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Abstracts

Assessment of radiotherapy set-up error for limb sarcoma using electronic portal imaging (epi)

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Aims:

There are few published data on radiotherapy set up variation in limb sarcoma patients. In routine practice a margin is added to the clinical target volume (CTV) to produce a planning target volume (PTV) in immobilised patients, to ensure the CTV receives the prescribed dose in the majority of patients despite daily variation in set-up (van Herk, 2004). This margin is dependent on the set-up error in individual departments. We aimed to determine the set up error for our department and calculate appropriate CTV-PTV margins based on this data.

Methods:

Weekly EPI's for patients receiving radical radiotherapy for limb sarcoma between 15/11/05-14/11/06 were reviewed (49 consecutive patients). Geometric variation in set-up assessed and recorded in three dimensions (left-right, superior-inferior and anterior-posterior). These data were used to calculate systematic and random errors which were in turn used to calculate appropriate margins for our department.

Results:

589 images were reviewed (mean 12 per patient), of which 512 (90.5%) were within 5mm. All images were within tolerance for 63% of patients. 11 patients (22%) required some adjustment to their treatment position. This was required most frequently in the first and fourth week, although could occur at any stage of treatment. Appropriate departmental CTV – PTV margins were calculated as follows: 4.3 mm left–right, 5.3 mm superior-inferior and 4.4 mm anterior-posterior.

Conclusions:

These data suggest that a 5mm margin (CTV → PTV) is acceptable for our department. Our data also supports weekly EPI as patient set up can vary at any stage of treatment.