A B S T R A C T

Aim: To present the segmented photon beams technique (SPBT) for irradiation of postmastectomy patients.

Background: In majority of techniques for irradiation of postmastectomy patients, a few adjacent photon or electron beams were usually implemented in order to encompass different parts of the target. In the presented SPBT technique, the radiotherapy plan consists of 6 isocentric photon beams and the area CTV includes both the chest wall and the supraclavicular area. This makes it possible to provide a uniform dose to the CTV with no hot and cold points and enables the determination of doses for the entire volume of critical organs.

Methods and material: The treatment forward-IMRT plan comprises six isocentric 4 and 15 MV photon beams. Modulation of the dose distribution for each field was obtained by applying three segments on average. The total dose of 45 Gy was administered in 20 fractions. Dose distributions in target volume and organs at risk were evaluated for 70 randomly chosen patients.

Results: On average, 94.8% of the CTV volume received doses within 95–107% of the prescribed dose. The average volume of the heart receiving a dose of 30 Gy and larger was 2% for patients with left breast cancer. The average dose to the lung on the irradiation side was always lower than 15.5 Gy and the average V20 Gy was below 35.5%.

Conclusions: The SPBT complies with requirements for high dose homogeneity within the target volume and satisfactory level of sparing of organs at risk.

Keywords: Postmastectomy irradiation technique; Dose distribution; Forward – IMRT