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Oncology

Long-term survival of a patient with pulmonary metastatic urothelial carcinoma following metastasectomy

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ABSTRACT

Cisplatin-based systemic chemotherapy is the gold standard for the treatment of patients with metastatic urothelial carcinoma (UC), which is a chemosensitive cancer. However, long-term survival has been deemed disappointing. We describe here a case of UC with solitary pulmonary metastasis who had successfully achieved long-term disease-free survival by combination of cisplatin-based chemotherapy and pulmonary metastasectomy. From the finding of this article, we propose that adjuvant chemotherapy may be considered as a viable option after metastasectomy in low volume pulmonary metastatic UC patients.

Introduction

The gold standard for the treatment of patients with metastatic urothelial carcinoma (UC) is systemic cisplatin-based chemotherapy. A combination regimen of gemcitabine and cisplatin (GC) demonstrates an objective response rate of approximately 60%. However, long-term survival rates have been deemed disappointing in follow-up studies.[1)] Further, there is no other substantial therapeutic option that can improve patient survival on an individual basis. In 1982, Cowles et al.[2)] first reported six UC patients with pulmonary metastasis who successfully achieved long-term survival with by complete resection of the metastatic lesion, however, the prognostic significance is not still fully understood. We report here a case of UC patient with solitary pulmonary metastasis who has successfully achieved long-term disease-free survival with a combination of GC adjuvant chemotherapy and pulmonary metastasectomy after induction systemic chemotherapy.

Case report

A 66-year-old Asian male visited our hospital with asymptomatic macrohematuria. Enhanced computed tomography (CT) and magnetic resonance imaging (MRI) revealed multiple advanced-stage bladder tumor that were 3 cm in maximum diameter (Fig. 1A and B), and transurethral resection was performed. Pathological findings revealed invasive UC, thus, radical cystectomy and ileal conduit were also performed. The final diagnosis was high grade invasive UC without vascular invasion, and the pathological stage was T1N0M0 (Fig. 1C). Three years after the operation, CT revealed a solitary 8 mm-sized nodule in the right middle lobe of the lung (Fig. 1D). This lesion gradually enlarged in two months, therefore, after repeated systemic search by imaging examinations and based on a clinical diagnosis of metastatic UC from the bladder, a total of 6 cycles of combination induction chemotherapy using gemcitabine (gemcitabine 1000 mg/m^2 on days 1, 8 and 15), and cisplatin (70 mg/m^2 on day 2) were performed. In the interval between chemotherapy courses, CT revealed that the inner signal of the metastatic pulmonary lesion had turned rough (Fig. 1E), and the therapeutic evaluation based on RESIST ver1.0 was stable disease. However, in the view of adverse event, including grade 3 myelosuppression demonstrated by decreases in white blood cells and platelets appeared during the later courses of the induction GC chemotherapy, therefore, partial resection of the right middle lobe of the lung was performed after informed consent (Fig. 2A). Pathological finding revealed high grade invasive UC that had the following immunohistochemical profile: positivity for cytokeratin 7, negativity for cytokeratin 20, and TTF-1 (Fig. 2B, C, 2D, 2E, 2F). He was administered additional 3 cycles of GC combination chemotherapy as adjuvant therapy. Three years after the operation, he had no sign of recurrence and was considered to have achieved long-term disease-free survival.

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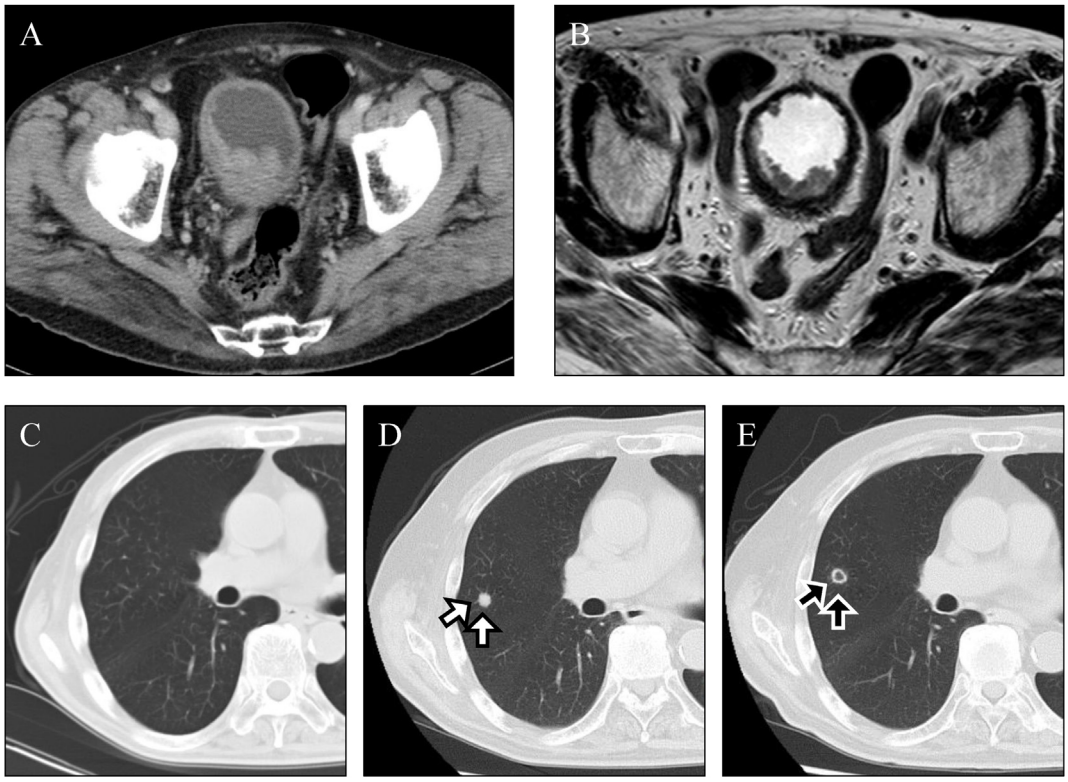

