IN VIVO SKIN DOSE MEASUREMENT WITH GAFCHROMIC EBT FILM IN THE TREATMENT OF EPIDEMIC KAPOSI'S SARCOMA ON THE FEET WITH RADIATION THERAPY

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Purpose : Epidemic Kaposi's sarcoma mainly invades skin tissues. In the clinic, we often use bolus to increase the surface dose. To evaluate the patients of epidemic Kaposi's sarcoma who had lesions on either single foot or on both feet skins, Gafchromic EBT film was used as in-vivo dosimetry to compare two different radiotherapy methods and verified the skin doses.

Materials and Methods : In these two different treatment methods, we used 2×2 cm^2 size EBT film to measure the skin dose. The first method treated both feet. Two feet were immersed in a water tank and irradiated with 10 MV bilateral photon beam. The total dose of 36 Gy was delivered in 12 fractions. The second method treated only partial single foot, and used the Alpha cradle fixation system. In this study, we used at least 3mm thick Polyflex II as the tissue-compensator. Base on CT images, the treatment site was irradiated with 4 MV photon beams at 4 different angles. The total dose of 50 Gy was delivered in 25 fractions. The treatment planning system used in this study was Philips pinnacle^3 v7.6c.

Results : In both-feet irradiation case, we chose twelve points and repeated measurement for 5 days. The average skin dose of both feet was 313.3±15.7 cGy. In single foot irradiation case, two measure points were repeated for 10 days. The average skin dose at points A and B were 219.5±4.1 cGy and 219.0±5.5 cGy respectively. The calculation results of treatment planning at A and B points were 212.7 cGy and 216.7 cGy respectively. The measurement results were higher than the treatment planning system by 3.2% and 1.1%.

Conclusions : As shown by the results of this study, either water tank or polyflex II may be used as tissue-compensators. They can provide sufficient doses to the skin tissue. Both methods are available for follow-up evaluation.

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Key words: Gafchromic EBT film, Kaposi's sarcoma, Bolus, In-vivo dosimetry