Conclusion: Obtained results do not permit to form robust conclusion concerning role of RT in the management of thymic tumors patient. Besides clear, unquestionable bad prognostic factors as bad PS, low differentiation, presence of local relapse, lung fibrosis, second malignancy or distant metastases, we found only one more - male sex, decreasing LC.

EP-1215
Do higher doses of palliative radiotherapy still prolong survival in stage III/IV NSCLC?
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Purpose or Objective: In a UK Medical Research Council trial carried out before the widespread use of chemotherapy or CT-PET, palliative thoracic radiotherapy delivering 39 Gy in 13 daily fractions conferred an overall survival (OS) benefit when compared to 17 Gy in 2 weekly fractions in good performance status patients with radically treatable NSCLC. To determine whether this benefit persisted with contemporary standards of staging and systemic therapy, we studied the outcomes of patients with locally advanced/metastatic NSCLC receiving palliative radiotherapy in our centre over a 2 year period.

Material and Methods: The case records of 176 patients who received palliative thoracic radiotherapy in 2011 or 2012 were reviewed retrospectively. Data collected included age, stage, performance status, dose/fractionation, additional treatments and survival.

Results: 36 patients received high dose thoracic radiotherapy (HDTRT, 36-40 Gy in 12-15 fractions) and 140 received a lower dose (LDTRT), 20 Gy in 5 fractions. Median OS in the HDTRT group was 8.5 months and 5.5 months in the LDTRT group (hazard ratio 0.6, p <0.01). 12 patients received chemotherapy and HDTRT with median OS 12m vs 7m in the 25 patients receiving chemotherapy and LDTRT. In those who received HDTRT alone, median OS was 6.5m vs 4m for LDTRT alone. In patients with stage II-III disease median OS was 9.6m vs 6m for LDTRT. In those with stage IV disease, median OS was 8m for HDTRT vs 5m for LDTRT. In patients with performance status 0-2 median OS was 9m for HDTRT vs 6m for LDTRT, while in the two patients with performance status 3 who were irradiated it was 1m with HDTRT vs 3m with LDTRT.

Conclusion: This audit of contemporary practice suggests that the survival benefit of high dose palliative radiotherapy reported by Macbeth (Clin Oncol (R Coll Radiol). 1996;8:167-75) persists with modern staging and systemic therapy practices, and may also extend to patients with small volume stage IV disease excluded from that trial, but not those with poor performance status.

EP-1216
Differential diagnosis between toxicity and recurrence after SBRT in early stage inoperable NSCLC
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Purpose or Objective: SBRT is the standard treatment of early stage inoperable NSCLC. Parenchymal changes (PC) after SBRT make it difficult the differential diagnosis between treatment effects and disease recurrence. The purpose of our study was to identify the radiographic features (High Risk Features: HRFS) with high specificity (SP) and sensitivity (SE) for early detection of recurrence.

Material and Methods: We retrospectively evaluated patients treated with SBRT for inoperable early stage NSCLC. Median dose was 50 Gy in 5 fractions (range, 45-60 Gy /3-12 fractions) prescribed to 80% isodose. All patients underwent chest computed tomography (CT) before SBRT and after 3, 6, 12 months (thereafter annually). Using a chest CT scan radiological aspects according to Huang et al. classification (Huang et al., Radiother Oncol 2013;109:51-57) were evaluated. 18F FDG-PET was used in case of suspected tumor recurrence.

Results: Forty-five patients were included, 34 males and 11 females; mean age was 75.7 years (range, 60-86 years); 77.8% of patients had stage IA disease and 22.2% stage IB with a mean follow-up of 21 months, local control was 69%. Benign acute CT changes (up to 6 months after SBRT) were observed in 34 patients (patchy consolidation was the most frequent) and late changes (after 6 months) in 44 patients (mass-like fibrosis was the most frequent). HRFS were identified in 20 patients, enlarging opacity at primary site in 9 patients, enlargement after 12 months in 20 patients, bulging margin in 7 patients, disappearance of linear margin in 2 patients, loss of air bronchogram in 18 patients and cranial-caudal growth in 15 patients. These HRFS were individually significantly associated with local recurrence of the disease. The better predictor of relapse was enlargement opacity at 12 months (p <0.001) with SE: 84.6% and SP: 71.8%. The presence of > 1 HRFS demonstrated a higher SE (93.3%) (p <0.02) with SP: 59.4%.