Fig. 1. A, B, Abdominal enhanced CT (A) and T2-weighted MRI (B) showed multiple advanced-stage bladder tumors that were 3 cm in maximum diameter. **C,** Plain CT of the chest demonstrated the absence of metastatic lesion in radical operation. **D,** Chest CT revealed a solitary 8 mm-sized nodule in the right middle love of the lung, 3 years after radical operation (white arrow). **E,** Chest CT revealed that the inner signal of the metastatic lesion had turned rough after 6 cycles of induction chemotherapy (black arrow).

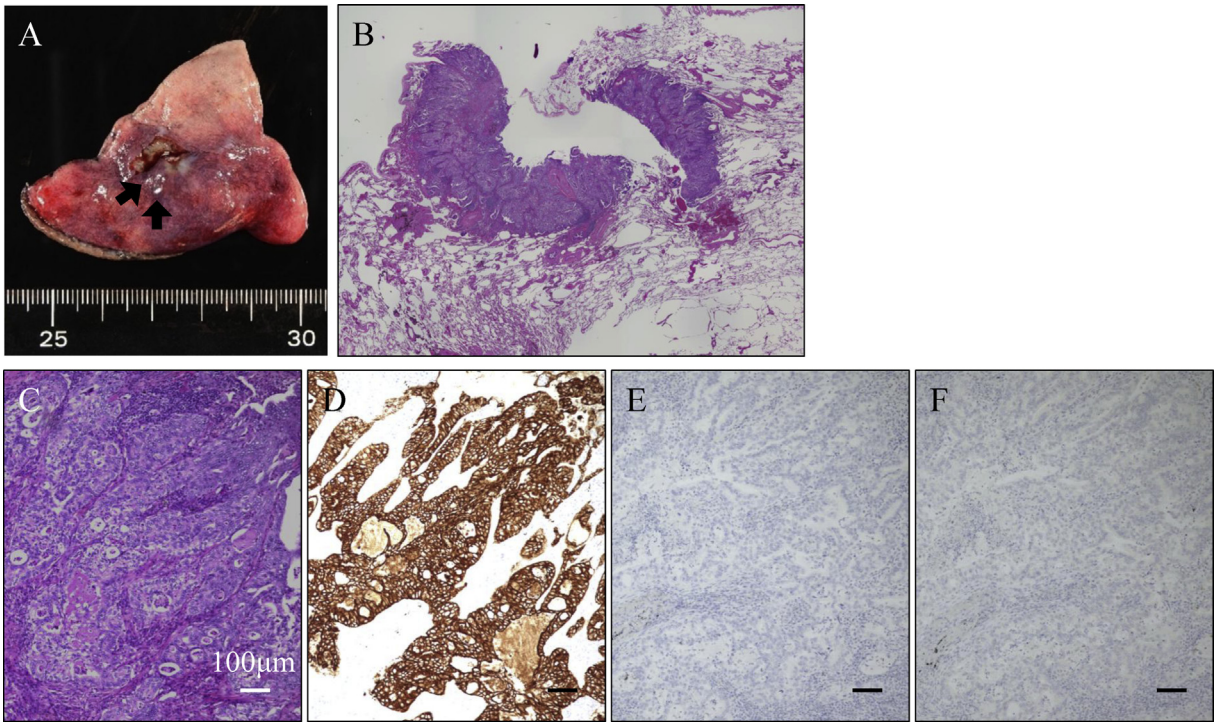

Fig. 2. A, Macroscopical findings of the specimen of the right middle lobe following partial resection. A tiny yellowish tumor was observed surrounded by normal tissue. **B, C,** HE staining of the specimen of the right middle lobe of the lung following partial resection. By gross examination, the infiltrating metastatic urothelial carcinoma was recognized. **D, E, F** Immunohistochemical staining of the metastatic urothelial carcinoma lesion shows positivity for cytokeratin 7 (D) and negativity for cytokeratin 20 (E) and TTF-1 (F).