

Purpose:

To analyze the margin from CTV to PTV for radiotherapy using imaged-guided radiotherapy (IGRT) or not in lung cancer. To confirm the effect of reducing margin by using IGRT.

Methods:

According to << Geometric Uncertainties in Radiotherapy>>, the margin from CTV to PTV for radiotherapy in lung cancer was calculated. The influencing factors about the margin included: 1. the uncertainty for delineation of target volume. 2. tumor motion. 3. transfer errors from reference frame. 4. set-up errors. New PTV was validated in two lung cancer patients.

Results:

The margins for using IGRT or not were 0.99cm and 0.99cm in left and right, 0.88cm and 0.92cm in anterior and posterior, 1.28cm and 1.43cm in superior and inferior, respectively. The validated results were satisfying.

Conclusions:

The uncertainty for delineation of target volume may be the most influencing factor for the margin from CTV to PTV for radiotherapy in lung cancer. So it is very important to constitute the delineative criterion. The set-up errors were less than 2mm by using IGRT, which were smaller in the total 1cm margin. It is not safe and scientific to reduce the margin just according to set-up errors.