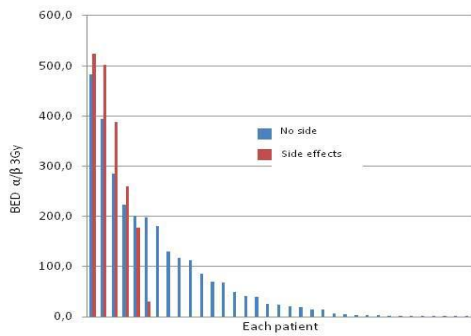Maximum dose to the brachial plexus for each patient and neurological side effects

Conclusions: SBRT of apically located lung lesions may cause severe neurological symptoms; D_{max} and large PTV being risk factors.

PO-0666
Evaluation of image guided radiotherapy (IGRT) in lung cancer. Is weekly cone beam CT (CBCT) enough?

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Purpose/Objective: To determine if a weekly cone-beam CT (CBCT) is enough to evaluate the entire tumor inclusion and the reproducibility throughout the radiation course treatment in lung cancer.
Materials and Methods: Thirty-six lung cancer patients were treated with image-guided radiotherapy (IGRT) on an Elekta Synergy Beam Modulator linear accelerator.
The GTV included the tumor and the positive nodes in PET-CT and pathologic analysis. The PTV was configured with the GTV and a margin of 0.7 cm – 1 cm in all directions.
In our protocol of lung cancer treatment, prior to each radiotherapy fraction we make one cone-beam CT every day on the first five days of treatment using automated soft-tissue registration. The positional errors of the reference image in relation to the acquired image (given in terms of translation movements) were obtained. No rotations were permitted. The average of these translational movements in the three axes (x, y, z) was calculated. This average was applied from the sixth day of treatment until the end. Weekly image guidance was registered resulting in at least 10 CBCT scans for each patient. The deviations in the three axes in every weekly CBCT with respect to the average were analyzed (Tx, Ty, Tz)
Results: The graphics summarize the result of our analysis.
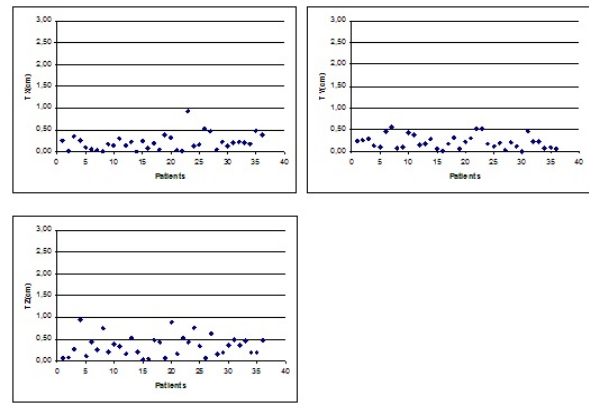
In 29 patients (80.6%) the mean value of the difference between the positional errors compared to the average was: x = (0.19 ± 0.14) cm, y = (0.21 ± 0.14) cm, z = (0.27 ± 0.16) cm. All these values were less than 0.5cm and were considered correct for the suitable treatment of the patients. The shifts in the z axis showed more variability compared to the other axes mainly related to breathing movements. Nevertheless this z axis variability did not influence on the entire tumor inclusion and the set up reproducibility.
In the other 7 patients (19.4%) we obtained a greater difference in either axes, and a CBCT more often than once a week was evaluated by the physician.
Conclusions: Our preliminary results showed that in most lung cancer patients treated with IGRT, once an average is calculated after the first five days of treatment, a weekly cone-beam CT is enough to evaluate the entire tumor inclusion and the reproducibility throughout the radiation treatment.

PO-0667
Cardiac toxicity in lung cancer patients after chemo-radiotherapy (CART): a pilot study

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Purpose/Objective: Lung cancer is responsible for 22% of cancer deaths annually. One factor which may contribute to reduced survival is treatment related toxicity. Whether the cardiotoxic effect of chemo-radiation may contribute to adverse outcome in lung cancer is uncertain. The aim of this pilot study is to use cardiac MRI to investigate cardiac muscle injury, function and cardiac biomarkers in patients being treated for non-small cell lung cancer (NSCLC).
Materials and Methods: The study plans to recruit 20 evaluable NSCLC patients. Study assessments are made on 4 occasions: pre-treatment, during treatment, 6 weeks and 6 months after treatment initiation. Evaluations include clinical assessment, cardiac MRI, ECG and serum cardiac biomarkers.