192. Use of micro-ionization chamber in a quality assurance and dosimetry for stereotactic radiosurgery

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[INTRODUCTION] Precision and accuracy are required in dosimetry of radiosurgery X-ray beam, and also treatment planning is very important. This report points out problems at absolute dose measurement for supporting enhancement of the measurement guideline.

[METHODS] The calibration was performed with the 6 MV photon beam produced from Siemens KD2 linear accelerator in Singapore General Hospital. Some characteristics measured with two types of detectors were studied [Exradin.new micro, Fujitec.micro (0.009 cm^3)]. A solid-water phantom was utilized for the calibration. Characteristics of radiosurgery X-ray beam were calibrated with two institutions.

[RESULTS and DISCUSSIONS] The OAR curves (Fig.1) show definite peak which sharp decrease toward the lateral borders for field collimator diameters less than 1.0 cm. Considering that the definite peak, dose measurement of narrow beams cannot calibrate with else small volume detector. The TMR curves (Fig.2,3) show clear decrease as field sizes decrease. We suggested importance that dose measurement of narrow beams must use many detectors of small volume. The curves of field factor (Fig.4) show sharp decrease for area of field less than 1.0 cm^2 .

Fig.1 Off-axis ratio as a function

Fig.2 TMR by new micro-chamber

Fig.3 TMR by micro-chamber

Fig.4 Field factor at reference point

The field factor by the new micro-chamber is blunt decrease. We conclude the decrease of the field factors are affected by the material of phantom and collimator.

[CONCLUSIONS] Type of ionization chamber its calibration assurance have many problems use to the protocol for standard dosimetry in radiotherapy. In a quality assurance, We suggested that the form and the material influenced for the efficacy of treatment.