

tumor and mediastinum and a boost of 20Gy to all gross disease. All patients also received platinum based doublet regimen concurrently. After CRT, the patients were re-evaluated in the resectability and underwent surgery. We analyzed tumor volume reduction ratio near the end of radiation therapy. All patients were classified by their lung condition about emphysematous and interstitial changes with CT images before treatment into three degree (slight / moderate / severe). Patients with grade 2 or worse RP were evaluated with their Dose-Volume Histogram(DVH) parameters of both lungs.

**Results:** The median follow up time was 73.9 months. The 3-year and 5-year overall survival rates were 44.8% and 33.0% in all patients, and 74.7% and 64.7% in patients with CRT followed by surgery. The 3-year and 5-year local control rates were 68.8% and 49.0%, respectively, in all patients. More than 50 % volume reduction was observed in 73.2 % of patients surviving over 2-years, but 32.3% of these good responder had local failure. Grade 2 or worse RP were observed in 70 patients (27%), grade 3 in 11 patients (4%), grade 5 in 3 patients (1%). The median of V5Gy, V10Gy, V20Gy, V40Gy, and mean dose of group with grade 2 or worse RP were 32.1, 27.5, 22.5, 16.5 %, and 13.5Gy, respectively, and with grade 3 to 5 RP were 31.5, 27.9, 23.9, 19.0 %, and 12.8Gy, respectively. In patients with grade 3 to 5 RP, 8 of 14 patients had severe emphysematous lung and moderate or severe interstitial change, or had over 30 % lung V20Gy.

**Conclusion:** CRT for stage III NSCLC was effective with acceptable toxicities. Even though patients had good early response to CRT, local control was not sufficient. Grade 3 or worse RP may relate not only to DVH parameters, but also pulmonary complication before CRT.

**Keywords:** CRT, lung cancer

## P2.05-010

### Stereotactic Radioterapy (SBRT) for Primary and Metastatic Lung Tumors in Elderly Patients



*Topic: Clinical Outcome*

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**Background:** To evaluate SBRT for primary and metastatic lung tumors in elderly patients.

**Methods:** Retrospective analysis of technique and results of SBRT for lung tumors in patients over 75 years old treated in a single institution.

Simulation was made with CT, abdominal compression and stereotactic frame. Internal target volume (ITV) was covered according ICRU recommendations. Treatment delivery using planar or noncoplanar fields or VMAT-IMRT dynamic arc. The prescribed dose was either 3 fractions of 15 Gy each or a single 30 Gy fraction. Planar images or cone beam CT were used for verification. Toxicity and radiologic response were assessed using standardized criteria (RTOG and RECIST). Survival rates and toxicities were calculated by the Kaplan-Meier method.

**Results:** Between 2002 and 2015, 86 patients had 103 SBRT procedures; of those 66 were for primary lung tumors (T1-2N0M0) and to 37 oligometastases (M1). Median patient age was 80 years (75-88). At the treatment all patients had good performance status (ECOG PS 0-1). The FEV1 was over 30 % of predicted. 10 % of the primary and 67% of the M1 received systemic treatment before SBRT. 73 % of the patients had 18-FDG PET-CT previous to SBRT. Primary tumors histology included: 48% epidermoid, 14% adenocarcinoma, 19% undifferentiated, 4% neuroendocrine and 15% PET positive tumors without histology. In lung M1 patients the origin was in: 53% NSCLC, 24% colorectal adenocarcinoma, 8.5% urotelial tumors, 8.5% thyroid, 3% endometrial and 3% parotid. Median ITV was 11.6 cm<sup>3</sup> (0.9-143). Biological Equivalent Dose BED > 100Gy. Transient grade 1 or 2 acute toxicities (cutaneous erythema, esophagitis, rib pain or respiratory symptoms) occurred in 11%. No grade > 3 acute or any chronic toxicities were identified. Median follow-up 22 months (4-65). Overall survival is 79.4 % at 1 year (78.7 % primary; 81 % M1) and 74.2% at 2 years (65.9% primary; 84.6% M1). Global cancer-specific survival rates were: 80.5 % (78.8 % primary and 84.6% M1). Local control in the irradiated volume is 97.2% in primary and 100% in M1 tumors, the only failure was marginal/proximal, in a patient with neuroendocrine histology, rescued with second time SBRT.

**Conclusion:** SBRT is an excellent treatment option for lung tumors and metastasis in elderly patients in whom other treatment options might be limited. Our encouraging results are similar or better than those reported for younger patients.

