

## EP-1202

CBCT in Lung FFF-SABR: predictive parameters of early response

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**Purpose or Objective:** aim of the study was to analyze tumor volume variations, by contouring on cone-beam computed tomography (CBCT) images, to evaluate early predictive parameters of Flattening Filter Free Stereotactic Ablative Radiation Therapy (SABR) treatment response.

**Material and Methods:** the prescribed dose of SABR varied according to the tumor site (central or peripheral) and maximum diameter of the lesions using a strategy of risk-adapted dose prescription with a range of dose between 48 and 70 Gy (3-10 consecutive fractions). For the purpose of the analysis, gross tumor volume (GTV) was re-contoured for each patient at first and last CBCT using two lung levels/window: 1) -600/1000 Hounsfield Units (HU) and 2) -1000/250 HU. Statistical analysis was performed to evaluate correlations between target variations on CBCT, using the two window-levels, and treatment response three months after the end of SABR. The analysis was conducted considering the following variables: number of fractions  $\geq 5$ , BED 95-110, BED > 110 and GTV volume pre-SABR > 6 cc.

**Results:** 41 lung lesions were evaluated. The median follow-up was 14 months (range, 5 - 43 months). For both the CBCT level/windows, GTV shrinkage of at least 20% was associated to the probability of achieving a disease complete response (CR) at 3 months. The probability of CR ranged between 6 and 8 times higher, in respect to the CBCT lung level adopted, comparing to patients without a GTV decrease of 20%. This cut-off value was confirmed for all the variables analyzed.

**Conclusion:** according to current findings, a tumor shrinkage cut-off of at least 20% at last session of SABR is predictable for CR

## EP-1203

Stereotactic raditherapy for oligometastases or oligorecurrence within a mediastinal lymph node

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**Purpose or Objective:** This study was to evaluate the safety and efficacy of stereotactic radiation therapy (SRT) in the treatment of patients with oligometastases or oligorecurrence within a mediastinal lymph node (MLN).

**Material and Methods:** Between October 2006 and May 2015, patients with oligometastases or oligorecurrence within MLNs originating from different primary tumor were enrolled and treated with SRT at our hospital. The primary end-point was MLN local control (LC). Secondary end-points were: time to symptom alleviation; overall survival after SRT (OS); and toxicity using the Common Terminology Criteria for Adverse Events (CTCAE v4.0).

**Results:** Eighty-five patients with 98 MLN oligometastases or oligorecurrence were treated with SRT. For the entire cohort, the 1-year and 5-year actuarial LC rates were 97.3% and 77.2%, respectively. Symptom alleviation was observed in 28 patients (28/32, 87.5%), with symptomatic lesions after a median of 5 days (range, 3-30 days). The median OS were 27.17 months for all patients and 32.20 months for those with NSCLC. Univariate and multivariate analyses revealed that an interval between diagnosis of primary tumors and SRT and MLN PTV volume were independent prognostic factors for OS in patients with NSCLC. CTCAE v4.0 Grade 3 toxicities occurred in six patients (7.06%), with Grade 5 in three patients (all with radiotherapy history to MLN station 7).

**Conclusion:** SRT is a safe and efficacious treatment modality for patients with oligometastases or oligorecurrence to MLN, except for patients who received radiotherapy history to MLN station 7. Further investigation is warranted to identify the patients who benefit most from this treatment modality.

## EP-1204

Predicting toxicity after lung stereotactic radiation therapy

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**Purpose or Objective:** Lung SBRT has shown excellent local control rates for inoperable patients with early-stage lung cancer without lymph node involvement. The reported toxicity is low, but factors associated with toxicity such as pneumonitis or lung fibrosis have not been well documented.

**Material and Methods:** All inoperable patients treated in our institution between August 2007 and April 2013 with SBRT for peripheral early-stage lung cancer were included. Endpoints of the study were rib fracture, acute pneumonitis, lung fibrosis, hemoptysis. Univariate binary logistic regressions were used to look for statistical associations between binary (eg, gender), ordinal (eg, age, dose per fraction, total dose, number of treatment session, V20, mean lung dose, volumes) or nominal (eg tracking method, previous treatment) variables and the study endpoints. Multivariate logistic regression was to be performed if more than 1 factor was associated with 1 of the outcomes of interest with a P value of less than .2. Treatment fractionation regimens were adapted according to tumor localization.

**Results:** 205 patients with 214 lesions were included in the study (67 central and 147 peripheral). 73 patients (36%) had toxicities: 14 patients (6.8%) had acute pneumonitis and 56 lung fibrosis (27.3%) without clinical effects. Two patients had a rib fracture (1%) and 1 patient had rib cage pains. No other toxicities were observed. In univariate analysis, a lower number of treatment sessions ( $p=0.018$ ) and higher dose per fraction ( $p=0.011$ ) were associated with more toxicity. Longer treatment sessions were associated with more acute pneumonitis ( $p=0.001$ ). Lung fibrosis was associated with a higher dose per fraction ( $p=0.027$ ). Tracking was also associated with a higher rate of lung fibrosis, but patients treated with tracking had bigger tumors (mean diameter : 21.9 mm vs 28 mm). Tumor localization (central vs peripheral) was not a predictive factor of toxicity.

**Conclusion:** A higher dose per fraction and fewer treatment sessions were associated with more toxicity. Tumor localization was not associated with toxicity, suggesting that treatment regimens adapted for central tumors are efficient in minimizing toxicity.

## EP-1205

Resected pN1 non-small cell lung cancer: recurrence patterns and nodal risk factors

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**Purpose or Objective:** To describe the pattern of recurrence in resected pN1 non-small cell lung cancer (NSCLC), aiming to identify clinical, pathological, treatment and nodal factors predicting an increased risk of locoregional recurrence (LR) or distant metastasis (DM), in order to define a selected population who may benefit of postoperative radiotherapy (PORT).