Case Report

Gemcitabine/Carboplatin Chemotherapy for Pure Small Cell Carcinoma of the Prostate: A Case Report

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Small cell carcinoma of the prostate is rare and is thought to behave clinically as a highly aggressive neoplasm. We report on a patient with pure small cell carcinoma of the prostate presenting as multiple organ metastases. Immunohistochemical studies of the tumor cells revealed positive reactions to chromogranin A, synaptophysin, and cytokeratin stains, and a negative reaction to PSA stain. This patient received 5 courses of gemcitabine/carboplatin chemotherapy after transurethral resection of the prostate, and the previous metastatic bone lesions showed partial resolution. (*FJJM 2005; 3 (1):25-31*)

Key words: chemotherapy, prostate, small cell carcinoma, neuroendocrine, immunohistochemical studies

INTRODUCTION

Small cell carcinoma (SCC) of the prostate is rare and is thought to behave clinically as a highly aggressive neoplasm [1]. Early diagnosis of SCC is quite difficult, because of early dissemination, rapid growth, and lack of a concordant elevation in serum PSA levels as with a usual acinar adenocarcinoma of the prostate. These cases usually present at a high stage with multiple bone, lymph node, and visceral organ metastases. Because of the rarity of the condition, no standard therapeutic regimen has been developed.

Gemcitabine, a fluorine-substituted deoxycytidine analog, produced a 27% overall response rate in previously untreated patients of SCC of the lung [2]. The combination of carboplatin and gemcitabine has recently emerged as a relatively new standard regimen for SCC of the lung [3]. A phase III trial of patients with SCC of the lung and a poor prognosis revealed comparable overall response and median survival rates using the combination of carboplatin and gemcitabine with those of etoposide and cisplatin, but less non-hematologic toxicity was seen[3].

We present the clinical and pathologic pictures of 1 case of small cell carcinoma of the prostate. The metastatic bone lesions showed a partial response to the combination of gemcitabine and carboplatin.

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CASE REPORT

A 79-year-old man underwent transurethral resection of the prostate (TURP) due to repeated urinary retention. The pathological report revealed pure small cell carcinoma (SCC) of the prostate. The tumor was composed of small- to medium-sized tumor cells with scanty cytoplasm and inconspicuous nucleoli (Fig. 1A). Immunohistochemical studies revealed positive reactions to chromogranin A stain (Fig. 1B), synaptophysin stain, and cytokeratin stain, and a negative reaction to PSA stain. No usual acinar adenocarcinoma was seen after all tissues were submitted for a diagnosis. Computed tomography (CT) revealed multiple metastases, including to the liver, spleen, pelvic lymph nodes, and bones. A bone scan demonstrated multiple bone metastases to the ribs, all thoracic and lumbar vertebrae, the sacrum, and bilateral sacroiliac joints (Fig. 2A). After 5 courses of gemcitabine/carboplatin chemotherapy, the previous metastatic bone lesions in the T11, T12, L1, L2, L4, and L5 vertebrae showed partial resolution (Fig. 2B), but the other metastatic lesions remained unchanged. During the 5 courses of chemotherapy, the most-common side effects were a poor appetite, nausea, and vomiting, and these could be well controlled by administration of corticosteroids. Pancytopenia was also noted after every course of chemotherapy, but it was always reversible within 2 weeks. A check of the PSA value was omitted before the TURP, but the PSA value after the final course of chemotherapy was 0.06 ng/ml. He died shortly after the final course of chemotherapy due to sudden cardiac arrest with a survival duration of 7.4 months.

