locoregional right-sided breast cancer treatment in this study, a slightly lower risk of pneumonitis and secondary lung cancer (in ever-smoking patients) can be expected. In addition, we estimate that for 10-25% of the patients the heart dose will also be reduced. We therefore suggest to also apply breath-hold for locoregional irradiation (with and without IMN) of patients with right-sided breast cancer.

EP-1159  
Does a SPECT-CT improve the delineation of internal mammary nodes for breast cancer patients?  
M. Essers1, K. Van der Klugt2, R.H. Tijssen3, R. Pijpers4, B. Oei5, P.M. Poortmans3  
1Institute Verbeeten, Department of Medical Physics, Tilburg, The Netherlands  
2Institute Verbeeten, Radiation Oncology, Tilburg, The Netherlands  
3University Medical Centre Utrecht, Medical Physics, Utrecht, The Netherlands  
4Institute Verbeeten, Nuclear Medicine, Tilburg, The Netherlands  
5Radboud University Medical Centre, Radiation Oncology, Nijmegen, The Netherlands

Purpose or Objective: A large recent study (1) has shown that in patients with early-stage breast cancer, irradiation of the regional (internal mammary and mediastinal) lymph nodes improves disease-free and distant disease-free survival, while breast-cancer mortality is reduced. However, internal mammary nodes (IMN) are usually delineated using anatomical landmarks, e.g. using the ESTRO delineation atlas (2), since the nodes are not visible on CT. We studied the impact of SPECT-CT lymphoscintigraphy on the localisation of IMN and on the subsequent treatment planning and dose distribution.

Material and Methods: For 10 breast cancer patients (5 right, 5 left), SPECT-CT lymphoscintigraphy of the IMN was performed. Using the Eclipse TPS (Varian), the SPECT-CT and planning CT images were co-registered. The 70% of the maximum uptake value was used to contour the IMN on SPECT-CT images. Using the ESTRO atlas, the IMN were also contoured on the planning CT images. The localisation of IMN based on the SPECT-CT images and based on the ESTRO atlas were compared, as well as treatment plans based on the two contouring methods.

Results: For 2 patients, no drainage to the IMN was visible. For 6 out of the remaining 8 patients, the caudal border of the IMN based on SPECT-CT was situated at the second intercostal (IC) space, whereas the ESTRO atlas prescribes to include the third or fourth IC space depending of the position of the tumour in the breast. In the lateral direction, the lymph nodes mostly follow the veins, but for one patient, the position on SPECT-CT was more medial (and missed by the ESTRO atlas) and for one more lateral. On treatment planning, for one patient only 50% of the IMN seen on SPECT-CT would have been covered following contouring using the ESTRO atlas. The mean heart dose (MHD) increased by 0.8 Gy for one patient and decreased by 1.0 Gy for one patient and the mean lung dose (MLD) decreased by 2 Gy for one of the patients following SPECT-CT based delineation. For the other patients, the differences in MHD and MLD were less than 0.5 Gy.

Conclusion: Delineation of the IMN using SPECT-CT lymphoscintigraphy is easier and less user dependent than using the delineation atlas. In general, the agreement between atlas and SPECT-CT based delineation is good. However, the caudal border of the IMN was overestimated in 6 out of 8 patients. Differences in the medial border were also observed, resulting in underdosage of the IMN in 1 and overdose to lung and heart in 1 other patient. SPECT-CT lymphoscintigraphy might be applied for patients with a high heart dose, to investigate whether the caudal and medial border of the IMN may be reduced.

EP-1160  
What drives post-mastectomy radiation therapy receipt in T2N0 patients?  
C. Fisher1, R. Rabinovitch1, J. Jaga2, A. Aminil, P. Kabos1  
1University of Colorado Denver, Radiation Oncology, Aurora, CO, USA

Purpose or Objective: Increased biological information on individual tumors can be obtained with 21-gene recurrence score (RS) testing, which has revolutionized receipt of chemotherapy. Similar biological drivers of outcomes may be useful in determining who might benefit from post-mastectomy radiation, as is being investigated in the SUPREMO and other trials. This study aimed to determine who was getting post-mastectomy radiation in a T2N0 cohort, as well as whether the recurrence test score affected radiation therapy receipt.

Material and Methods: The National Cancer Data Base captures about 75% of all US cancer patients and was queried for breast cancer patients from 2004-2012. 5302 T2N0 post-mastectomy patients were identified. Multivariate logistic regression analysis was used to estimate the covariates associated with test utilization and impact on radiation therapy decisions (see table). Z-test was used to measure the difference between radiation receipt for those who had the test and those who did not.

Results: Post-mastectomy radiation was delivered for 431 patients (8.1%) of the 5302 included patients. Multivariate statistics were used to investigate potential radiation drivers including age, race, insurance status, grade, recurrence score, and presence of cells in the nodes on immunohistochemical staining (NOI+ versus NOI-). The strongest association with receipt of radiation therapy was NOI+ status (p<.002) versus NOI. Age, race, insurance status, grade, and actual recurrence score did not predict for receipt of post-mastectomy radiation therapy.

Conclusion: As expected, radiation was used in a minority of this cohort. Presence of cells in a lymph node was the largest driver, even though the disease burden in the nodes was very low to be T2N0+. In patients where the recurrence score was ordered, it also predicted for non-receipt of radiation therapy as a rationale de-escalation of care. The biggest driver of radiation was NOI+ status, where at least a small number of cells reached the lymph nodes and radiation might be expected to have an impact. Interestingly, increasing recurrence score reflecting aggressive biology and poorer outcomes did not drive PMRT receipt in this population. In the future, use of the recurrence score may help select patients in whom personalized use of local therapy is possible.

EP-1161  
Does sentinel-node biopsy affect the use of supine MRI for regional breast radiotherapy?  
1UMC Utrecht, Radiotherapy, Utrecht, The Netherlands  
2UMC Utrecht, Epidemiology, Utrecht, The Netherlands  
3UMC Utrecht, Radiology, Utrecht, The Netherlands  
4UMC Utrecht, Surgery, Utrecht, The Netherlands  
5Diakonessenhuis, Surgery, Utrecht, The Netherlands

Purpose or Objective: Regional radiotherapy (RT) is replacing axillary lymph node (LN) dissection in breast-cancer patients with tumor-positive sentinel node(s) (SNs). In regional RT, only part of the LNs can be visualized using