Abstract Objectives The dosimetric comparison of RapidArc with fixed gantry static IMRT for liver metastatic carcinoma

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Abstract Objective To compare the dosimetric difference of RapidArc and fixed gantry static IMRT for liver carcinoma. Methods Ten CT datasets of liver cancer patients were studied retrospectively. The IMRT and RapidArc plans were generated using either one or two arcs. The PTV Dosimetric distribution, the OAR dose, the normal tissue dose, mornitor units and treatment time were compared. Results The maximum dose of PTV of RapidArc was lower than IMRT and there was statistically significant. RapidArc had an improved 90% prescription dose conformity index than IMRT (CI90 = 1.35±0.20 for RA1, 1.33±0.18 for RA2 and 1.62±0.41 for IMRT) and there was statistically significant. For organs at risk all techniques respected planning objectives. RapidArc plan had a lower dose in V40 of stomach and Small bowel than IMRT plan, but higher in mean dose of left kidney. Concerning the V5 V10 and V15 of healthy tissue RapidArc plan was higher than IMRT plan. But the V20 V25 and V30 of healthy tissue of RapidArc plan was lower than IMRT plan. The number of computed MU/fraction of Rapid Arc plan was 40% or 46% of IMRT Plan and the treatment time reduced at least 60%. Conclusion All techniques respected planning objectives. RapidArc showed improvements in conformity index and healthy tissue sparing with uncompromised target coverage. This, in combination with the less MU and short delivery time, can lead to clinically significant advances in the liver cancer.

Key words] RapidArc IMRT Liver metastatic carcinoma Dosimetric