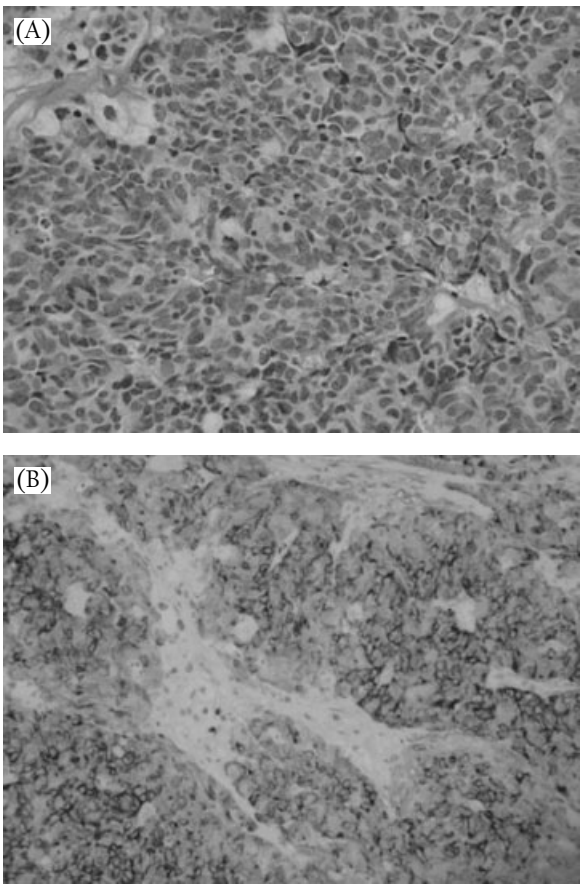

Fig. 1 (A) Small- to medium-sized tumor cells with scanty cytoplasm and inconspicuous nucleoli (H&E stain, 400x). (B) Tumor cells reactive to chromogranin A. (ABC stain, 400x).

DISCUSSION

Primary SCC is well known in the lung, but SCC of the prostate is a very rare condition, comprising 0.5%-2% of prostate cancers [4]. These extrapulmonary SCCs are indistinguishable from SCC of the lung by light microscopic, ultrastructural, and immunohistochemical examinations.

Neuroendocrine differentiation of prostate cancer includes pure SCC, carcinoid and carcinoid-like tumors, and a conventional prostate adenocarcinoma with focal neuroendocrine differentiation [5]. Pure SCC has a more-aggressive clinical course with a dismal prognosis.

SCC of the prostate was proposed to arise from amine precursor uptake decarboxylation

