Case Report

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# Complete Chemotherapeutic Regression of a Non-Metastatic Case of Primary Pure Small Cell Carcinoma of the Prostate

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**Key Words**
Small cell carcinoma • Prostate • Chemotherapy

**Abstract**
Pure small cell carcinoma of the prostate (SCPCa) is a very rare condition usually with poor survival after diagnosis. It seems to show different clinical features compared to other prostate cancer subtypes, specifically adenocarcinoma. Here, we present a 74-year-old man early diagnosed with SCPCa treated with a cisplatine and etoposide regimen. There was no metastasis found in imaging studies and bone scan. The patient mostly complained of obstructive symptoms which were relieved after resection. Interestingly, our patient experienced a disease free condition after chemotherapy and no further progression was found. This could implicate the critical role of early diagnosis in the treatment of SCPCa despite its aggressive nature.


## Introduction

The majority of prostatic cancers are adenocarcinomas while neuroendocrine differentiation, small cell carcinoma of the prostate (SCPCa), is very rare occurring in 0.5 to 2% of cases [1, 2]. SCPCa usually occurs accompanied with or sequential to adenocarcinoma. The pattern of prostate specific antigen (PSA) titer, clinical presentation and metastasis seems to differ from other subtypes [3]. However, there is a relative lack of information regarding clinical manifestations, diagnosis, optimal treatment, and prognosis of patients with this tumor.

Here, we report a patient diagnosed with primary pure SCPCa that became disease free after chemotherapy.

## Case Report

A 74-year-old man first visited the Urology Clinic in April 2011. He presented with obstructive and irritative symptoms unresponsive to medications for 6 months. He reported a gradual increase in symptoms a month prior to admittance. His diet, medication, past medical history, and family history were unremarkable. Digital rectal examination revealed a moderately enlarged, relatively firm, irregular prostate. The PSA serum level was within normal levels. No abnormal findings were evident in a comprehensive metabolic and biochemical panel or blood cell count.

Transurethral resection of the prostate was performed to relieve the patient's symptoms. Hematoxylin and eosin staining of resected tissues revealed cells with scant cytoplasm, and hyperchromatic nuclei with salt and pepper chromatin without prominent nucleoli which were compatible with pure SCPCa (fig. 1). Immunohistochemical staining of the specimens were positive for cytokeratin, vimentin, synaptophysin, and neuron-specific enolase (NSE), but negative for CD43, CD45, CD99, CD117, desmin, and myogenin (fig. 2). These findings confirmed the diagnosis.

Pelvic computer tomography indicated enlargement of the prostate gland without involvement of lymphatic lymph nodes. No pathological finding was evident in chest computer tomography, which excluded small cell carcinomas arising from other organs. A whole body bone scan was negative for metastasis.

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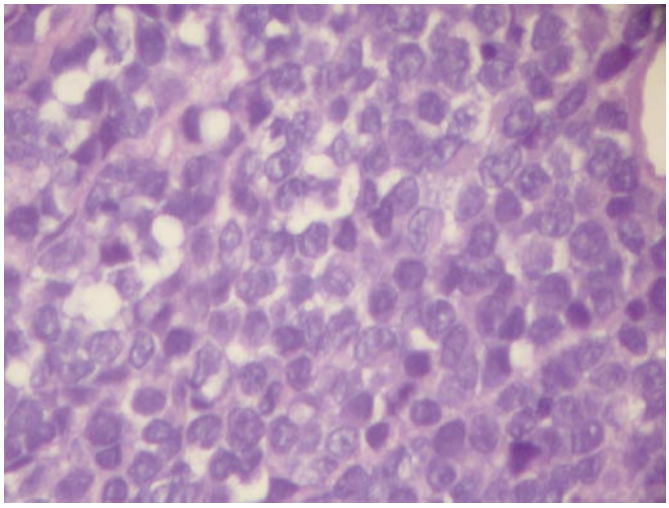

**Fig. 1.** Hematoxylin and eosin staining showing cells with scant cytoplasm, hyperchromatic nuclei with salt and pepper chromatin without prominent nucleoli. Classic oat cell morphology is present.

