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Thermally targeted drug delivery

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Thermal Oncology includes use of both sensitizing and ablative temperature change. Mild to moderate hyperthermia involves elevation of temperature between 39-45°C. These modest temperature changes have been shown in multiple randomized trials to increase the effectiveness of radiation therapy and chemotherapy in treatment of cancer. Thermal ablation involves use of more extreme temperatures to achieve direct tumor cell destruction. Ablation also includes a heated but not ablated rim of tissue to which the principles of hyperthermic sensitization apply. Pre-clinical and clinical studies demonstrating current and emerging roles for heat in combination with radiation, chemotherapy and immunotherapy will be presented. In regard to systemic oncologic therapy, a rapidly expanding area of research is use of targeted drug delivery. Targeted drug delivery has the advantage of greatly concentrating oncologic drug release directly into or adjacent to tumor while minimizing systemic toxicity. Heat can be used in combination with thermally sensitive drug carriers including liposomes, magnetic nanoparticles and microbubbles to achieve targeted drug delivery. Results of both pre-clinical and clinical studies of thermally targeted drug delivery utilizing a range of drug carriers will be presented and future directions discussed.

Biography

Mark Hurwitz, M.D. is Professor, Vice-Chair of Quality, Safety and Performance Excellence and Director of Thermal Oncology at Thomas Jefferson University in Philadelphia, PA. Dr. Hurwitz is a past-president of the Society for Thermal Medicine. He serves as an associate editor for the International Journal of Hyperthermia and is a widely recognized expert in both genitourinary and thermal oncology. He has published extensively on these topics and is a sought after speaker both nationally and internationally. He has successfully led multi-national clinical trials including on behalf of industry, the Cancer and Leukemia Group B, Radiation Therapy Oncology Group and NRG Oncology.

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