

873

RADIATION-INDUCED DYNAMIC ALTERATIONS IN PD-1/PD-L1 ACTIVITY AND RELEVANT IMMUNE CELL PROFILES DEPENDING ON TREATMENT RESPONSE STATUS IN MOUSE TUMOR MODELS

¹Yi Na Yoon*, ²Yu Jin Lim, ¹Jae-Sung Kim. ¹*Korea Institute of Radiological & Medical Sciences, Seoul, Republic of Korea;* ²*Kyung Hee University College of Medicine, Seoul, Republic of Korea*

Background In order to assess the immunologic effects of anti-cancer treatment and their therapeutic implications, we investigated the dynamic changes in programmed death-1 (PD-1)/programmed death ligand-1 (PD-L1) expression patterns caused by radiotherapy (RT).

Methods In the CT26 mouse model, local RT with 2 Gy \times 5 or 7.5 Gy \times 1 was treated on the tumors. Tumors were excised and analyzed at certain time points depending on radiation response status: baseline, early (immediately after RT), middle (beginning of tumor reduction), late (stable state with RT impact), and progression (tumor regrowth). The activity of PD-1/PD-L1 and associated immune cell profiles were quantitatively measured.

Results RT potentiated PD-L1 expression levels in tumor cells from the middle to the late phase, which thereafter dropped to the equivalent PD-L1 levels to baseline in the progression phase. The fractionated RT treatment resulted in a lower degree of tumor regression than the 7.5 Gy regimen, although the frequency of PD-L1⁺ myeloid-derived suppressor cells remained greater. In the progression phase, the frequency of PD-1⁺ and interferon (IFN)- γ ⁺ CD8 T cells was increased, meanwhile the mean fluorescence intensity (MFI) values of IFN- γ started to drop. The proportion of PD-1⁺CD8⁺ T cells in the spleen was dramatically increased and maintained longer with 2 Gy \times 5. Further, we confirmed that RT promoted the overall transcription levels of immune-related genes in the transcriptome data, supporting previously confirmed sequential patterns.

Conclusions According to time-course radiation responses, the dynamic changes in PD-1/PD-L1 activity were analyzed. The sequential patterns and dose-fractionation effects should be considered to determine relevant radioimmunotherapy regimens.

Consent Written informed consent was obtained from the patient for publication of this abstract and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

<http://dx.doi.org/10.1136/jitc-2022-SITC2022.0873>