

QUALITY ASSURANCE IN TOTAL BODY IRRADIATION

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The central aspect of all quality assurance programs in radiotherapy is to guarantee the prescribed dose and dose distribution in every treated patient. This should assure as much as possible benefit from the intended treatment and should also facilitate the comparison of treatment results of multicentric studies. It is the topic of this paper to summarize the special aspects of quality assurance in total body irradiation prior to bone marrow transplantation.

In general radiotherapy is an interdisciplinary task and especially this is true for total body irradiation. Many factors influence the clinical outcome of this combined treatment modality and their interaction is by far not well understood.

Quality assurance in total body irradiation covers all steps of this complex treatment regimen including clinical diagnosis, formulation of the therapeutic concept, clinical and physical treatment planning, dosimetry, and treatment verification. A clear dose prescription

is a prerequisite for all following steps in total body irradiation. This is not self-evident and contrasts with more conventional radiation therapy treatment situations because of the complex target volume.

Localization/simulation as the essential part of clinical treatment planning consists mainly in delineating the lung areas to be shielded in order to protect the most critical organ at risk. The requirements on dosimetry and physical treatment planning are outlined including the possibilities and limitations of commercially available therapy planning systems for total body irradiation. Treatment verification procedures comprise the control of the different treatment parameters like patient position, alignment of shielding blocks and compensators or bolus and machine settings. This is similar to the situation in conventional radiotherapy. Besides this the distinctive importance of in vivo dosimetry for quality assurance in total body irradiation will be outlined.

DOSES IN THE URINARY BLADDER DURING RADIOTHERAPY OF WOMEN WITH ADVANCED CERVICAL CARCINOMA.

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The treatment of women with advanced cervical carcinoma consist in the irradiation of the pelvis. The irradiated area includes tumor together with adjacent organs (bladder, rectum). Because of its immediate proximity to the tumor the bladder is particularly exposed to X-rays and is a critical organ in this therapy. We calculated the total dose from brachy and teletherapy in women with advanced cervical cancer using the Target 2 Plus system. The reference points in the pelvis were determined according to the

ICRU-38 report. The doses from teletherapy were 40-44 Gy, from brachytherapy 50-55 Gy in the reference points. The total doses received by the bladder in both parts of the treatment reached 40-75 Gy in the points of maximum exposure. The doses received by the remaining parts of the organ were significantly lower. Determining the total dose makes it possible to modify the dose in the bladder and to prevent possible complications.