Cardiac serum biomarker results will not be available for this cohort of patients.

Cardiac MRI is performed on a Siemens 3.0 Tesla scanner. The imaging protocol includes short axis scans of the base, mid and apical positions of the left ventricle and 4-chamber scan, including standard cine scans for anatomy, mass and function.

The cardiac MRI images are registered with the radiotherapy planning CT scan and analysed for the radiotherapy dose to cardiac macrostructures and the left ventricle 17 segment function. The radiotherapy dose will be correlated with cardiac MRI, ECG and cardiac biomarkers.

Results: To date 24 patients have been recruited, 7 were withdrawn due to issues with completion of cardiac MRI scan, and 5 have completed the study.

On treatment radiotherapy physics data has been analysed for 12 of these patients. Maximum radiotherapy dose was highest in the left (mean 4680 cGy, 95CI (3711-5649) and right atria (mean 3885 cGy, 95CI 2635-5135) compared to the left (mean 2625 cGy, 95CI 1567-3682) and right ventricles (mean 2448 cGy, 95CI 1678-3217) (p=0.005 and p=0.021 respectively).

Furthermore review of the dose to the left ventricular segments, identified areas which received radiation dose in excess of 35Gy.

Cardiac function, measured by cardiac MRI, was significantly affected during radiotherapy. There was a small but significant relative reduction in LVEF compared to baseline (-4.7%, p=0.040). In comparison, right sided cardiac function was more impaired, with a mean relative fall in RVEF of 21.6% (95CI 13.01-30.26, p < 0.0001).

Conclusions: Preliminary evidence suggests an acute effect on right heart function by thoracic radiotherapy in NSCLC. Further analyses will be performed as the data matures.

PO-0668
Stereotactic Body Radiation Therapy (SBRT) for lung metastatic patients with soft tissue sarcoma (STS)

P. Navarria1, A.M. Ascolese1, F. De Rose1, E. Clerici1, C. Franzese1, A. Tozzi1, C. Iftode1, T. Comito1, E. Villa1, S. Tomatis1, G.R. D’Agostino1, G. Reggiori1, M. Scorretti1

1Istituto Clinico Humanitas, Radiotherapy and Radiosurgery, Rozzano (Milan), Italy

Purpose/Objective: Patients with soft tissue sarcoma (STS) frequently develop pulmonary metastasis limiting their long-term survival. Lung metastases have historically been treated with surgical resection and/ or chemotherapy. Few reports are available in the literature describing the value of stereotactic body radiation therapy (SBRT) as an alternative to surgical treatment. The aim of this study was to evaluate toxicity, rate of local control and survival in lung metastatic STS patients underwent SBRT.

Materials and Methods: From February 2008 to May 2014, 28 patients for 55 lung lesions were treated at our Institution. SBRT was performed in patients with good Performance Status (1-2 ECOG) and unsuitable for surgical resection, with controlled primary tumor and number of lung metastases ≤ 4. All patients were evaluated at multidisciplinary team including thoracic surgeon, medical oncologist and radiation oncologist. According to site and maximum diameter several radiation schedule were used: 30 Gy/1 fr, 60 Gy/3 fr, 60 Gy/8 fr and 48 Gy/4 fr. The plan was generated using Volumetric Modulated Arc Therapy (VMAT). Clinical outcome was evaluated by thoracic and abdominal CT scan before SBRT and then every 3 months. Toxicity was evaluated with CTCAE scale version 4.0.

Results: Leiomyosarcoma (36%), and synovial sarcoma (25%) were the most common histologies. Five patients (18%) initially presented with pulmonary metastasis, whereas 23 (82%) developed them at a median time of 51 months (range 11-311 months ) from the initial diagnosis. The median follow-up time from initial diagnosis was 65 months (range 5-39 months) and from SBRT was 21 months (range 2-80 months). No severe toxicity (grade III-IV) was recorded and no one patients required hospitalisation. The local control rate was 94% (54/55 lesions). At the last follow up 15/28 patients (54%) were alive and 13/28 (46%) died. All patients died for distant progression. The 1, 2 and 3 years Overall Survival was 88%, 57% and 46%, respectively.

Conclusions: SBRT provides excellent local control of pulmonary metastasis from STS and a promising influence on survival. SBRT should be considered for all patients with PM and evaluated in a multidisciplinary team. Further investigation is warranted to identify patients that could received benefit from local treatment.

PO-0669
External validation of a survival model for stage III NSCLC: focus on similarities or differences?

C. Oberije1, J. Deasy2, Y. Lievens3, J. Belderbos4, K. Vandecasteele5, W. Uytterlinde3, A. Rimner6, E.G.C. Troost1, P. Lambin1

1MAASTRO Clinic, Radiation Oncology, Maastricht, The Netherlands
2Memorial Sloan Kettering Cancer Center, Medical Physics, New York, USA
3University Hospital Ghent, Radiation Oncology, Ghent, Belgium
4NKI, Radiation Oncology, Amsterdam, The Netherlands
5NKI, Thoracic Oncology, Amsterdam, The Netherlands
6Memorial Sloan Kettering Cancer Center, Radiation Oncology, New York, USA

Purpose/Objective: Testing a model on external data indicates generalizability and is seen as a requirement before using a model in daily clinical practice. Although it is of utmost importance, reporting of model performance is generally limited to one number: the Area Under the Curve (AUC) for a dichotomous outcome or the C statistic for time-to-event outcome. However, by focusing on one performance measure, important information is neglected. A more extensive approach could raise new research questions, indicate underlying causes and mechanisms, and highlight differences in diagnostic, treatment or follow-up procedures, between countries and hospitals. We used three external datasets to test a previously developed prediction model for survival of stage III NSCLC in an innovative way.
A previously developed survival model for stage III NSCLC, based on 548 patients, was tested on datasets from three different hospitals situated in the US (1), Belgium (2) and the Netherlands (3); 174, 130 and 112 patients, respectively. All patients were treated with high dose (chemo-) radiotherapy, but received no surgery. The C statistic was reported, Kaplan Meier (KM) curves were created for survival and Follow-up (FU) time. In addition, for all patients a linear predictor (LP) was computed by multiplying each variable with its regression coefficient and subsequently sum up the results. High LP-values indicate a worse prognosis according to the risk factors included in the model. The distributions of the LPs were compared graphically (Figure 1).

**Results:** While the model achieved a C statistic of 0.63 in the development cohort (bootstrap), this decreased to 0.59, 0.56 and 0.49, respectively, in the validation cohorts. Dataset 1 included a more homogeneous population with a better prognosis according to the LP distribution, which was confirmed by the KM curve. Based on the LP distribution for dataset 2 and 3 it was expected that these cohorts had comparable but worse survival outcome than the development cohort. However, although the two-year overall survival was indeed similar being 44%, it was higher than that of the development cohort. The FU at two-years was 94% in the development cohort, while this was 59%, 89% and 51%, respectively, for the validation datasets, indicating major differences in either follow-up regimen or access to patient outcome data.

**Conclusions:** A more extensive model validation reveals important information. To improve survival prediction for individual stage III NSCLC patients, more detailed information about patient populations and local policies, including specific diagnostic, treatment and follow-up procedures, is needed. An effort should be made to identify and collect these metadata electronically, applying a Big Data approach. Ultimately, this will enable us to develop more valid models for stage III NSCLC patients.