

## CDO-P-44

### Verification Of Doses For Total Skin Electron Irradiation Using Thermoluminescent Dosimeters And Diodes

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The total skin electron irradiation (TSEI) is one of the most efficient techniques in the treatment administered with curative intent of the cutaneous T-cell lymphoma (mycosis fungoides). To irradiate all skin in an appropriate time of the machine, in most times, are used large electron fields with treatment distances about 3 meters. TSEI was introduced to the treatment of mycosis fungoides in the 1950s [1, 2] and can assume various forms but it needs to be pointed out that all of them should lead to complete or partial remission and at the same time be characterised by low toxicity. The condition necessary to reach adopted goals is obtaining a uniform dose for the entire irradiation target volume (construed as epidermis, adnexal structures and dermis. This work aims to simulate and verify the radiation absorbed dose to the phantom using thermoluminescent dosimeters and semiconductor detectors (diodes).

In this study were used forty thermoluminescent dosimeters (TLD) of lithium fluoride doped with magnesium and titanium (LiF:Mg,Ti) produced by *Harshaw Chemical Company* and semiconductor detectors (diodes) for electron beams produced by *Sun Nuclear Corporation*. In this work were utilized a 6 MeV electron beam treatment method based on Stanford technique, where we used a Varian linear accelerator CLINAC 6EX. To perform the irradiations was used a anthropomorphic phantom (Alderson Rando) and the detectors were positioned in specific positions (head, thorax, abdomen, pelvis) for posterior comparison. For this method the patient is placed on a rotative base and he assumes successively 6 positions, therefore the phantom was positioned to six positions and for each position the irradiations were performed for two gantry's position (253° and 287°) (Figures 1, 2).

The thermoluminescent responses were obtained by a reader TL Harshaw model 4500 and the response of diodes were provided in real time.

The analysis of results showed the agreement of doses evaluated by thermoluminescent detectors (LiF:Mg,Ti) with semiconductor detectors (diodes). The assessment of the doses in radiation therapy is extremely importante and this study allowed to compare the absorbed doses for two independent methods.

It is difficult the measure of doses for electron beams; several factors influence in measures: the distance between the gantry and phantom, variation of positioning of the phantom. This work contribute to verify and validate the doses received for a patient in treatment and further studies will compare the two dosimetric methods.

[1] American Association of Physicists in Medicine. Total Skin Electron Therapy: Technique and Dosimetry. AAPM Report no. 23, 1988.

[2] Piotrowski, T.; Milecki, P.; Skórska, M.; Fundowicz, D. Total skin electron irradiation techniques: a review. *Postepy Dermatologii i Alergologii* XXX, v. 1, n. 1, p. 50-55, 2013.

