

Evaluation Physical Characteristics of Electron Beam at Extended Distances for Total Skin Electron Irradiation Technique

Aida Salama¹, Khaled M. El Shahatz, Ehab M. Attalla³, Ayat M. Saadeldin⁴, Hussein M. Metwally^{5,6}

¹Biophysics Branch, Faculty of Science, Al-Azhar University, Egypt

²Clinical Oncology Department, Faculty of Medicine, Al-Azhar University, Egypt

³Radiotherapy Department, National Cancer Institute, Cairo University, Egypt

⁴Radiation Oncology Department, El-Hussein University Hospital Egypt

⁵Clinical Oncology Department, Faculty of Medicine, Fayoum University, Egypt Cairo, Egypt

⁶Dar Al Fouad Hospital-Radiation Unit, Cairo, Egypt

Abstract:

Background

Electron beam radiotherapy, still the first option for the treatment of superficial tumors. Characteristics of electron beams from a Varian Medical linear accelerator are presented at extended SSD and the change of output with SSD was estimated.

Aim of the work

was to present a full description of total skin electron irradiation technique applied with special Holder (tray for TSI), the dosimetry steps, Patient-specific in-vivo QA and monitor time calculations.

Materials and Methods:

The defining Z_{ref} for electron 6 MeV at extended distances to define the physical parameters required for the application of Total Skin Electron Irradiation (TSEI) technique including an effective SSD (SSD_{eff}) and the mean dose/MU at extended distance.

Results and Discussion:

There is no significant difference between PDD for standard energy and High dose rate (10Gy/min) and there no difference in value x- ray continuation between two PPD curves one treated case was represented with before, during and after photo showing the positive response appears through the application of Stanford technique as a treatment course.

Conclusion:

The application of Total Skin Electron Irradiation Technique is applicable even without adding applicator to the gantry, however the complete dosimetry required for each treatment machine and mandatory for accurate application of the technique especially with narrow range of treatment