Evaluation of Dynamic Log Files for Different Dose Rates in IMRT Plans

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Abstract : The aim of this study is to evaluate dynamic log files (Dynalogs) at different dose rates by dose-volume histograms (DVH) and used as a (QA) procedure of IMRT. Seven patients of phase one head and neck cancer with similar OAR`s are selected randomly. Reference plans of dose rate 300 and 600 MU/Min with prescribed dose of 50Gy in 25 fractions for each patient is made. Dynalogs produced by delivery of reference plans processed by in-house MATLAB program which produces new field files contain actual positions of multi-leaf collimators (MLC`s) instead of planned positions in reference plans. Copies of reference plans are used to import new field files generated by MATLAB program and renamed as Dyn.plan. After dose calculations of Dyn.plans for different dose rates, DVH, and multiple linear regression tools are used to evaluate reference and Dyn.plans. The results indicate good agreement of correlation between different dose rate plans. The maximum dose difference among PTV and OAR`s are found to be less than 5% and 9% respectively. The study indicates the potential of dynalogs to be used as patient-specific QA of IMRT at different dose rate.

Keywords : IMRT, dynalogs, dose rate, DVH

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