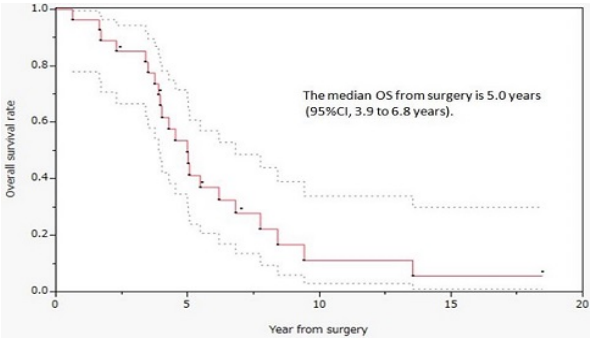
median OS from SBRT is 2.2 years (95%CI, 1.2 to 2.7 years), and the median OS from surgery is 5.0 years (95%CI, 3.9 to 6.8 years).



Conclusions: Our results demonstrate that SBRT after surgery brings about a good prognosis with low toxicity. SBRT may be a good treatment option for intrapulmonary recurrence after lung cancer surgery.

EP-1170

Stereotactic Ablative Radiotherapy for stage I non-small cell lung cancer: retrospective observational study

M. Pieri[1], S. Cima[1], J. Capuccini[1], F. Labropoulos[1], M. Palombarini[2], F. Salvi[2], G. Compagnone[1], F. Deodato[3], A.G. Morganti[1], G. Frezza[2]

[1]*Policlinico Universitario S.Orsola-Malpighi, Radiotherapy Department, Bologna, Italy*

[2]*Ospedale Bellaria, Radiotherapy Department, Bologna, Italy*

[3]*Fondazione 'Giovanni Paolo II' Catholic University of Sacred Heart, Radiation Oncology Unit, Campobasso, Italy*

Purpose/Objective: Stereotactic Ablative Radiotherapy (SABR) has now become a primary option for medically inoperable patients with early stage non-small cell lung cancer (NSCLC). Many retrospective and prospective studies have showed that SABR can achieve local control rates of approximately 90%, offering a significant survival advantage over conventional radiotherapy with specific survival rates comparable to those of surgery. The aim of this retrospective study was to evaluated the clinical outcomes in patients affected with stage I NSCLC, medically inoperable, treated with SABR.

Materials and Methods: Between 2003 and 2012, 110 consecutive patients with stage I NSCLC were treated with SABR. The median age was 77 years (range 48-96 years). Histological/cytological diagnosis was obtained in 56 patients (50,9 %). The remaining 54 patients (49.1%) were included in the study if both FDG-PET was positive and tumor had increased in size at a second CT scan performed at least after a three months interval. Eighty-five patients (77.3%) had stage IA (T1N0M0 in 48 cases and T1bN0M0 in 37 cases, respectively) and 25 patients (22.7%) had stage IB (T2aN0M0), according to the 7th edition of the TNM classification and staging system for lung cancer. One hundred and three patients were medically inoperable because of the presence of medical comorbidities, poor pulmonary function or advanced age; 7 patients refused surgery. In 98 cases (89%) the localization of the tumor was peripheral; in 12 cases (11%) the localization was central. All patients were treated with 3D-CRT, consisting in 7-12 non-coplanar static fields conformed by mean of a multi leaf collimator (MLC). Dose and fractionation were chosen depending on size and location of the tumor. RTOG score were used for grading acute and late toxicity.

Results: Median follow-up time was 24.2 months (range 3-123 months). One-year and 3-year local control was 95% and 75%, respectively. Forty-one patients (45.1%) had at least one failure (local and/or nodal and/or distant), with a median time to any recurrence of 18.5 months. Disease free survival (DFS) rate at 3 years was 53%. Overall survival (OS) at 3 and 5 years was 70% and 47%, respectively. Grade 1 acute pulmonary toxicity was observed in two patients (1.8%). Late pulmonary toxicity was recorded in 7 patients (6.3%) as: G1 in 3, G2 in 3 and G3 in 1 patients, respectively. Seventy-four patients (67.3%) developed late radiological toxicity as: G1 in 66, G2 in 7 and G3 in 1 patients, respectively.

Conclusions: The results of this study support the routine use of SABR for stage I NSCLC, due to high local control and limited toxicity.

