Conclusions: IMRT planning achieves better dose coverage and homogeneity in comprehensive irradiation in breast cancer; however, it increases dose to carotid artery as compared to conventional 3DCRT. Byspecifying dose constraint to the carotid artery, it is possible to reduce carotid artery doses in IMRT plans by improving dose conformity and homogeneity. It seems reasonable to designate carotid artery as a dose limited structure for long term survivors with high risks for vascular disorders.

EP-1041

Acute and late toxicity with hypofractionated radiation therapy for early breast cancer compared to conventional RT

A. Podgornii[1], M. Galeandro[1], D. Ramundo[1], F. Vigo[1], R. Micera[1], E. Cagni[1], C. Bassi[1], C. Iotti[1], P. Ciammella[1]

[1]*Arcispedale S. Maria Nuova, Advanced thecnologies, Reggio Emilia, Italy*

Purpose/Objective: The purpose of the present study is to evaluate toxicity and cosmetic outcome in breast cancer survivors treated with hypo-fractionated adjuvant radiotherapy (HF-RT) and to identify risk factors for toxicity, with special focus on the impact of age, co morbidities and chemotherapy. For comparison, a group of 65 patients with similar characteristics and consecutively treated with conventional fractionation was retrospectively selected.
Materials and Methods: From April 2010 and May 2012, 190 women with early breast cancer were treated with HF-RT, after conserving surgery. The patients received 40.05 Gy in 15 fractions. The boost to the tumour bed was administered with a total dose of 9 Gy in 3 consecutive fractions in 50 women due to young age (< 50 yrs) or to positive margins. Physician-rated toxicity and cosmetic outcomes were prospectively assessed during yearly follow-up after radiotherapy.
Results: In the HF-RT group, the mean age was 69 years. 11% and 32% patients were affected by diabetes mellitus and hypertension, respectively. 13% had tumors that were 2 cm or larger in diameter; pTis = 17%, pT1a= 6%, pT1b= 23%, pT1c=41%, pT2=13% ; 10% had estrogen-receptor-negative disease and 29 % had high-grade disease. Pre-operative chemotherapy was administered in 10 patients; adjuvant systemic therapy and hormone therapy were given in 19 patients, while 11 and 115 patients received chemotherapy or hormone therapy alone, respectively. The mean follow-up was 19 months (range 6-32 months). The median time from surgery was 29 days, with overall median treatment duration of 22 days. At last follow up all patients are alive without local recurrence. By the end of RT 18% of the patients treated with HF-RT developed no toxicity, while 55.7% showed grade 1 and 13.3% grade 2 acute skin toxicity. Only one patient experienced a grade 3 acute skin toxicity. In the control group, early G1 reactions were observed in 24 patients (42%); 19% of patients showed G2 acute toxicity and only one patient developed G3 acute reaction. Neither grade 4 skin ulceration nor soft tissue necrosis was observed. Late toxicity was assessed after 6 months from RT completion in 120/190 patients in the hypofractionation group and in 51/65 patients in the standard RT group. Late toxicity according to the RTOG criteria was observed in 9 patients (7.5%) in the HF-RT group and in 4 patients (8%) in the conventional fractionated radiation group. The difference was not statistically significant. Cosmetic result was assessed and scored at the RT end and 6 months later: at last follow up, 71% of women in the control-group as compared with 68.8% of the women in the HF-RT group had a good or excellent cosmetic outcome.
Conclusions: Our results confirm the feasibility of the HF-RT with 2,67 Gy/fx to a total dose of 40,05 Gy in patients with breast cancer. If compared with conventional RT group, the hypofractionation not seems to increase the late toxicity. Long-term follow up is need to confirm this finding.

EP-1042

Preliminary results of neoadjuvant chemotherapy for cN3 breast cancer patients

S. Kim[1], S. Ahn[1], S. Lee[1], E. Choi[1], S. Ahn[2], B. Son[2], J. Lee[2], S. Kim[3], K. Jung[3], J. Ahn[3]

[1]*Asan Medical Center Univ of Ulsan, Radiation Oncology, Seoul, Korea Republic of*
[2]*Asan Medical Center Univ of Ulsan, Surgery, Seoul, Korea Republic of*
[3]*Asan Medical Center Univ of Ulsan, Oncology, Seoul, Korea Republic of*

