SKIN DOSE MEASUREMENT OF NECK FIELD OF HEAD-AND-NECK CANCER USING MULTI-CENTERS AND MONO-ISOCENTER TECHNIQUE

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Purpose : In radiotherapy of head and neck cancer, regional lympha mode of lower-neck and supraclavicular fossa was taken into the irradiation field because of the tumor type and lymphatic drainage always in high risk. A conventional anterior low-neck and supercalaviculer field was performed regularly during radiotherapy. Owing to the remarkable progressing advances in linear accelerator and treatment planning system, there were a lot of achievement in radiotherapy in recent decades, the patient setup technique of radiotherapy in head and neck cancer have changed from multi-centers technique to mono-isocenter technique.

Materials and Methods : Thermoluminescent dosimeters (TLDs) were used to place on RT-HUMANOID phantom to evaluate the skin dose of head and neck field. Multi-centers and mono-isocenter techniques were performed in setup with anthropomorphic phantom during the experiment. TMR formula and Pinnacle radiotherapy planning system were used to calculate the output monitor-unit (MU).

Results : We found that the neck skin doses in mono-isocenter technique was calculated in treatment planning system as 6% higher than multi-centers technique when that of calculated with TMR formula. The neck skin doses of mono-isocenter were 3% higher than that of multi-centers setup technique using the same calculation method (which is Pinnacle radiotherapy planning system). The neck skin doses of Pinnacle radiotherapy planning system were 8% higher than that of TMR formula using the same setup technique (which is multi-centers).

Discussions : The calculation methods and the SSD (source-surface distance) might cause the different of the neck skin doses.

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Key words: Mono-isocenter, Thermoluminescence Dosimeter (TLD), Neck skin dose