EP-1171

Blood parameters as prognosticators in radio-chemotherapy for non-small cell lung cancer

R. Suwinski[1], M. Giglok[1], K. Galwas-Kliber[1], U. Dworzecka[1], B. Jochymek[2], D. Butkiewicz[3], A. Tukiendorf[4], B. Maslyk[5]

[1]*M. Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, II Radiotherapy Clinic and Teaching Hospital, Gliwice, Poland*

[2]*M. Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Radiation Oncology, Gliwice, Poland*

[3]*M. Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Translational Research, Gliwice, Poland*

[4]*M. Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Epidemiology and Biostatistics, Gliwice, Poland*

[5]*M. Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Laboratory Analysis, Gliwice, Poland*

Purpose/Objective: Several investigators suggest that pretreatment blood parameters can be useful in determining the prognosis of non-small cell lung cancer (NSCLC). The relevance of readily available and commonly recorded blood parameters for long-term outcome of curative radio-chemotherapy for NSCLC is, however, only partially determined.

Materials and Methods: The analysis included 104 patients with stage IIIAN2 or III B non-small cell lung cancer (64 squamous cell, 18 adenocarcinoma, 22 NOS). All patients had platin-based induction chemotherapy and radiotherapy with curative intent (60-74 Gy, 1,8-2.0 Gy/fraction). Twenty routinely recorded parameters from automated blood cell counter (blood cell number, mean cell volume, distribution width, hemoglobin concentration etc.) as well as erythrocyte sedimentation rate (ESR), osteopontin concentration (OP) and ratios of those parameters were considered in the analysis. Clinical parameters of known prognostic potential were also included (age, sex, general performance status, T, N stage, smoking history). Univariate and multivariate Cox proportional hazard regression model was used to select variables that had significant and independent impact on overall survival. The model performance was assessed with respect to 3-year overall survival by calculating the AUC (area under the curve) using ROC analysis.

Results: A multivariate model that was optimized with stepwise backward regression indicated that tree parameters: clinical N stage 2 or 3 (RR=1.85), high ESR (RR=1.74) and high platelet/hemoglobin ratio (RR=1.67) independently and negatively influenced overall survival. The actuarial 3-year overall survival was 27%. Patients with no risk features had 3-year OS of 60%, those with 1 risk factor had 3-year OS of 25%, while those with 2-3 risk factors had 3-year OS of 10% ($p<0.001$, RR=2.08). OP correlated with ESR (correlation coefficient 0.42, $p<0.05$). The model of 3 year overall survival yielded an AUC of 70% (specificity 69,6%, sensitivity 62,2%).
Conclusions: Platelet/hemoglobin ratio and erythrocyte sedimentation rate are readily available strong prognosticators of overall survival in curative radio-chemotherapy for locally advanced non-small cell lung cancer. The outcome support the studies that suggest that inflammation-related parameters (such as ESR) should be routinely considered in determination of the prognosis of NSCLC.
Supported in part by NCN grant 2012/05/B/NZ5/01905 (DB)

EP-1172

Stereotactic body radiation therapy for central lung tumors: outcomes and toxicity

A. Leysalle[1], J. Doyen[1], K. Benezery[1], M. Poudenx[2], J. Otto[2], P.Y. Bondiau[1]
[1]*Antoine Lacassagne Cancer center, Radiotherapy, Nice, France*
[2]*Antoine Lacassagne Cancer center, Oncology, Nice, France*

