Conclusions: With <G2 lung toxicity, the score was 3.75 for patients with palliative radiotherapy. Retrospective audit of patients of advanced lung cancer treated EP-1033 performed formal dosimetric analysis of the rib dose to assess if there is higher D2cm as a surrogate for potential higher rib dose and we will did not predict for clinical toxicity. Further analysis is required to see impact of short regimen RT in patients with advanced lung cancer. Optimal dose and fractionation needs to be ascertained. To assess the symptoms for which local treatment is often required. Radiotherapy diagnostically associated with poor prognosis.

**EP-1032 Can dosimetric parameters predict lung toxicity in SABR patients?**

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**Purpose/Objective:** SABR is increasingly considered as a standard of care in medically inoperable patients with early stage peripheral lung tumour(s). Radiation pneumonitis (RP) is more of a clinical concern in this population due their background lung disease. Though dosimetric lung parameters for conventional radiotherapy are better defined, such data in SABR is group is limited. We present an update of a previous study assessing correlation between clinical toxicity and abnormal dosimetric parameters with more patient numbers and longer follow up.

**Materials and Methods:** 209 patients were treated at St.James’s Institute of Oncology, Leeds, UK with three risk adapted SABR fractionations 54Gy in 3, 55Gy in 5 and 60Gy in 8 fractions from September 2009 to April 2012. UK SABR Consortium dose constraints were used for these different fractionation schedules. Various dosimetric parameters like R100 (ratio of 100% isodose volume to PTV), R50, V2cm, mean lung dose and D2cm (maximum dose 2 cm2 from PTV in any direction) were computed for all the patients and where there is deviation from constraints, clinical toxicity was evaluated and graded according to Common Toxicity Criteria v4.0.

**Results:** At the time of analysis median follow up for the group was 21 months (IQR 6-23 months). Mean lung dose in patients with <grade 2 (G2) toxicity was 4.2 Gy and 3.6 Gy in patients with ≥G2 lung toxicity. 50 patients (23%) had ≥G2 early lung toxicity (4 patients G2, 1 patient G3 toxicity). Only 2 out of 23 patients(pts) with abnormal V2cm developed G2 pneumonitis which resolved with steroids. 7 patients with high R100 (33%) developed G1 to G3 early lung toxicity (2 pts G2, 1 pt G3). The one patient with grade 3 toxicity improved with steroids. NCTM, the 5 patients with high R50 had out of 30 patients with high D2cm (surrogate for rib dose), only 3 patients developed rib fractures. Mean FEV1 for patients with ≥G2 lung toxicity was 1.3 litres/min (0.5-3.9) and 1.2 litres/min (0.59-2.2) for patients with ≥G2 toxicity. Median Medical Research Council (MRC) breathlessness score was 3.75 for patients with ≥G2 toxicity and 3.5 for patients with ≥G2 lung toxicity.

**Conclusions:** In our study, various dosimetric and clinical parameters did not predict for clinical toxicity. Further analysis is required to see if there are any other predictive metrics for lung toxicity in this challenging population. In addition, in this analysis we have used a higher D2cm as a surrogate for potential higher rib dose and we will perform formal dosimetric analysis of the rib dose to assess if there is a correlation between dose and rib toxicity.

**EP-1033 Retrospective audit of patients of advanced lung cancer treated with palliative radiotherapy**

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**Purpose/Objective:** In India, 63,000 new lung cancer cases are diagnosed annually with two-thirds in stage III and IV at presentation. Even in metastatic disease, predominant symptoms include chest symptoms for which local treatment is often required. Radiotherapy (RT) is an excellent modality to relieve these symptoms, however, optimal dose and fractionation needs to be ascertained. To assess the impact of short regimen RT in patients with advanced lung cancer.

**Materials and Methods:** Retrospective audit of consecutive patients of advanced lung cancer (NSCLC & SCLC), receiving palliative thoracic radiotherapy (TRT) during the period from January 2012 to mid November 2012 was conducted. Patient related factors age, gender, smoking habits, predominant symptom, comorbidity, performance score (ECOG), tumour related factors stage, histology were recorded. TRT was planned using megavoltage radiotherapy with conservative treatment volume by giving smaller margin to gross disease. Treatment related factors (RT dose, dose fractionation), use of systemic therapy were recorded. Subjective response to RT (improvement in symptom index) was recorded. Overall survival was calculated.

