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EDITORIAL – UROLOGIC ONCOLOGY

Editorial Comment On: Prognostic Implication of Body Mass Index on Survival Outcomes in Surgically-Treated Non-metastatic Renal Cell Carcinoma: A Single Institutional, Retrospective Analysis of a Large Cohort

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To date, various epidemiologic studies have consistently demonstrated a significant correlation between obesity and the risk of developing renal cell cancer (RCC).[1–3] Moreover, a large contemporary study also demonstrated that the obesity represents a risk factor for RCC-specific mortality.[3] However, many studies have shown that obesity is a favorable predictor of the survival outcome after surgical removal of localized RCC in clinical practice.[4–6] These phenomena are called the "obesity paradox" in which a higher body mass index (BMI) that is expected to contribute to worse oncological outcomes actually improves these outcomes.[5,6] However, most previous studies have originated from Western countries,[4–6] and the results for Asians may be different from those for Caucasians because there are some differences in body build, lifestyle, genetic background, and general circumstances.[7]

In this issue of *Annals of Surgical Oncology*, Seon et al. showed that obese patients had relatively favorable survival outcomes after RCC surgery, using a relatively large Asian cohort.[7] The obese patients presented favorable 5-year recurrence-free (90.7% vs 84.9%, $P < 0.001$), overall (91.8% vs 86.8%, $P = 0.002$), and cancer-specific (94.8% vs 89.4%, $P = 0.002$) survival rates compared with normal BMI patients.[7] A multivariate analysis also showed that an increasing BMI was an independent predictor of favorable survival outcomes ($P < 0.05$ for all).[7] Overweight ($P = 0.009$) and obese ($P = 0.009$) patients in particular demonstrated better cancer-specific survival compared with the normal BMI patients.[7] They concluded that additional basic research is required to determine the biological mechanisms that explain the correlation between BMI and survival outcomes.[7]

As described above, it is interesting that although obesity is a well-established risk factor for developing RCC,[1–3] RCC in obese patients is related to a relatively favorable outcome.[4–6] Previously, it was reported that a higher BMI was associated with a low Fuhrman grade in clinically localized renal masses, regardless of the tumor size, renal mass pathology, RCC subtype, or clinical stage.[6] However, survival of patients with a malignant tumor is related to more than the tumor biological aggressiveness, with various factors contributing to the survival outcome of these patients. One factor is the opportunity to visit a medical institution. The co-morbidities of hypertension ($P < 0.001$) and diabetes mellitus ($P = 0.002$) have a higher frequency in overweight and obese groups compared with those in the normal group.[7] Accordingly, an asymptomatic presentation at diagnosis was found to be highly associated with the obese patients group ($P = 0.001$) and pathologically nodal negative results were also highly associated with the obese patient group ($P = 0.033$).[7] Another important factor related to the outcome is treatment efficacy and resistance. This factor depends on the treatment agent and the results may alter from day to day. An example is M3 promyelocytic leukemia. Acute promyelocytic leukemia (APL), which has been identified as an M3 subtype of acute myeloid leukemia by the French–American–British classification, is a distinct subtype of acute myeloid leukemia.[8] This disease was the most malignant form of acute

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leukemia with a severe bleeding tendency and a fatal course of only weeks.[8] However, introduction of all-trans retinoic acid (ATRA) into the treatment regimen, and optimization of the ATRA-based regimens, has increased the complete response (CR) rate to 90–95%.[8] In RCC, high PD-L1 expression was associated with a poor outcome.[9,10] Introduction of immune checkpoint inhibitors might change this scenario.[10,11] Although the study reported by Seon et al. did not describe the precise treatment sequences for these patients, almost patients must be treated with tyrosine kinase inhibitors (TKIs).[7] Several studies also demonstrated that overweight and obese RCC patients showed longer post-operative survival compared with normal-weight patients in the cytokine and TKI era.[4–7] Currently, in the immune checkpoint inhibitor era, the risk factors and/or poor prognostic factors, including obesity and PD-L1 expression, that were identified before or in the TKI era, may be changing.

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DISCLOSURE I declare that I have no conflict of interest in this manuscript.

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