Purpose/Objective: Recent trials of stereotactic radiotherapy (SBRT) for lung cancer exclude central lesions, tumors considered within or affecting the area of the proximal bronchial tree defined as 'a volume of 2 cm in all directions around proximal bronchial tree'. Several series for central tumors have been published with various doses and fractionation. These series often proposed a scheme with a Biological Effective Dose (BED) less than 100 Gy to minimize the risk of toxicity. We investigated our original institutional experience using SBRT for central lung tumor with a scheme delivering 75 Gy in 5 fractions of 15 Gy leading to a BED of 187.5 Gy.
Materials and Methods: Our institutional SBRT database retrospectively collected demographic and treatment-related data from all patients treated at our Center. We analyzed all patients with central lung tumors treated with SBRT between September 2008 and September 2012. Local control (LC) and overall survival (OS) were calculated using Kaplan- Meier estimates. Toxicity was graded using the Radiation Therapy Oncology Group Common Toxicity Criteria. Tumor response was scored using Response Evaluation Criteria in Solid Tumors v1.1. Predictors for toxicity, LC, and OS were analyzed using Cox proportional hazard regression models.
Results: A total of 43 central lesions in 41 patients (23 with primary, 12 with metastatic tumors, 6 no biopsy proven) were treated. Median age was 71 years (range: 51-88) and median follow up was 24.4 months (1-67). Seventeen patients had prior surgery: 10 lobectomies, 3 pneumonectomies, 4 wedge resections. Radiation was delivered in 5 equal fractions of 12 to 15 Gy each to a median prescription isodose line of 78.9% (range, 68-80%). Thirty-four tumors (79%) were treated with the original regime (75 Gy= 5 X 15 Gy). In order to respect the dose constraints of organs at risk we have changed the dose per fraction for 9 tumors (21%) (n= 4: 70 Gy/5 Fr; n=5: 60 Gy/5 Fr). Overall, there were 4 local failures resulting in 1-year LC rate and 3-years local LC rate of 82.2% and 78.5% respectively. Grade 3 toxicities were dyspnea (n = 2), pneumonia (n = 3), pleural effusion (n = 1) and parietal pain (n = 1). One patient previously treated by pneumonectomy died of dyspnea grade V 12.9 months after treatment. The actuarial 1-year and 3-year overall survival was respectively 89.4% and 52.7%.
Conclusions: SBRT for central lung tumors offers high rates of local control and acceptable toxicity rates comparable to published data for peripheral tumors.

EP-1173

A new SBRT Technique with the lung totally arrested (Arrested Lung Ablative Radiotherapy - ALART)

G. Pradas Montilla[1], V. Muñoz Garzón[2], J. Vazquez Rodriguez[3], D. Aramburu Núñez[3], J. Pereira[4], J.J. Legarra[1], R. Casais[1], A. Teijeiro[3], E. Hernandez[2], A. Gonzalez[2], J.R. Guitián[5], J.M. Nogueiras[5], M. Salgado[3], M. Hernandez[3], M. Caeiro[2]
[1]*Galaria- Hospital Meixoeiro, Cardiac Surgery, Vigo, Spain*
[2]*Galaria- Hospital Meixoeiro, Radiation Oncology, Vigo, Spain*
[3]*Galaria- Hospital Meixoeiro, Medical Physics, Vigo, Spain*
[4]*Hospital Meixoeiro, Anesthesia, Vigo, Spain*
[5]*Galaria- Hospital Meixoeiro, Nuclear Medicine, Vigo, Spain*

Purpose/Objective: To describe a new technique of External Radiotherapy Hypofractionated with immobilised patient and with the Lung arrested, which we have set into motion in our centre and which we have called: 'Arrested Lung Ablative Radiotherapy' (ALART). The second objective was to investigate the possible parameters of movement in the treatment.
Materials and Methods: We use this technique in four patients, treated with RT-54Gy (3 fractions); IMRT: 34 and 27Gy two lesions (1 fraction), RT-32Gy (1 fraction) and RT-30Gy (1 fraction). To carry out the technique, general anaesthesia is applied with mechanical ventilation until we arrested the lung, to achieve that we use a portable extra-corporeal membrane oxygenation (ECMO) device (Cardiohelp™-Maquet©) with a Normo-hypothermia module by femoral (arterio-venous) cannulation. For the transport and immobilization of the patient we used the Image Provider® (SIHO©) transfer trolley with vacuum mattress immobilizer and an abdominal compressor frame with the ECMO device, keeping the lung arrested and immobilized from the Plan-CT to the CT-post-Treatment. The calculation was done with a TPS XiO (CMS-Elekta). For the positioning of the patient we used a stereotaxic system Exactrac® (Brainlab©) and ConeBeam (Elekta). The LINAC was a Primus (Siemens) and Synergy (Elekta) using the portal image system in movie mode and the Exactrac® to monitorized the movement of the patient in the Siemens LINAC and the ConeBeam imaging for the Synergy LINAC. We fused through rigid fusion the pre-CT and the Post-CT at the level of the tumour and at a global level. In each of the fusions we transferred PTVs & GTVs and we measured the distances between the center of the volumes.