

عنوان مقاله:

Verification of the Accuracy of the Delivered Dose in Brain Tumors by in Vivo Dosimetry Using Diode Detectors

محل انتشار:

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خلاصه مقاله:

Introduction: During radiotherapy, high accuracy in the dose delivery is required because there is a strong relationship between the absorbed dose, local tumor control and particularly the normal tissue damage. In many institutions, in vivo dosimetry using diodes is performed to check the actual dose delivered. In general, the uncertainty in the dose delivered should fall within $\pm 5\%$ of the prescribed dose as recommended by the International Commission on Radiation Units and Measurements (ICRU). **Materials and Methods:** The combined entrance and exit dose measurements have been performed for brain tumors by diode detectors. In vivo detectors used in this study were P-type semiconductor diodes used for determination of absorbed dose and exit transmission (T_{ex}). A Perspex water phantom (30×30 cm³ area and thickness ranging from 5 to 30 cm) and a farmer type ionization chamber (0.6 cm³) were used for the measurements. The calibration and correction factor are calculated and the relevant curves have been obtained. The SSD correction factor (SSD = 80 cm for all set-up), directional dependence and temperature dependence (<1%) were ignored in the determination of the absorbed dose. **Results:** Errors more than 5% between the measured and the calculated entrance, exit and midline doses were detected. The measured entrance, exit and midline doses were compared with the calculated ones, and no significant difference ($P > 0.1$) was observed. **Discussion and Conclusion:** In vivo measurements have been shown to be very useful as a check of the dose delivered to a given patient.

کلمات کلیدی:

Quality Assurance, In Vivo Dosimetry, Semiconductor detectors, Brain tumors

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