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Advanced prostate cancer discovered with cancerous peritonitis: Case report

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Introduction

Cancerous peritonitis occurs rarely in patients with prostate cancer since prostate cancer is not likely to cause peritoneal dissemination because of the localization of prostate itself and the low frequency of metastasis to the intraperitoneal organs from prostate cancer. This rarity of cancerous peritonitis may delay the diagnosis and treatment of prostate cancer. Herein we report a case of a patient with abdominal distension due to cancerous peritonitis wherein the primary tumor in the intraperitoneal organs could not be detected, but prostate cancer was diagnosed by the presence of adenocarcinoma cells using ascites puncture cytology.

Case presentation

A 68-year-old man presented with abdominal distension and edema of the scrotum. Computed tomography (CT) findings showed prominent ascites and mesenteric thickening (Fig. 1). Since adenocarcinoma cells were detected from ascites puncture cytology, we suspected the patient of having gastrointestinal cancer and performed endoscopy. However, the lesion could not be identified. The ascitic fluid repeatedly flared, even after puncture drainage.

In our search for primary cancer of other organs, we found a rise in prostate specific antigen (PSA) level to 470.153 ng/mL. Immunohistochemical staining of the ascitic cell block revealed adenocarcinoma cells positive for anti–PSA antibody (Fig. 2). Subsequent magnetic resonance imaging (MRI) showed infiltrating cT3b prostate cancer, and bone scan confirmed metastasis to the ribs, thoracic vertebrae, and pelvis. Prostatic biopsy detected the presence of adenocarcinoma cells (Gleason score: 4 + 4), confirming diagnosis.

Combined androgen blockade (CAB) therapy using LH-RH antagonist and bicalutamide was immediately initiated. With a decrease in the PSA level (from 470.153 to 78.108 ng/mL), the ascitic fluid quickly disappeared, and the edema of the lower limb and scrotum also improved (Fig. 3). However, bicalutamide has been switched to a novel androgen receptor inhibitor, abiraterone, due to early PSA relapse.

Discussion

Prostate cancer shows regional lymph node metastasis and hematogenous metastasis to bone and lung.[1] Pelvic organs are separated from peritoneal cavity by the peritoneum. Furthermore, prostate is surrounded by Denonvilliers' fascia on the dorsal side and the urinary bladder on the top. Therefore, metastasis to the peritoneal cavity from prostate cancer rarely occurs, and peritoneal dissemination and cancerous peritonitis from prostate cancer are extremely rare. To our knowledge, only 17 cases of cancerous peritonitis with ascites retention caused by prostate cancer have been reported.[1]

In our patient, besides bone metastasis and massive ascites, we could not find any lesions in intraperitoneal viscera. This made it difficult to identify the primary tumor. PSA immunohistochemical staining was effective in detecting prostate adenocarcinoma cells in the ascitic cell block, although it is limitedly used for metastatic lesions in which primary tumor is undetected.[2] After biopsy findings confirmed the prostate cancer, CAB therapy decreased the PSA level and the ascitic fluid disappeared. These results supported the fact that the primary cancer of cancerous peritonitis was prostate cancer.

Prostate cancer with visceral metastasis has poor prognosis and often shows resistance to ADT. Although our patient did not show apparent metastasis to visceral organs, we considered it necessary to treat him for visceral metastasis. A study on a poor-prognosis group,

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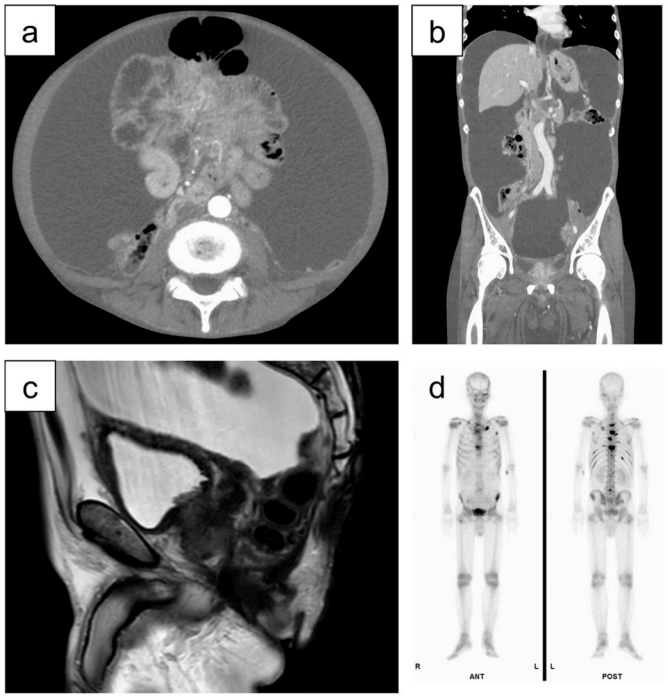

