Contribution ID: **21** Type: **Poster**

Proton minibeam radiation therapy and immune response

Thursday 21 March 2024 13:15 (1h 30m)

roton minibeam radiation therapy (pMBRT) is a novel therapeutic approach offering great promise for the treatment of radioresistant tumors based on the spatial fractionation of the dose. pMBRT applies a high dose modulation consisting of high doses (peaks) deposited in the paths of millimetric planar beams and low doses (valleys) in the rest of the tissue. This distinct dose delivery leads to different radiobiology effects than conventional protontherapy, associated to bystander cell communication, vascular remodeling and immune response. As a result, pMBRT has demonstrated in several preclinical experiments to lead to a superior tumor control compared to conventional protontherapy while remarkably sparing normal tissues.
The pivotal role of the immune system in the anti-tumor response of minibeam radiation therapy was recently shown[1], centered on T and B cells from the adaptive immunity system that confers long-term anti-tumor immunity to the cancerous cells. The advances in single cell analysis and next-generation sequencing have allowed us a better understanding to pMBRT immune mechanisms. pMBRT is able to produce a significant acute inflammatory response in glioblastoma via specific signaling pathways. Taking advantage of flow cytometry phenotyping, transcriptomic and proteomic analysis of irradiated rat brain healthy tissue and glioblastoma, we will discuss the latest evidence in proton minibeam radiobiology and its relationship with immune response in order to shed light on the anti-tumor response mechanisms underlying this innovative technique.
[1] Bertho A. & Iturri L. et al., IJROBP 2022

Primary author: ITURRI, Lorea (Institut Curie)

Co-authors: BERTHO, Annaïg (Institute Curie); GILBERT, Cristele (Institute Curie); Mrs ESPENON, Julie (Institut Curie); JUCHAUX, Marjorie (Institut Curie); Dr RIQUELME PEREZ, Miriam (Institut Curie); Mrs POTIRON, Sarah (Institut Curie); PREZADO, Yolanda (Institut Curie)

Presenter: ITURRI, Lorea (Institut Curie)

Session Classification: Postersession

Track Classification: Biological mechanisms of the effect of Particle Minibeams