effective and tolerable, it may continue for more than six courses. Continuous maintenance chemotherapy for chemo-sensitive tumors have been reported to be able to lead to survival benefits for patients with metastatic UC (8). Also, even if the patients are not in progressive disease (PD) according to Response Evaluation Criteria in Solid Tumors (RECIST) version 1.1, they may change to second-line treatment if the tumor tends to increase. The efficacy of second-line immunotherapy or chemotherapy for metastatic UC has been reported (9, 10). Moreover, resection or radiation for primary lesion or metastatic lesion has also reported (11-13). Although metastatic UC has a poor prognosis, aggressive multidisciplinary treatment after first-line chemotherapy may improve clinical outcomes.

Several studies have been performed on the prognostic factors of immunotherapy, and it is possible to find which patients are suitable for immunotherapy as first-line therapy. One study has reported a risk score for first-line ICI, and the Eastern Cooperative Oncology Group Scale of Performance States (ECOG-PS) ≥2, albumin <3.5 g/dl, neutrophil-to-lymphocyte ratio (NLR) >5 and liver metastases are associated with worse OS (14). The prediction of good prognosis for pembrolizumab as second-line treatment for UC was reported as pretreatment low NLR and an NLR with no large increase after 1 month of treatment (15). In addition, prognostic nutritional index before pembrolizumab initiation was also reported to be a significant and independent prognostic factor for survival in metastatic UC patients (16). Knowing whether immunotherapy or chemotherapy is suitable as first-line treatment is beneficial for patients. Exploring the differences between prognostic factors of immunotherapy and chemotherapy is important.

A retrospective study was conducted on the clinical outcomes of Japanese patients who received three or more courses of first-line chemotherapy for metastatic UC to assess the outcome of conventional treatments in a real-world clinical situation. Whether the poor prognostic factors for immunotherapy apply to chemotherapy and whether the OS of patients who received aggressive treatment instead of BSC is longer have been investigated.

Patients and Methods

Metastatic UC patients who received first-line platinum-based chemotherapy at Kanazawa University between August 2009 and December 2019 have been retrospectively evaluated. All patients had histologically or cytologically confirmed UC of the renal pelvis, ureter or bladder. Patients who received three or more courses of first-line chemotherapy and had no disease progression [i.e. CR, PR or stable disease (SD)] at the end of three courses were included. Patients who received adjuvant or neoadjuvant chemotherapy within the preceding 12 months were excluded from the study. OS and PFS were analysed using the clinical records. OS and PFS were calculated as the time from the first day of first-line chemotherapy administration to death or the last follow-up and progression to PD according to RECIST, respectively. Clinical variables included patient age, sex, primary tumour lesion, ECOG-PS, number of first-line chemotherapy courses, metastatic site and laboratory data including blood cell counts and serum albumin concentration. Survival curves were measured using the Kaplan–Meier method, and differences in OS were evaluated using the log-rank test. All data analyses were performed using SPSS for windows (SPSS Inc., Chicago, IL, USA), and a p-value of <0.05 was used to indicate statistical significance. This study was approved by the institutional review board of Kanazawa University Hospital.

Results

Patient characteristics. A total of 34 cases have been evaluated by RECIST, of which 6 (17.6%) had PD at the end of three courses. Table I shows the demographics and baseline characteristics of 28 patients who had no disease