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THE APPLICATION OF LATTICE THERAPY IN CLINICAL RADIATION ONCOLOGY

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High-dose GRID radiotherapy, sometimes termed spatially-fractionated GRID radiotherapy (SFGRT), is a treatment modality designed for the treatment of advanced bulky tumours. GRID therapy would induce a more rapid rate of tumour cell apoptosis in bulky, hypoxic, tumours than conventional dosimetric approaches. Indeed, dramatic clinical responses have been reported with GRID radiotherapy. GRID's application is limited by tumour location (only for superficial tumours). Lattice therapy (LRT) is a 3D version of GRID which can create high dose islands within the tumour target with similar dose distribution and effects like brachytherapy with external beam radiation. LRT is not limited by tumour size and location due to its design to have a rapid dose fall-off outside these high dose islands, resulting in low-dose valleys within the tumour as well as low radiation dose outside of the target volume. In vivo data has shown that single fraction, high-dose LRT significantly delayed growth of both local and distant tumours. High-dose LRT induces increased secretion of inflammatory cytokines and abscopal effects in distant tumours untreated with LRT. Clinical data in LRT is promising; a patient with voluminous ovarian carcinosarcoma (size>6 cm) was treated with lattice with excellent local control and no toxicity. LRT combined with chemotherapy for the treatment of the large recurrent ovarian mass in this patient was very well tolerated. In a small group of cancer patients treated with IMRT and LRT (18Gy) as a boost, 75% patients achieved a PR; LRT was well tolerated in this group of patients.

Biography

Weisi Yan has finished his PhD in Pharmacology in Weill Graduate School of Cornell Medical College. He was trained in NYP/Cornell for Clinical Radiation Oncology. He subsequently held Faculty appointments at New York-Presbyterian Hospital and New York Hospital Queens. He also served as an Assistant Professor of Clinical Radiology at the Weill Cornell Medical College of Cornell University. His specialties are head and neck cancers, lung cancer, lymphoma and GI cancers. In addition, he has an extensive training in Stereotactic Radiation Therapy, in which high-dose radiotherapy beams are aimed at a tumour from many different directions with a high level of precision. He is also the Director of the Cyber Knife Robotic Radiotherapy System at Mitchell cancer Institute at the University of South Alabama.

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