between the patients with ICI ≤2 lines (n = 28) and ≥3 lines (n = 2). (c) The association between the anti-SARS-CoV-2 S IgG antibody titer and time from final administration of chemotherapy to initiation of ICIs therapy. (d) The association between the anti-SARS-CoV-2 S IgG antibody titer and time from final administration of chemotherapy to vaccination. (e) The association between the anti-SARS-CoV-2 S IgG antibody titer and time from initiation of ICIs therapy to vaccination.

Figure S2. Visual abstract.

Editorial Comment

Editorial Comment from Dr Kobayashi to Effect of active anticancer therapy on serologic response to SARS-CoV-2 BNT162b2 vaccine in patients with urothelial and renal cell carcinoma

In this issue of *International Journal of Urology*, Togashi *et al*.[1] reported the efficacy of vaccination for SARS-CoV-2 with BNT162b2 in patients with urothelial cancer (UC) and renal cell cancer (RCC) by evaluating post-vaccination seropositivity. The study demonstrated that humoral response, defined as an anti-SARS-CoV-2 IgG level ≥15 U/mL according to the manufacturer's data, was ≥90% among these patients. Although high, this proportion is considerably lower than the 99% to 100% found in control groups.[1–3] Indeed, the post-vaccination seropositivity in UC and RCC patients altogether was 91.8% (78 of 85), which was significantly lower than that in the control groups (P = 0.0415, Fisher's exact test).

It seems to be at least partly attributed to the significant difference in age between control group and the patients, as is often the case in such studies.[2] It should be also noted that the present study evaluated seropositivity after the second dose of BNT162b2. A previous report demonstrated that antibody levels increased significantly after the third booster dose, irrespective of active anticancer therapy being ongoing or not.[4] The authors may be able to evaluate antibody levels in their patients and controls after the booster doses.

As the authors also mentioned, there are a lot more to be answered in the future studies. How long will the antibody titers once established be maintained? Does tumor burden or anticancer therapy affect it? These data will be important when considering the optimal intervals for booster doses in patients on cancer treatment. Does tumor burden, metastatic site, or modality and intensity of anticancer therapy affect the susceptibilities to vaccine side effect, virus infection, aggravation, or mortality? Does vaccination itself affect treatment response, adverse treatment events, and prognosis of cancer patients? Considering that systemic immunological condition may substantially affect both SARS-CoV-2 vaccination and treatment outcome of UC/RCC patients and vice versa,[5] clinical significance of SARS-CoV-2 vaccination in cancer patients should be further studied.

Despite these unanswered questions, the authors should be congratulated for their timely report on the efficacy of SARS-CoV-2 vaccine in Japanese patients with UC or RCC. Further reports will be warranted in the future.

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Conflict of interest

None declared.

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