

AbstractID: 14195 Title: Investigations into treatment planning for mycosis fungoides localized to the face

Purpose:

This work describes an investigation of the best treatment approach to ensure delivery of the desired dose to a patient with extensive mycosis fungoides nodules localized to the face.

Method and Materials:

The physician's treatment goal was to deliver a uniform dose to the patient's entire face to a depth of 5mm. Several treatment methodologies were considered including a partial total skin electron treatment or patched electron beams. Three different electron treatments were evaluated to determine the best approach. Dose distributions were evaluated at multiple axial slices in an anthropomorphic head phantom. TLDs were placed at points of interest to measure the surface dose. Additional treatment considerations addressed include methods to reduce the dose to the posterior region of the scalp, the nose, the ear canals, the oral mucosa, and the lens, as well as the ability of the therapists to reliably deliver the plan to minimize the risk of variances.

Results:

The technique that provided the most homogeneous dose utilized five 25x25cm² electron beams spaced at 60° gantry angles about the patient's head. With this technique the use of oblique beams was an advantage because the depth of dose maximum was raised towards the skin surface. Measurements confirmed the treatment planning algorithms ability to accurately calculate the dose. The use of an immobilization mask reduced patient setup time, further reduced dmax, and permitted use of a single image to verify patient position. In vivo TLD measurements showed a surface dose distribution of ±18%, which is comparable to TSET.

Conclusion:

Pre-treatment dosimetry and involvement of the entire treatment team in the planning process allowed for the confident delivery of an atypical course of radiation therapy without incident. The patient responded as desired and in vivo measurements provided feedback for decisions made by the physician over the course of treatment.