

The Hallmarks of Cancer and the Radiation Oncologist: Updating the 5Rs of Radiobiology

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I enjoyed reading the recently published paper by Good and Harrington entitled “The Hallmarks of Cancer and the Radiation Oncologist: Updating the 5Rs of Radiobiology”, in which they seek to link the 5Rs of Radiobiology to the 9 Hallmarks of Cancer (Tip: use it for your students!). In particular, their paragraph saying: “Our ability to build machines that deliver radiation with ever greater accuracy and conformality is testament to the skill and ingenuity of engineers, medical physicists and computer scientists. Despite this phenomenal progress, radiotherapy will continue to fall short of its promise. The next quantum leap in progress will require radiation oncologists to immerse themselves in the biological basis of cancer and its response to radiation”. And, I would add: ... and radiobiologists to provide the information about new and exciting results from their own and their colleagues’ laboratories and translation of those data into clinical practice!

Over the last few years, a number of radiobiological questions have been raised regarding the use of (flattening filter-free) Volumetric Modulated Arc Therapy, which has now been introduced into patients’ therapy. But what about the larger tissue volumes exposed to lower irradiation dose and the very high dose rates

with regard to toxicity, tumour response and induction of secondary malignancies? Studies by colleagues in the field emerged, as well as our own laboratory report, that addresses the dose rate issue. This is just another example of the fact that further progression in radiotherapy requires expert input from dedicated basic and translational scientists in radiobiology. The Wolfsberg meeting, organised in association with ESTRO, and the many other national and international meetings provide the forum for exchange of knowledge in a fruitful and pleasant place, just like this Radiobiology Corner. We need these meetings and fora if we are to move radiation oncology forward in 2014 and beyond!

REFERENCE

The Hallmarks of Cancer and the Radiation Oncologist: Updating the 5Rs of Radiobiology
Clinical Oncology 25, 2013, 569-577