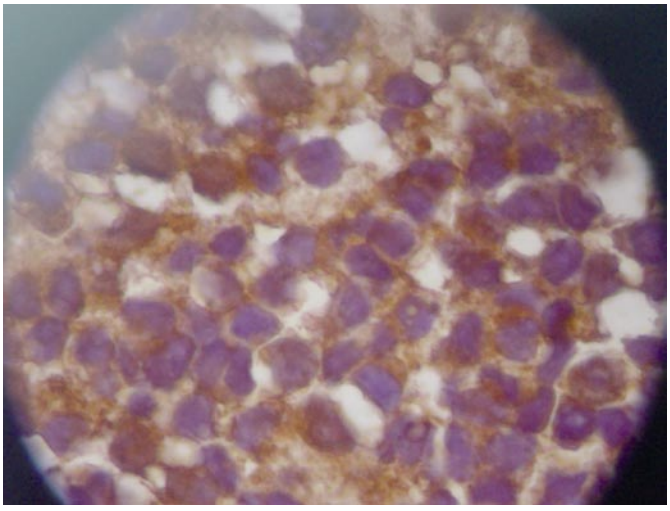

**Fig. 2.** Immunohistochemical staining of the prostatic specimen with synaptophysin.

Brain magnetic resonance image showed no findings suggestive of metastasis.

Following multidisciplinary consultation with urology, medical oncology, and radiation oncology specialists, the patient was treated with a cisplatine and etoposide regimen of chemotherapy (cisplatine: 120 mg IV on the 1st day of each course, etoposide: 200 mg IV on the 1st, 2nd, and 3rd day of each course, total number of chemotherapy courses: 6 courses every 3 weeks). The dose of chemotherapy drugs were calculated individually for the patient. A follow-up of 8 months showed no recurrence or metastasis. The patient has experienced disease-free survival up to the time of this report.

## Discussion

About 5% of small cell carcinomas arise from origins other than lungs. These tumors comprise 0.1 to 0.4% of all malignancies [4]. Small cell carcinoma has been reported in kidneys, bladder, and prostate [5].

Currently, the origin of neuroendocrine cells in prostate malignancies is not clearly known; however, the coexistence of small cell carcinoma with prostate adenoma or past history of prostate adenoma favors the hypothesis that small cell carcinoma may differentiate from adenocarcinoma cells [6]. Recent in vitro studies of prostatic adenocarcinoma cell lines further supports this hypothesis [7].

SCPCa expresses immunological markers of neuroendocrine cells, and therefore these cells are usually positive for chromogranin A, synaptophysin, NSE, and TTF-1 [8]. However, they do not show prostatic adenocarcinoma markers such as PSA, AR, and PSAP. These markers are useful in distinguishing difficult cases of adenocarcinoma from small cell carcinoma of the prostate.

In contrast to adenocarinoma of the prostate, patients with SCPCa are often symptomatic at the time of diagnosis suffering from obstructive, neurological, bone pain, hydronephrosis, abdominal pain, hematuria, and constitutional symptoms. Paraneoplastic features are also frequently reported [9].

In comparison to adenocarcinoma of the prostate, SCPCa shows a more aggressive behavior. It is usually locally advanced or metastatic at the time of diagnosis. Life expectancy of the patients is limited to a few months [9]. Due to its different features, SCPCa is refractory to hormone therapy [1, 8]. Currently, there is no guideline for treatment of SCPCa. However, it is suggested to treat the patients similar to patients with other small cell carcinomas. In other words, only radical prostatectomy shows therapeutic benefits in early SCPCa [9]. Generally, adjuvant chemotherapy is also applied. In case of capsular invasion or marginal invasion of the tumor, radiotherapy should also be considered [10].

Despite the controversy regarding the management of SCPCa, we found that the common chemotherapy regimen provided for small cell carcinoma in other organs could properly function in the prostate. It seems that early diagnosis is the most important factor influencing the prognosis. Therefore, better attention to urinary symptoms should be considered in dealing with similar patients.

## Conclusion

Due to rare occurrence and limited information about pure SCPCa, further studies on cohorts of patients with primary pure SCPCa are paramount to determine prognostic factors and optimal treatment of this disease.

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