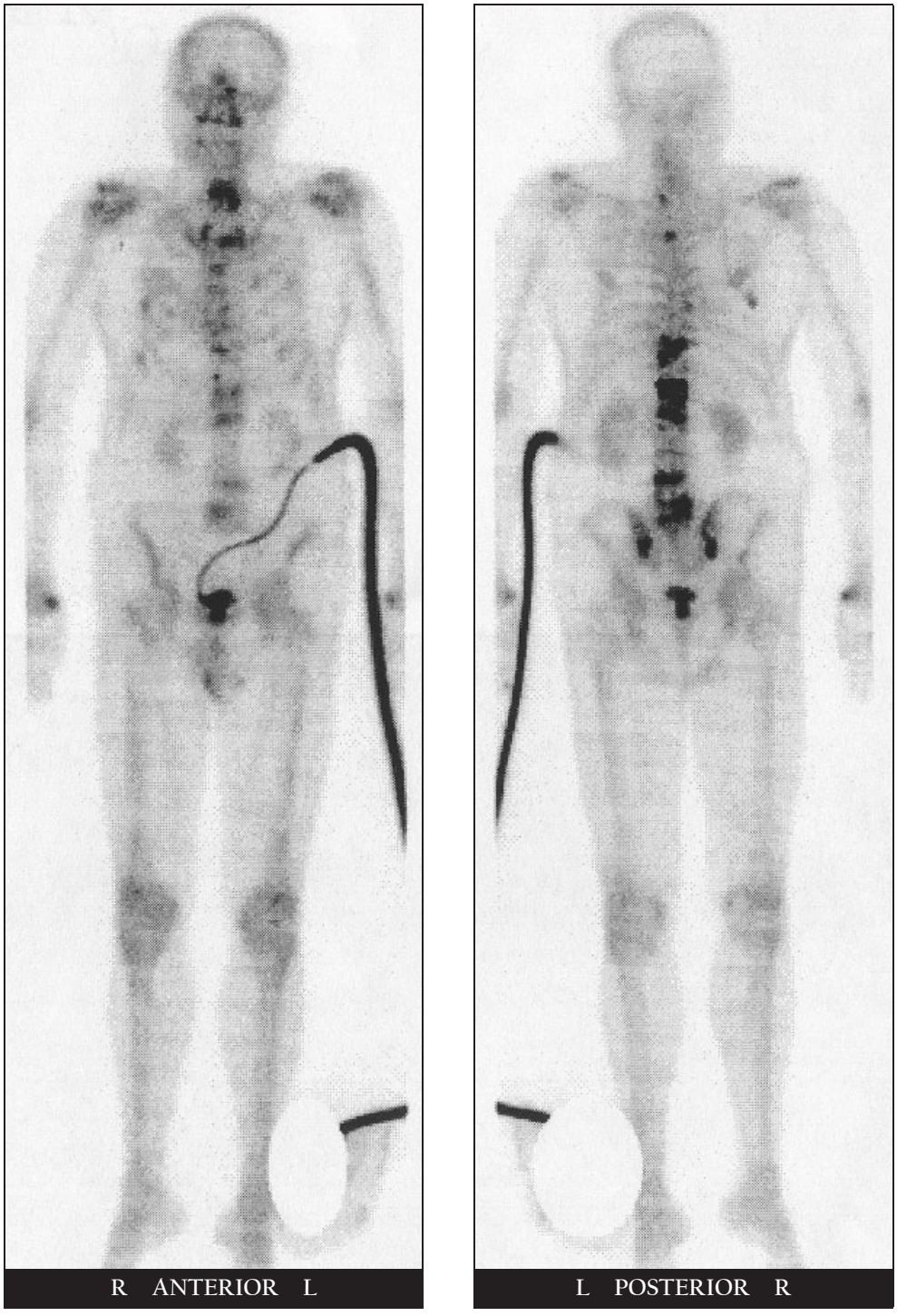

Fig. 2 (A) Bone scan showing skeletal metastases in the ribs, T1-L5 spine, sacrum, and both sacroiliac joints.

