

3479

## Comparison of Target Volume in CT alone with that in PET/CT of Patients with Lung Cancer

Mi-Hwa Kim<sup>1</sup>, Seunghee Kang<sup>1</sup>, Youngtaek Oh<sup>1</sup>, Kyoung-Sik Choi<sup>1</sup>, and Mison Chun<sup>1</sup>

<sup>1</sup> Dept. of Radiation Oncology, Ajou University Medical Center

[msmhkim@chol.net](mailto:msmhkim@chol.net)

**Purpose:** By the use of PET/CT images together enhanced CT images for definition of target volume, we compared the target volume in CT alone with that in PET/CT. We observed variability in the delineation of target volumes in the same PET/CT images. We evaluated the usefulness of target volume definition through the fusing enhanced CT to PET/CT and how to minimize the variability in the delineation of target volumes when delineating directly on PET/CT images. **Methods and Materials:** We obtained Enhanced CT and PET/CT images of thirteen patients with lung cancer in a PET/CT scanner, and images were coregistered in GE advantage workstation. A physician drew target volume through window level of mediasternum and lung on the enhanced CT images and the corresponding PET images were overlaid to the CT images to define the target volume. We also delineated the target volume directly through various display on PET images. **Results:** Coredgistered PET/CT showed good fusion accuracy, but not good about coregistered PET/CT to enhanced CT. The position of delineated target independently on both PET/CT and enhanced CT images wasn't corresponded with each other and was shifted a little. Particularly, the delineated target volumes independently on enhanced CT images were depended on the window level such as mediasternum setting and lung setting value of enhanced CT images. To delineate the target volume directly through various display on PET images is very difficult because of ambiguity of target edge due to halo phenomenon in different color display. So we used threshold value. When delineating target with threshold 2% on various display, ambiguity of target edge was reduced. **Conclusions:** The variability in the delineation of target volumes in the same PET/CT images was reduced by using threshold but the accuracy of target volume wasn't good because SUV of tumor wasn't reflected. The position of target is shifted a little during enhanced CT scanning after PET/CT scanning due to respiration. So the respiration has to be considered when fusing the scanning data. And when the target volumes were delineated independently on enhanced CT images, adequate window level on the enhanced CT images must be selected in order to correspond target position and volume of enhanced CT images with that of PET/CT images.

**Keywords :** Enhanced CT, PET/CT, Target Volume