Fig. 1. (a and b) CT imaging shows prominent ascites and thickening of the mesentery. No apparent tumor can be identified in the peritoneal cavity. (c) MRI shows cT3b prostate cancer directly invading seminal vesicles and the urinary bladder but not the peritoneal cavity. (d) Bone scan revealed metastasis to the sternum, ribs, and pelvis.

especially high-volume disease subgroup, showed that primary androgen deprivation therapy (ADT) with docetaxel prolongs the overall survival time compared with ADT alone.[3] Studies have also reported an improvement in the survival rate by the addition of abiraterone to primary ADT.[4,5] In our patient, bicalutamide was used initially because neither docetaxel nor abiraterone was reimbursed for the initial

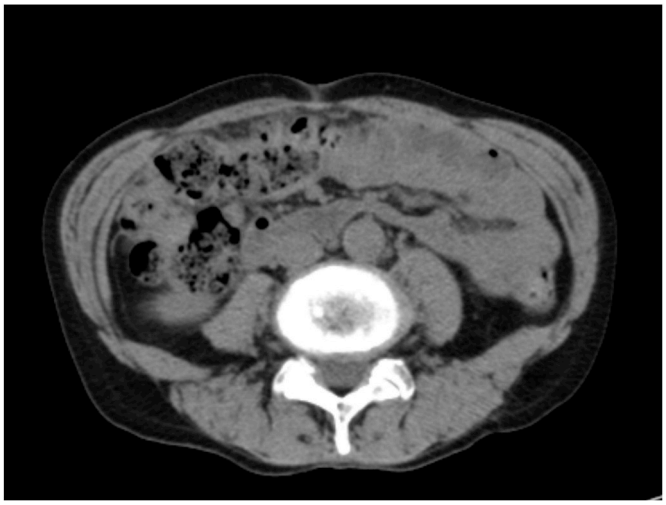

Fig. 3. After CAB was started, ascites rapidly disappeared and the mesenteric thickening improved with a decrease in the PSA level.

treatment then. Although a decrease in ascites was observed, he showed early PSA relapse. Therefore, we have switched bicalutamide to abiraterone for his castration-resistant prostate cancer. If his disease progress further, we should consider the introduction of chemotherapy using docetaxel.

Conclusion

Prostate cancer showing atypical metastasis, such as in our patient, is difficult to diagnose and treat. Therefore, comprehensive diagnosis must be performed.

Conflicts of interest

None of the authors of this manuscript have any financial or

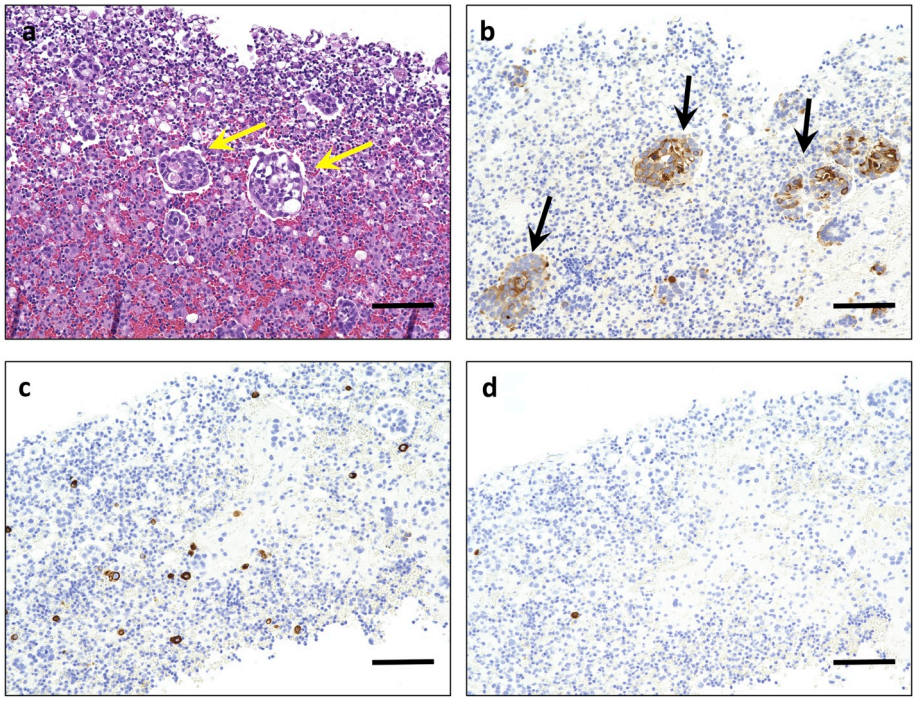

Fig. 2. (a) HE, (b) PSA, (c) CK7, and (d) CK20. Scale bar = 100μm. Ascites fluid contains adenocarcinoma cells, which are positive for anti–PSA antibody on immunohistochemical staining. CK7 and CK20 were not clearly stained.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2018.10.010.

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