

Immune biological rationale for the design of radioimmunotherapies

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Radiotherapy primarily aims to induce tumor cell death. However, it has become evident that it also impacts on the tumor cell phenotype and its micro-environment thereby exerting both immune suppression and activation. Therefore, a deeper understanding of how radiotherapy modulates the immune system is mandatory for the design of radioimmunotherapies. The talk will focus on immune modulations by radiotherapy, taken also into account the impact of radiation dose and timing of combination with immunotherapies on it. Immune biological challenges for combining radiotherapy with additional immune modulators are discussed. Based on the inflammatory status of a tumor, the dynamics and the interconnections of the immune system and the tumor are outlined. Finally, genetic and immune biomarkers for radiation responses are specified for improvement of radioimmunotherapies. It can be concluded that local and systemic antitumor immune responses can be induced by radiotherapy, but predominantly only in combination with additional immune modulations.