Objective: Renal deterioration is one of the important side effects of ZA. The purpose of this study is to investigate the effects of ZA on renal function as well as clinical factors associated with renal deterioration in patients with malignant tumor.

Methods: We reviewed 180 consecutive patients with malignant tumors treated with ZA between June, 2006 and November, 2012. The relationship between the renal deterioration and each clinical factor was analyzed. There were 55 cases of breast cancer, 37 prostate cancer, 20 lung cancer, 13 multiple myeloma, 12 renal cell cancer, and 43 others. Creatinine clearance (Ccr) was calculated by Cockcroft-Gault equation, and the renal deterioration was defined as a decrease of Ccr more than 20 ml/min. The statistical analysis was performed by Wilcoxon signed-rank test and chi-square test.

Results: There were 95 males and 85 females, and the median age, body weight, and follow-up periods were 63 (25-87), 55.2 (31.3-91.3) kg, and 11.4 (0.7-80.3) months, respectively. 60 patients had died, and 56 had skeletal-related events (SREs). The median number of ZA treatments was 7 (1-60). There was no significant change in median Ccr: 74.2 ml/min (24.4-161.3) on the baseline vs 74.7 (14.9-179.0) after the final ZA treatments (p = 0.107). Fifty-two patients had the dose reduction of ZA, but 22 patients (12.2%) had significant deteriorations in Ccr. Significantly more renal deterioration was observed in patients with more than 5 ZA treatments (p = 0.001), baseline Ccr more than 60 ml/min (p = 0.017), and the concurrent use of antimitabolite (p = 0.025), but no significance in the concurrent use of platinum compounds (p = 0.102).

Discussion: This has some advantages from previous studies with respect to modification of ZA doses according to recommendation and the use of Ccr calculated by Cockcroft-Gault equation for evaluating renal deterioration. Ccr is more accurate in estimating renal function than the serum creatinine level as in past reports. Patients with baseline Ccr under 60ml/min were less likely to experience renal deterioration, and the reduction of ZA dose according to the recommendation appears clinically useful. Patients who received ZA repeatedly require special care to prevent renal damage.