

AbstractID: 2476 Title: Study of Merits on IMRT with gating technique for treatment of intrahepatic cancer

Purpose: To investigate and compare the benefits in terms of dose escalation, increases of TCP, decreases of NTCP and increases of dose conformity of four various techniques, i.e., 3DCRT and IMRT with and without gating techniques respectively, for treatments of intrahepatic malignancies.

Method and Materials: Total 9 patients with liver cancer went through this study. Every patient has four set of plans, i.e., 3D conformal with and without gating, and IMRT with and without gating. Plans of different techniques were then evaluated with the following elaborated approaches: Kutcher's effective volume, Lyman's NTCP for the normal liver, and the Ten Haken's TCP for the intrahepatic cancer.

Results: To keep a maximum of 5% NTCP of the normal liver for each technique and assume 3DCRT technique without gating as our norm for comparison. The 3DCRT combined with gating technique would increase 4.5Gy more in total target dose and 4.5% higher in TCP of liver lesion. Furthermore, 12 Gy and 6 Gy more in the total target dose and 13% and 8% higher in TCP of liver lesion were found with the IMRT technique with and without gating respectively.

Conclusion: After reviewing and analyzing these various techniques, the combined technology of IMRT and gating seems to be right approach for treatment of liver lesion. IMRT with gating technique may have the most advantages in reducing the treatment margins, increasing the dose conformity, allowing us to escalate total target dose and improving tumor control probability simultaneously.

Conflict of Interest (only if applicable):