Figure 1

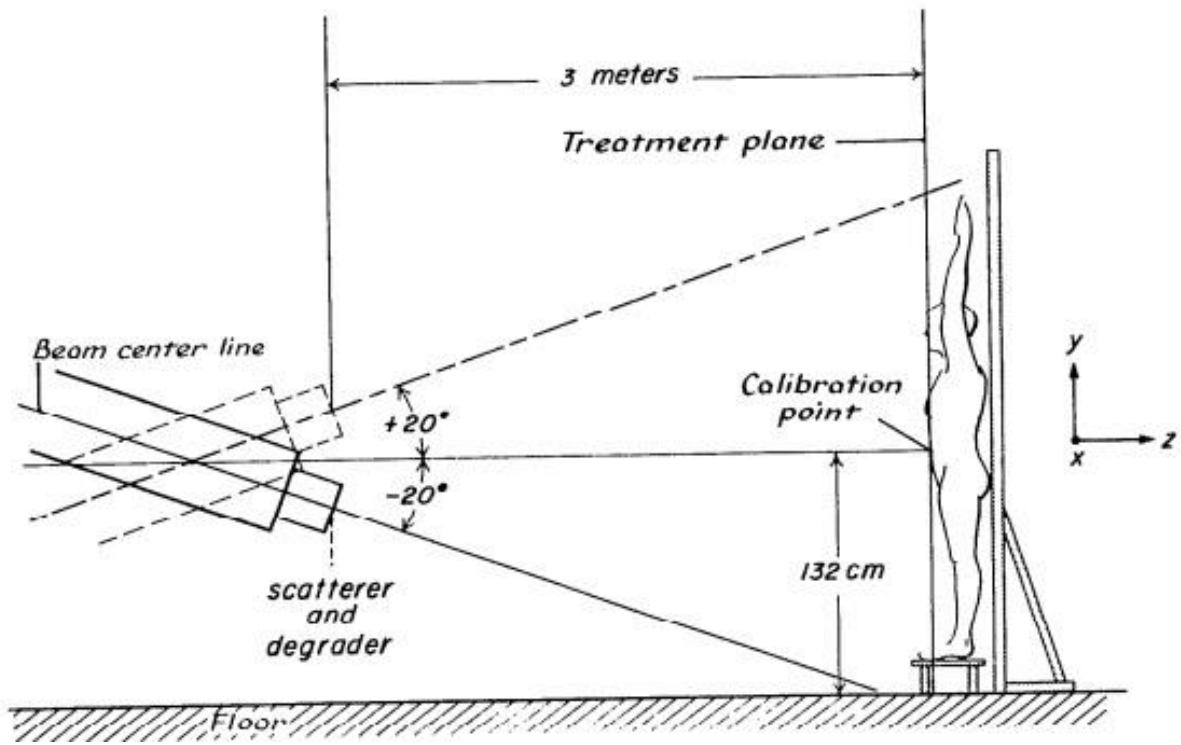


Figure 2



Figure 1

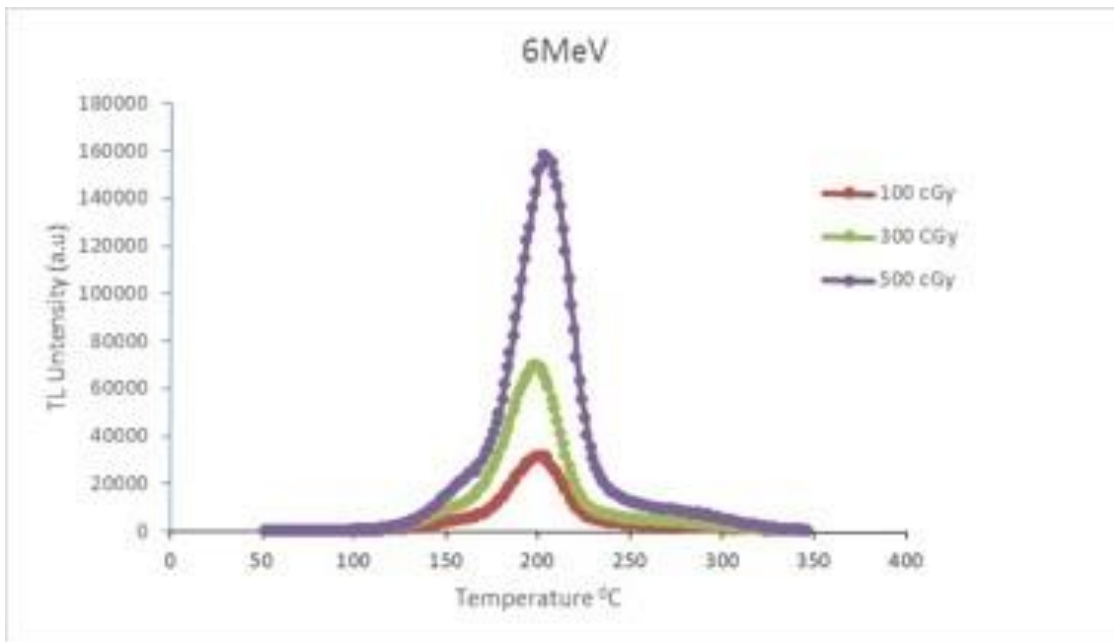


Figure 2

