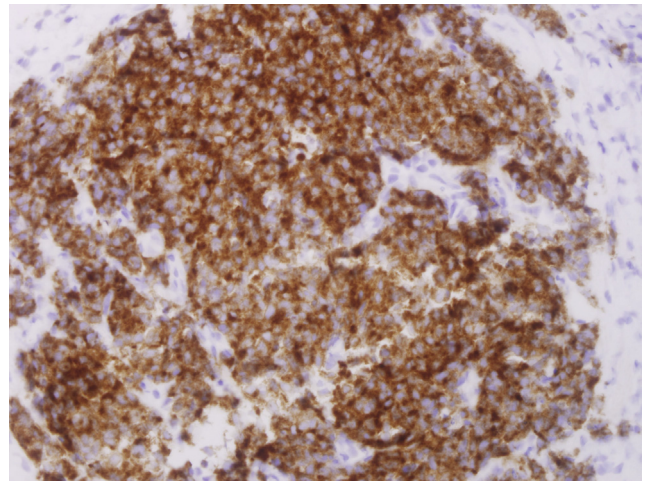


Figure 3. Immunohistochemical stain for synaptophysin $\times 400$.

findings in metastatic lesions within the liver and spine. CT of the chest also demonstrated a T8 soft tissue mass. The patient was otherwise asymptomatic without any back pain or any other neurologic symptoms. Due to the extensive nature of his liver metastases, he began palliative treatment with carboplatinum/etoposide. Patient completed two cycles with a positive response on CT imaging. He subsequently underwent five treatments at 4GY a palliative radiation to the T8 mass.

Discussion

While the physical distribution of prostatic small cell carcinoma is similar to that of adenocarcinoma, patients with small cell carcinoma will most commonly present after the onset of symptoms. Signs and symptoms of SCCP include obstruction of the urinary tract, neurological deficits, hematochezia, hematuria, and constitutional symptoms.² In contrast to adenocarcinoma of the prostate, serum prostate specific antigen (PSA) is not predictive of disease severity, nor is it a useful tumor marker for monitoring progression or surveillance. Additionally, SCCP can often present with abnormal lab findings related to paraneoplastic syndromes commonplace to small cell carcinomas.

SCCP metastasizes early in its course and therefore the clinical presentation is often in an advanced stage. Unlike prostatic adenocarcinoma, brain metastases are common in SCCP, making neurological symptoms in these patients more common.³ Due to its tendency to spread systemically, SCCP carries a poor prognosis with a median survival of less than 12 months.⁴

The diagnosis of SCCP is made with an initial transrectal needle biopsy of the prostate; however, morphology and immunohistochemical staining for neuroendocrine markers remains the benchmark to confirm the diagnosis of small cell carcinoma. Neuroendocrine markers CD56, Chromogranin A, and Synaptophysin are highly specific for small cell carcinomas. Neuroendocrine cells commonly present in isolated patches throughout prostatic adenocarcinomas, however, immunohistochemical staining against PSA, androgen receptor (AR), prostatic acid phosphatase (PAP), and p50s (AMACR) are used to demonstrate high sensitivity for ruling out the presence of adenocarcinoma and mixed small cell/adenocarcinoma tumors. Differentiating the different forms of prostate cancer (adenocarcinoma, pure small cell carcinoma, mixed) is essential to selecting the most effective form of treatment. While PET imaging has demonstrated efficacy in diagnosing extrapulmonary small cell carcinoma, the rarity of SCCP in particular, has likely delayed it from becoming common practice.

In February 2016 the National Comprehensive Cancer Network (NCCN) published new clinical practice guidelines. In these guidelines, regardless of stage at initial presentation, SCCP should be managed by cytotoxic chemotherapy such as cisplatin/etoposide, carboplatin/etoposide, docetaxel/carboplatin or by participation in a clinical trial. Additional recommendations for early versus advanced stage SCCP reference treatment protocols for small cell carcinoma of the lungs.

The majority of men with SCCP present with both locally advanced lesions and distant metastatic spread. Therefore, treatment should involve both local control using radiation therapy (RT) to the primary tumor and systemic treatments with chemotherapy. Additionally, RT may be considered in patients who underwent radical prostatectomy (RP) in the adjuvant setting. Ultimately, optimal treatment specific to SCCP has not been firmly established via clinical experience or scientific research.

As small cell carcinoma of the prostate commonly presents concomitantly with high-grade adenocarcinoma, it is reasonable to include androgen deprivation therapy (ADT) as part of the initial therapeutic regimen. However, there is currently no evidence that ADT is useful in patients with pure SCCP.⁵

Conclusions

Our patient exhibits multiple unique clinical findings demonstrating the variability of SCCP at presentation. Despite presenting with diffuse metastatic disease, our patient demonstrated no significant lower urinary tract symptoms or neurological deficits throughout his course despite presenting with rampant metastatic disease. Interestingly, his PSA was elevated to 6.36 where most patients with pure SCCP have normal PSA readings.

Conflicts of interest

There are no conflicts of interest for either author.

References

1. Wang W, Epstein JI. Small cell carcinoma of the prostate. A morphologic and immunohistochemical study of 95 cases. *Am J Surg Pathol.* 2008 Jan;32(1):65–71.
2. Palmgren JS, Karavadia SS, Wakefield MR. Unusual and underappreciated: Small cell carcinoma of the prostate. *Semin Oncol.* 2007;34:22–29.
3. Erasmus CE, Verhagen WJ, Wauters CA, van Lindert EJ. Brain metastasis from prostate small cell carcinoma: Not to be neglected. *Can J Neurol Sci.* 2002;29:375.
4. Deorah S, Rao MB, Raman R, et al. Survival of patients with small cell carcinoma of the prostate during 1973–2003: A population-based study. *BJU Int.* 2012;109:824.
5. Moore SR, Reinberg Y, Zhang G. Small cell carcinoma of prostate: Effectiveness of hormonal versus chemotherapy. *Urology.* 1992;39:411.