Purpose/Objective: To analyze the treatment results of cN3 breast cancer patients who treated with neoadjuvant chemotherapy
Materials and Methods: Between 2003 and 2009, Of 241 breast cancer patients who received neoadjuvant chemotherapy, 52 cN3 non-inflammatory patients were included. Median age was 43 years (range 25-75). Clinical T-stage were T1 (5.8%), T2 (38.5%), T3 (48.0%) and T4 (7.7%). Clinical N-stage were N3a (11.5%), N3b (25.0%), and N3c(63.5%). N3 lesions were detected on PET-CT in 43 patients (82.7%) and confirmed histolotically in 30 patients (57.7%). Antracycline- and/or taxane-based neoadjuvant chemotherapy were delivered to 98.1% of patients. Breast conserving surgery was enabled to 14 patients (26.9%), others received mastectomy alone (59.6%) or mastectomy with immediate reconstruction (13.5%). Excision of N3 lesion was performed in 18 patients (34.6%). Adjuvant radiation therapy were performed in 44 patients (84.6%), and 23 patients received radiation dose more than 50.4 Gy to N3 region.
Results: Median follow-up period was 41 months. Actuarial four-year overall, disease-free, locoregional-recurrence-free survival rate were 72.4, 49.1, and 70.7% respectively. Actuarial four-year control rate of N3 region was 74.6%. Univariate risk factor analysis revealed ypN stage and ypStage as significant risk factors for loco-regional, disease-free, and over survival rate. Excisional biopsy and higher dose to N3 region were proved not to be correlated with regional control rate.
Conclusions: Neoadjuvant chemotherapy followed by curative resection and adjuvant radiation therapy accomplished comparable treatment results for regionally-advanced breast cancer patients. More patients and longer follow-up are mandatory to investigate the optimal locoregional treatment regimen after neoadjuvant chemotherapy.

EP-1043

Target coverage and brachial plexus dose in regional adjuvant radiotherapy for breast cancer

F. Duane[1], E. McVeigh[2], M. Dunne[3], C. Faul[1], O. McArdle[1]

[1]*St. Luke's Radiation Oncology Network, Department of Radiation Oncology, Dublin, Ireland Republic of*
[2]*St. Luke's Radiation Oncology Network, Department of Radiation Therapy, Dublin, Ireland Republic of*
[3]*St. Luke's Radiation Oncology Network, Clinical Trials Unit, Dublin, Ireland Republic of*

Purpose/Objective: This study aims to estimate the dose received by the supraclavicular fossa (SCF) and levels I,II and III of the axilla in patients with breast carcinoma undergoing regional adjuvant radiotherapy using routine planning techniques. Dose to the brachial plexus was also evaluated.
Materials and Methods: A CT-planning study of 24 patients was conducted. The BP and nodal target volumes were contoured and five treatment plans were generated for each patient. Treatment techniques included (i) standard tangential fields; (ii) high tangential fields (HTF); (iii) 3-field technique targeting the SCF; (iv) 3-field technique targeting the SCF and axilla level III; (v) technique targeting the full nodal region, the SCF and axilla levels I-III. Dose-volume histograms were used to evaluate the percentage volume of the target covered by the 95% isodose (V95%) to assess target coverage, and the maximum and mean dose to the brachial plexus and the volume of this organ at risk receiving 45,48, and 50Gy.
Results: Using standard tangential fields V95% for axilla level I was 39.6% and for level II was 2.7%. Using HTF the V95% for axilla level I was 90% and 55% for level II. Suboptimal coverage of the SCF target volume was noted for each of the three techniques targeting this volume. The mean maximum BP dose was 50.9Gy for treatment to the SCF alone, 51.1Gy for treatment to the SCF and axilla level III, and 53.2Gy for full nodal treatment. The mean irradiated BP volume receiveg > 45Gy was 49.5%, 65.4% and 77.7% for these groups respectively.
Conclusions: It is important to be aware of the expected coverage for axillary levels I-III when using common radiotherapy regimens particularly given the current controversy over axillary management. Using conventional tangential fields suboptimal coverage of level I was achieved and Level II received only a minimal dose. Axillary levels should be contoured in node positive patients and coverage should be documented. As with previous studies our study shows that routine radiation prescriptions do not optimally cover intended targets for every patient. The BP dose should be considered for patients undergoing full nodal treatment.

EP-1044

Delineation of clinical target volumes for radiotherapy of the breast: consequences for treatment plans

G. Pupovici[1], E.K.M. Elisabeth Kildegaard Madsen[1], M.B. Martin Berg[1]

[1]*Department of Oncology, Medical Physics, Vejle, Denmark*

Purpose/Objective: The delineation of target and organs at risk (OARs) is a central part of the treatment planning of postoperative radiotherapy for breast cancer patients. We performed an investigation of the consequences of inter-observer variation in the delineation of the clinical target volume (CTV), heart and left anterior