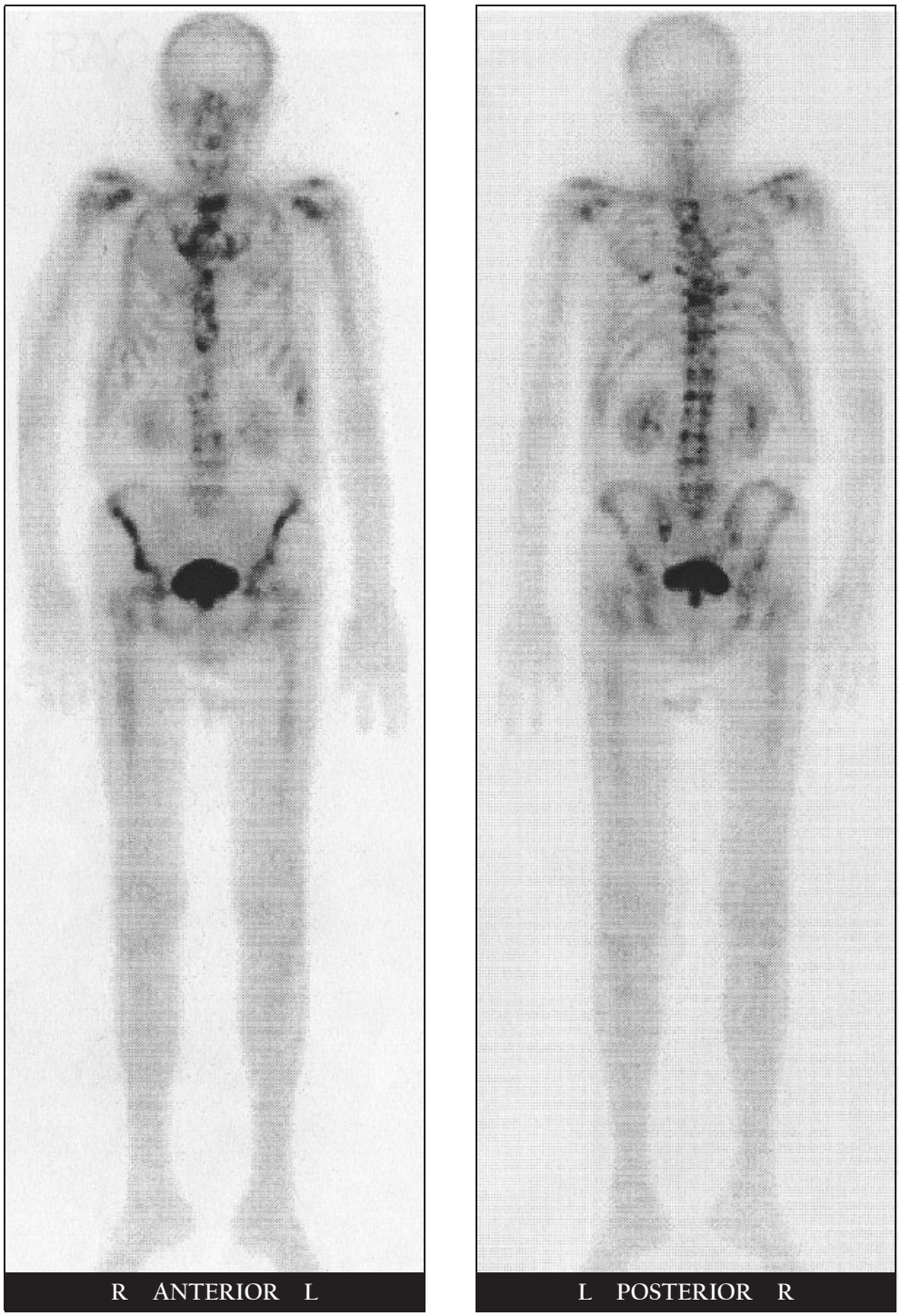

Fig. 2 (B) Follow-up bone scan revealing partial resolution of the previous metastatic lesions in the T11, T12, L1, L2, L4, and L5.

(APUD) cells of local endodermal origin [6] or from dedifferentiation of prostatic adenocarcinomas [7]. But the most-widely accepted view is that prostatic SCC, similar to lung cancer, arises from totipotential stem cells of the prostate, which have the ability to differentiate into either epithelial or neuroendocrine type carcinomas [8,9]. This concept is supported by the similarity of the histopathologic pictures and immunohistochemical studies, and by the presence of some paraneoplastic syndromes. Immunohistochemical studies often show multidirectional differentiation along epithelial, neuroendocrine, and/or mesenchymal lines of these poorly differentiated prostate cancers [10,11].

In contrast to a prostatic adenocarcinoma, PSA is an unreliable tumor marker for SCC and is usually normal, even when there is metastatic disease. One study suggested that the carcinoembryonic antigen is a more-reliable marker, because increases and decreases in antigen levels are found with disease progression and regression,respectively[9].

SCC of the prostate has a propensity to metastasize to visceral organs, including the liver, bones, lungs, central nervous system, and pericardium, and regionally to pelvic lymph nodes, the rectum, and bladder [9].

The small cell lung cancer (SCLC) of prostate cancer has the same unfavorable outcome as other SCC counterparts [12]. SCC of the prostate has a highly aggressive course and a poor prognosis, with no successful treatment to the present. SCC of the prostate, as distinct from an adenocarcinoma, has been found to be unresponsive to hormone therapy. Despite chemotherapy with different combinations of reagents, the prognosis of SCC is extremely poor, and the median survival is 7 months[13].

The combination of carboplatin and gemcitabine has emerged as a standard regimen for SCC lung cancer [3]. By combining gemcitabine and carboplatin, we achieved a partial response to the metastatic bone lesions, but adjustments and modifications of the regimens and dosages are still necessary to achieve a more-effective response.

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Gemcitabine 及 Carboplatin 的複合性化學治療治療單純前列腺小細胞癌

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前列腺小細胞癌為少見的前列腺惡性疾患。我們報告一位病人為單一細胞型態的單純小細胞癌，診斷時已合併骨骼及多重器官之轉移。病灶病理切片組織免疫特殊染色呈現 chromogranin A, synaptophysin, and cytokeratins 陽性，及陰性的 PSA 染色。病人在經尿道前列腺切除手術做出診斷後給予 gemcitabine 及 carboplatin 的複合性化學治療，其骨骼轉移病灶得到部分改善。(*輔仁醫學期刊 2005；3 (1) ：25-31*)

關鍵詞：攝護腺，小細胞癌，神經內分泌，組織免疫染色

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