

Stereotactic Body Radiation Therapy for Liver Metastases: A Single Institution Experience

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Abstract

Objectives: Over the last decade stereotactic body radiation therapy (SBRT) has emerged as an alternative treatment modality for metastatic disease to the liver. Aggressive local therapy may improve local control of liver metastases and may also ease hepatic capsular pain to improve quality of life. The purpose of this study was to report our experience treating patients using SBRT for liver metastases.

Methods: We retrospectively reviewed data from patients treated with SBRT for metastatic liver lesions from July 2007 to August 2015. All lesions were treated with the Synergy-S robotic delivery unit using 6 MV X-ray beams with the Convolution algorithm on 0.2cm grid for calculation of final isodose display and treatment monitor units. Treatments plans and follow up imaging were reviewed to determine tumor response and local control. Local failures were defined as recurrences within the planning target volume (PTV) of original treatment plan. Prescription doses ranged from 1800 to 4000 cGy in 3 to 4 fractions with a mean interval between fractions of 5 days.

Results: 89 patients with a total of 124 metastatic liver lesions received SBRT. The mean patient age was 65. 56% were female and 44% male. The primary cancers were 45% colorectal, 22% breast, 9% gynecologic, 5% lung, 4% pancreatic, 4% esophageal, and 11% other. 78% of patients received chemotherapy within 6 months of radiation. The median metastatic lesion size was 41.3 cc. Median PTV was 114.1 cc with a median of 96% of the PTV receiving prescription dose. Liver enzymes including AST, ALT, and alkaline phosphatase showed no significant change when comparing pre-treatment, immediate post-treatment, and at least 6-month post-treatment values. Local control was 94% with local recurrences occurring after 6 months, 10 months, 1 year and 9 months, 2 year and 2 months, and 4 years after treatment.

Conclusions: SBRT for liver metastases is well tolerated and yields favorable local control outcomes.

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Abstract

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