using coplanar beams with 6 MV photons and the treatment was performed with DHX LINAC, VARIAN System. Pretreatment kV CBCT images were obtained at 1, 2 and 3 day of irradiations set-up corrections were made before treatment if the translational setup error was greater than 3 mm in any direction. Subsequently a weekly kV CBCT was repeated for whole duration of treatment.

Results: A total of 360 CBCT scans were acquired and analyzed. The systemic errors results 1.26 mm (SD ± 0.177) in RL direction, 1.25 mm (SD ± 0.187) in SI direction and 1.8 mm (SD ± 0.255) in AP direction. The range of deviations were 0-9 in RL directions, 0-5 mm in SI direction and 0-10 mm in AP direction. The frequencies of setup error > 3 mm in RL direction was 3.9 %, in SI 8 % and AP directions 15.5 %, respectively. Analyzing the CBCT before set-up corrections the frequencies of setup error > 3 mm were 17.8 %, 10.6 % and 5.6 % in AP, SI and RL respectively. After set-up errors corrections (corrections via couch shifts or patient repositioning) these rates were reduced to 13.3 %, 7.2 and 2.2 % in PA, SI and RL direction, respectively.

Conclusion: The results of our study confirmed that image guidance with kV CBCT represents an effective tool for measuring set-up accuracy in the treatment of H&B cancer patients. This study suggested that kV CBCT once a week is adequate to overcome the problem of set-up errors in head and neck cancer treated with IMRT technique.

PV-0275
IMRT for non-small cell lung cancer: a decade of experience at the Ghent University Hospital.
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Purpose or Objective: In 1998, our institute developed a class-solution for intensity-modulated radiotherapy (IMRT) for lung cancer. Clinical implementation of IMRT gradually started as of 2002. This retrospective study reports on toxicity and overall survival (OS) of non-small cell lung cancer (NSCLC) patients treated with curative intent using the described IMRT set-up.

Material and Methods: Between 2002 and 2013, a total of 434 patients with a thoracic malignancy have been treated with IMRT in the Radiation Oncology department of the Ghent University Hospital. Those with NSCLC and receiving a total dose of ≥60Gy with fraction size <3Gy, a total 223, were retrospectively reviewed and formed the basis of this analysis. Clinical endpoints of OS and acute and late pulmonary and esophageal toxicity grade ≥3 were analyzed in relation to chemotherapy (concomitant vs. sequential chemoradiotherapy (CRT) vs. no chemotherapy) and use of standardized dose-volume evaluation criteria. Analysis was performed in SPSS using Kaplan-Meier curves for survival and Chi-square analysis for toxicity.

Results: Median follow-up time is 18 months (range 2-125). The table reports patient, tumor and treatment characteristics. OS was scored for all patients as date of death (N=140) or, if missing, as date of last consultation in our hospital (N=83). Acute and late toxicity data were available for 219 and 95 patients respectively. Median OS for the entire population was 25 months, 5 year OS 24%. OS was significantly better for patients treated with concomitant CRT than for those undergoing the sequential approach (median OS 30 months vs. 23; 5 years OS 32% vs. 12%) (p<0,05). Acute grade ≥3 pulmonary toxicity occurred in 7.8% of the patients, without significant difference between concurrent and sequential CRT. Acute grade3 esophageal toxicity occurred in 5.5% of patients overall; and was significantly worse (p<0,01) in patients treated with concomitant CRT compared to sequential CRT: 10.4% vs. 4.3% respectively. Late grade 2 toxicity in 13,2% and 1,4% of the cases respectively. Although there was a trend towards reduced esophageal toxicity, the use of standardized dose-volume evaluation criteria (N=38) did not influence pulmonary (p=0.60) nor esophageal (p=0.08) toxicity significantly.

Conclusion: In spite of the low 5-year OS in patients undergoing sequential CRT, the entire NSCLC population treated with IMRT in our institution obtained OS in line with that reported in the literature. IMRT further confirms the potential for reduced toxicity as observed in other single-center experiences. Regardless of the lack of documented significant impact, we are convinced that the use of standardized dose-volume evaluation criteria has contributed to this positive outcome and is a precondition to exploit the full potential of IMRT in NSCLC.