Conclusion: Detection of HRFS is predictive of relapse with a SE increasing with the number of observed HRFS. This observation allows to better define the diagnostic algorithm in follow-up, suggesting to perform further exams only in patients with > 1 HRFS.

EP-1217
Effect of overall treatment time in dose escalation for radiotherapy of NSCLC. BED-time analysis
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Purpose or Objective: Because there is a positive correlation between radiation dose and local control (LC) in non-small cell lung cancer (NSCLC) although with no impact on overall survival (OS) our institutional protocol allowed moderate radiotherapy dose escalation up to 70 - 74 Gy (BED: 84 - 88.8 Gy) on the standard 60-66 Gy (BED: 72 - 79.2 Gy) providing that organs-at-risk are kept in tolerance. This retrospective study aims to assess the impact of dose escalation in clinical outcome when the duration of radiotherapy is taken into account through the use of BED model corrected by time (tBED)

Material and Methods: 78 consecutively patients with unsectable NSCLC were retrospectively analyzed. All were PET-CT staged and were treated with platinum-based chemotherapy (either concomitant or sequential) and 3DCRT. Two groups were compared according to prescribed dose level: Standard Dose Group (SD) n = 38 those receiving nominal prescribed BEDs 79.2 Gy and Escalated Dose Group (ED) n = 40 those receiving > nominal prescribed BED >79.2 Gy. For both groups actual administered dose corrected for the duration of treatment (tBED) was calculated using the formula (tBED (Gy) = n d /79.2 Gy) providing that organs-at-risk are kept in tolerance. This retrospective study aims to assess the impact of dose escalation in clinical outcome when the duration of radiotherapy is taken into account through the use of BED model corrected by time (tBED)
Results: For the entire group median follow-up and overall survival (OS) were: 17.7 months (mo) (IQR: 10.3-27.9) and 19.1 mo (95% CI 13.9-24.3). Median tBED for entire group was 45.8 Gy (IQR 40.5-49) tBED in SD and ED group were 42.2 (IQR 37.4-45.2) and 48.9 Gy (IQR 45.7-49.7) Univariate analysis by groups: Actuarial median OS: SD vs. ED was: 17 mo (95% CI 13.6-20.3) vs. 22.3 mo (95% CI 9.6-35) p = 0.18. Actuarial median DFS SD vs. ED was: 8.3 (95% CI 7.2 - 9.3) vs. 12.8 mo (95% CI 3 - 22.7) p = 0.009. Actuarial median TPFS (mo) SD vs. ED was: 8.4 (95% CI 7.2-9.5) vs. 21.8 (95% CI 13.2-30.5) p = 0.003.

On multivariate analysis significant predictors for OS, DFS and TPFS are depicted on table: radiotherapy dose was found not to be a significant factor.

<table>
<thead>
<tr>
<th>Variable</th>
<th>OS HR (95% CI)</th>
<th>DFS HR (95% CI)</th>
<th>TPFS HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS (0 vs. 1)</td>
<td>1.03 (0.88-1.45)</td>
<td>1.13 (0.79-1.61)</td>
<td>2.29 (1.31-4.2)</td>
</tr>
<tr>
<td>Medicaltronomy +/- [4]</td>
<td>0.64 (0.035 -0.93)</td>
<td>0.12 (0.025 -0.66)</td>
<td></td>
</tr>
<tr>
<td>Weight loss (50% of body)</td>
<td>3.85 (1.33 -8.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusion: On univariate analysis, but not on multivariate, ED associated statistically significant better DFS and TPFS and non-statistically significant better OS, even when adjusted to overall treatment time. Due to treatment time delays SD group received a suboptimal dose of radiotherapy and ED group received a tBED which virtually match nominal 60 Gy. Our data in agreement with those resulting from randomized trials strongly support that 60 Gy @2 Gy with 60 Gy. Our data in agreement with those resulting from randomized trials strongly support that 60 Gy @2 Gy with stringent control of time delays is the gold standard in the radiotherapy for NSCLC.

