

TECHNIQUE OF TOTAL BODY IRRADIATION USED IN NCKUH

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Purpose: We developed a system for total body irradiation (TBI) in an attempt to shorten patient setup and increase the reproducibility.

Materials and Methods: A special homemade stand with a quasi-saddle shaped chair and an additional immobilization system for the head and body help to position patient in a reproducible manner. Customized lung shields are used to protect the lung from excess tolerance dose. The blocks are screwed in a customized Aquaplast™ Thermoplastics cast which the patient wears like a vest. The reproducibility of the patient's positioning and lung shielding was evaluated by comparing the verification films with the simulation films. In vivo dosimetry was performed by placing diodes in the central axis and in several off-axis sites. Full-course verification of the lung shields was also performed.

Results: The mean horizontal and vertical deviations were 4.8 ± 1.1 mm and 4.3 ± 1.3 mm for the anterior fields, and 3.1 ± 1.1 mm and 3.4 ± 0.9 mm for the posterior fields. The average lung dose was 936 ± 21 cGy. The mean duration per fraction was about 30 ± 5 min for linear accelerator and 55 ± 5 min for ^{60}Co .

Conclusions: Our technique can reach a satisfactory level of reproducibility. It can also increase patient comfort during the treatment.

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Key words: Bone marrow transplant, Total body irradiation, Patient immobilization

INTRODUCTION

Total body irradiation (TBI) followed or preceded by intensive chemotherapy is a widely accepted conditioning regimen before bone marrow transplantation (BMT) in patients with hematological malignancies. The purpose of TBI is to result in bone marrow ablation, eradication of residual malig-

nant cells, and immunosuppression in allogeneic settings. There is no TBI technique that is considered standard. The techniques applied for TBI at various centers and the temporal administration of the dose are dependent on the local radiation facilities and their availability. It is frequently a complex and time-consuming technique that significantly overloads Radiation Oncology Depart-

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