**Keywords:** stereotactic, radiation, elderly, tumor

## P2.05-011

### The Current Status of Radiotherapy in the Definitive Treatment of Lung Cancer in a Developing Country: Turkey



*Topic: Clinical Outcome*

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**Background:** To investigate the current status of radiotherapy (RT) trends in the definitive treatment of lung cancer in Turkey.

**Methods:** A questionnaire consisting of 46 questions about the technical facilities, and indications regarding the definitive radiotherapy of lung cancer was sent to 62 centers in Turkey, and was answered by 47 centers.

**Results:** RT centers were mostly gathered in Marmara, Central Anatolia, and Aegean region (15, 12 and 8 centers respectively). The median number of patients with non-small cell (NSCLC) and small-cell lung cancer (SCLC) treated definitively in one year were 55 and 15 respectively. The cases are discussed in a multidisciplinary tumor board in 75% of the centers. All of the centers use at least the minimum technological standard which is CT-planned 3D conformal RT (3D-CRT) in the definitive treatment of lung cancer; 33% has 4D-CT simulation facility, 94% use PET/CT in RT planning, 75% apply RT under image guidance; 41% has stereotactic body radiotherapy (SBRT) facility, and 53% use SBRT routinely in early-stage NSCLC patients who are medically inoperable or who refuse surgery. Ninety-eight percent of the centers apply concurrent chemoRT (87% starting RT with the first chemotherapy course) in locally advanced NSCLC. Concurrent chemoRT dose is 60-66 Gy in 96%. Chemotherapy was given by the radiation oncologists in 34% of the centers. In stage IIIA (N2) potentially resectable disease 56% of the centers apply neoadjuvant treatment (chemoRT 67%, chemo 33%). Besides main postoperative RT indications 27% of the centers apply RT to patients with inadequate mediastinal dissection, 37% apply to patients with suboptimal surgery. Regarding definitive treatment of SCLC 17% of the centers apply 45 Gy bid, 50% apply 50-60 Gy, 28% apply 61-66 Gy concurrent with cisplatin-etoposide, starting with the first or second course in 87%. In extensive-stage SCLC 89% of the centers apply thoracic RT (50-66 Gy in 62%, 30 Gy in 26%) after chemotherapy. Prophylactic cranial irradiation doses were 25 Gy in 71%, 30 Gy in 22%. The patients are followed with 3-month intervals in 89% of the centers, however there is no consensus regarding follow-up workup among the centers.

**Conclusion:** At least minimum world standards can be applied in the definitive RT of lung cancer in Turkey. The problems regarding optimal RT dose and fractionation and concurrent chemotherapy regimen, postoperative RT indications are similar, but as a developing country we need more multidisciplinary workup and develop our own guidelines taking into account our own resources and patient characteristics.

**Keywords:** lung cancer, definitive radiotherapy, Developing Country

## P2.05-012 Definitive Radiotherapy and Survival in Lung Cancer: Results from a Brazilian Cohort Study



*Topic: Clinical Outcome*

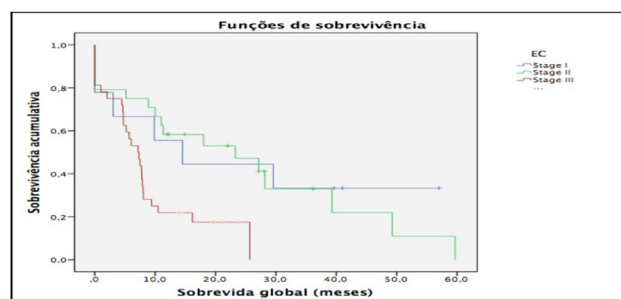
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**Background:** Lung Cancer is a major cause of cancer mortality around the world. Many patients are not fit for surgery or chemoradiation, and are treated with radiation therapy alone. There are few data on the outcomes of definitive radiotherapy in Brazil.

**Methods:** All patients AJCC I-III Stage undergoing definitive radiotherapy at the HCPA between 2010 and 2015 were assessed. Only individuals unfit for chemotherapy were evaluated. We excluded patients that received surgery. All patients were treated with conformal radiotherapy (3DCRT) and curative intent Individual variables and outcomes were retrospectively evaluated through medical records Statistical analysis was performed with software SPSS 22.

**Results:**



Patient characteristics	N = 68 (%)
Age, (Mean)	60,22 years
Gender, No. (%) Men Women	43 (63,2%) 25 (36,7%)
Race, No (%) White	54 (79,4%)
AJCC stage, No (%) I II III	5 (7,3%) 26 (38,2%) 37 (54,4%)
PS ECOG, No (%) 0-2 3-4	44(64,7%) 24 (35,3%)

Between 2010 and 2015, 68 patients were treated with radiation therapy alone. Most of patients were male and