EP-1219
Salvage radiotherapy for locoregionally recurrent non-small cell lung cancer after resection
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Purpose or Objective: Radiotherapy with or without chemotherapy is commonly used for isolated loco-regional recurrence of non-small cell lung cancer (NSCLC) after initial surgery. This study was undertaken to evaluate the outcomes and complications of curative radiotherapy for locoregionally recurrent NSCLC.

Material and Methods: Medical records of 57 patients who received curative radiotherapy for locoregionally recurrent NSCLC without distant metastasis after surgery from 2004 to 2014 were retrospectively reviewed. At the time of recurrence, the median age was 67 years (range 34-81 years), and most patients (84.2%) have good ECOG performance status. All patients initially received a curative intent operation, and the median disease-free interval was 14 months. For locoregionally recurrent lung cancer, forty-two patients were treated with concurrent chemoradiation therapy (CCRT), and 15 patients with radiotherapy alone. Radiation dose ranged from 45 Gy to 70 Gy (median 66 Gy) by a three-dimensional conformal technique. Lung function change after radiotherapy was evaluated by comparing pulmonary function tests before and after radiotherapy.

Results: Median follow-up after recurrence was 20 months. Six patients showed a complete response, and 39 patients showed a partial response. The median survival was 30 months. Two-year locoregional recurrence-free survival (LRFS), distant metastasis-free survival (DMFS), disease-free survival (DFS) and overall survival (OS) rate were 46.1%, 37.2%, 31.9%, and 65.1%, respectively. Eleven patients showed disease progression within the radiation field after radiotherapy. Pulmonary function decreased meaningfully after radiotherapy, and radiation pneumonitis of any grade was seen in 19 patients. In the multivariate analysis, age under 70 years was associated with good OS (p=0.047); concurrent chemoradiotherapy with good OS (p=0.014), and DFS (p=0.003); and single-station recurrence with good OS (p=0.01). DFS (p=0.022), and LRFS (p=0.01). Conclusion: Patients who have locoregionally recurrent NSCLC showed favorable survival outcomes with salvage radiotherapy. However, lung function should be carefully evaluated before and after radiotherapy. Young age, single site recurrence, and the use of CCRT were good prognostic factors of overall survival. In patients with good prognostic factors and suitable for curative radiotherapy, CCRT could be considered to improve treatment outcomes.

Utilisation of new functional imaging in NSCLC radiotherapy: Can we use DW-MRI?
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Purpose or Objective: Precise delineation of primary lung cancer mass and involved mediastinal LN is very important requirement in order to improve radiotherapy outcome and minimize treatment toxicity. Diffusion weighted MRI (DW-MRI) is a recently introduced functional imaging modality, having higher sensitivity and specificity than CT to differentiate lung cancer from post-obstructive lobar collapse. Also able to pinpoint lymph nodes with and without metastasis. The apparent diffusion coefficient (ADC) is the quantitative parameter of DW-MRI with cut off value 1.4 x 103 mm2/s which can be used as a good tool to contour Target volumes in lung cancer.

The aim is to study the feasibility of using the images of DW-MRI and data of ADC map for radiotherapy contouring purposes.

Material and Methods: Twenty cases of newly diagnosed lung cancer patients underwent CT chest with contrast and respiratory gatted DW-MRI with b value of 0, 500, 1000s/mms. Both studies were obtained in the same position, respiratory phase and slice thickness (5mm) in order to allow proper image fusion. For each patient, we’ve delineated GTV for primary lung mass and GTV-LN for involved mediastinal LN on both CT scan (guided by size) and DW-MRI (guided by T2W and the ADC map ) together with delineation of the nearby risk structures. Auto margins were taken for the CTV and the PTV. The impact of using MRI on stage and different treated volumes was assessed and compared.