

FRACTIONATED HIGH-DOSE-RATE STEREOTACTIC BRACHYTHERAPY IN THE MANAGEMENT OF MALIGNANT GLIOMAS

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A stereotactic high-dose-rate brachytherapy technique has recently been implemented for the treatment of malignant gliomas. A Cosman-Roberts-Wells (CRW) base ring is attached to the patient's skull with a CT localization frame attached to the base ring. The patient undergoes a contrast enhanced CT scanning. The CT images are transferred to the three-dimensional stereotactic brachytherapy treatment planning system (Brain-SCAN) through optical disc. Then the pre-plan is generated to determine the number of catheters, the location of each catheter, the source positions in each catheter and the implant time. The goal is to provide a steep dose fall off outside the target volume while providing the best possible dose homogeneity within the target volume. Once the plan is approved, the patient is taken to the operation room. According to the pre-plan data, neurosurgeons make a small hole by twist-drill on the skull and then place the catheters into the desired location. Later on, the real positions of catheters in the brain are verified by orthogonal radiographics and compare with the pre-planned positions. After adjusting the implant time and position of each seed to compromise the position deviation of catheters, the patient is treated with MicroSelectron unit. High activity Ir-192 source is afterloaded into the catheters by remote-control system. Based on our preliminary experience, a phase I/II clinical study has been initiated.

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Key words: Glioma, Brachytherapy, High-dose-rate, Stereotactic

INTRODUCTION

The prognosis of malignant astrocytoma

(including anaplastic astrocytoma and glioblastoma multiformes) remains dismal despite the integration of surgery, post-operative