**Results:** Of 68 patients treated with palliative TRT during this period with median age 57 years (range 24-80 years), 57 patients were males, 31 smokers, 48.5% in stage III at presentation and 51.5% in stage IV. The NSCL cancer (squamous cell-26, adenocarcinoma-21, NOS-8) and remaining were SCLC, 38 patients had ECOG PS ≥2. The predominant symptoms included pain (48.5%), cough with pain (14.7%), dyspnea (11.8%), SVCO (11.8%), cough (7.4%), pain with dyspnea (2.9%) and 2.9% patients had brachial plexopathy. Of these, 50 patients were treated with short course once weekly schedule using 16Gy/2 fractions or 17Gy/2 fractions, considering the volume to be treated. Seven patients did not receive second fraction due to various reasons. Twelve patients required analgesics for pain relief. 40 patients had greater than 50% relief in the symptoms after once weekly radiotherapy with a median duration of symptom relief of 2 months. 41 patients received systemic treatment. At last follow up, 17 patients had died due to disease progression. Median overall survival was 3.5 months.

**Conclusions:** Short course RT provides good intra-thoracic symptom relief in advanced lung cancer patients with compromised PS.

**EP-1034 Report of outcomes with Volumetric Arc Modulated Radiotherapy (VMAT) for thoracic tumours**

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**Purpose/Objective:** VMAT uses continuous gantry rotation to deliver multiple beam segments and has the advantage of faster treatment delivery compared to standard conformal radiotherapy. This technique has the theoretical advantage of better sparing of organs, but there is concern that larger volumes of low dose irradiation may increase toxicity. This study assessed if 3D conformal planning constraints are valid for VMAT planning and to determine toxicity and survival outcomes.

**Materials and Methods:** Data on patients with lung carcinoma (stage I-III) and oesophageal carcinoma (stage III) who were treated with VMAT were obtained retrospectively. Radiotherapy treatment was planned using Autobeam version 4.6. Stage III lung patients received induction or concurrent chemotheraphy, and oesophagus patients received induction chemotherapy followed by chemoradiotherapy. Patients were assessed weekly for toxicity during treatment, and then at 3-6 monthly intervals up to 2years. Toxicity was graded according to the Common Toxicity Criteria (CTC)v4.0. Doses received by the heart, lung, oesophagus, spinal cord, and liver were evaluated. An oesophageal dose constraint was not applied. Statistical analyses were performed to assess the relationship between dose volume parameters and toxicity. Outcome data was analysed using Kaplan–Meier survival curves.

**Results:** 68 patients (42lung, 26 oesophagus) were treated between 7/4/2008 and 31/1/2012, and received doses ranging from 50-64 Gy. The average age was 67.8 years (range 43-81). The median duration of follow-up was 11.6 months. The mean lung dose was 11.2 Gy (range 3.3-19.41), 8.8% (6/68) and 4.4% (3/68) patients experienced grade 2 pneumonitis at 3 and 6 months respectively. There was no significant correlation between lung volume parameters and lung dose volume parameters at all levels. Overall 8/42 (19%) lung patients experienced grade 2 oesophageal toxicity, median “Oesophageal V35” was 41% vs. 23% in those who had Grade 0-1 toxicity. Mann Whitney U test showed a significant difference in the V35 between these 2 groups of patients. (U=70, p=0.00375). No late cardiac or lung toxicity was recorded. Grade 2 oesophageal toxicity observed. Late oesophageal toxicity occurred in 4.4% (3/68). Median progression free survival (PFS) was 12.0 months (95% CI 8.1-15.9) in lung patients, 7.6 months (95% CI 0.0-15.2) oesophageal patients, and 11.9 months (95% CI 8.8-15.0) overall.

**Conclusions:** VMAT was well tolerated by our patient cohort, with acceptable pneumonitis and oesophageal toxicity rates. Outcomes are comparable with patients treated with 3D conformal radiotherapy with no additional late toxicity.