

The epidermal growth factor receptor (EGFR) : family members as targets to improve the radiosensitivity of human malignant solid tumors

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Stellingen bij het proefschrift :

The Epidermal Growth Factor Receptor (EGFR) Family Members as Targets to Improve the Radiosensitivity of Human Malignant Solid Tumors; Guido Lammering (Maastricht, 02/12/2004).

1. Irradiation of tumor cells indiscriminately activates all members of the EGFR family of receptors with the activation profile reflecting the cells' ErbB expression profile (this thesis)
2. Functional inhibition of the entire ErbB receptor tyrosine kinase network through expression of a dominant-negative (DN) EGFR leads to a significant radiosensitization for a broad spectrum of different tumor cells in vitro as well in xenograft tumors (this thesis).
3. The mechanisms underlying the radiosensitization through DN EGFR involve disruption of major ErbB receptor- dependent radiation- induced proliferative and cytoprotective responses, which would normally counteract the toxic effects of irradiation. (this thesis)
4. A naturally occurring variant of EGFR, named EGFRvIII is an important modulator of tumor cell radiosensitivity initiating a stronger cytoprotective response in irradiated cells than EGFR. (this thesis)
5. Progress in functional imaging and in basic and clinical cancer biology is likely to provide the tools required for individualized risk-adapted radiotherapy (S. Bentzen; Int J Radiat Oncol Biol Phys 2004;58:320)
6. The integration of functional imaging with fluorine 18 (¹⁸F) fluorodeoxyglucose (FDG) - positron emission tomography (PET) into three-dimensional radiotherapy planning by use of a dedicated combined PET-CT simulator might improve the accuracy and standardization of tumour volume delineation and decrease the inter-observer variability.
7. The use of high-throughput technologies to analyse biochemical and molecular profiles will ultimately enable the individualization of cancer treatment requiring the appropriate integration of radiation with a range of systemic therapies, including chemotherapy, biologic therapy, and immunotherapy (CN. Coleman; Int J Radiat Oncol Biol Phys 2004; 58: 307)
8. Compared to 3D- conformal radiotherapy (3D-CRT), intensity modulated radiotherapy (IMRT) might increase the risk of radiation- induced malignancies by perhaps 0.5% (E. Hall; Int J Radiat Biol 2004; 80: 335)
9. The use of X-rays in medicine has saved more life's than all two world wars together have taken without making much noise or causing sensation (F. Dessauer; 1881-1963)
10. I not only use all the brains that I have, but all that I can borrow (W. Wilson; 1856 - 1924)
11. Happiness is a journey, not a destination.