Materials and Methods: Since Nov, 2001 to Oct, 2002, we selected 20 women of unilateral upper limb lymphedema post-breast cancer treatment. The patients who were active metastasis, active infection, bil lymphedema, congestion heart failure, and renal function impairement were excluded. The patients received one time D.L.T. treatment per day, the treatment times from 4 to 26 times. We measured the circumference calculation volume edema ratio (=excess volume/normal side volume) before and after treatment; And edema reduction ratio (=reduction volume/excess volume).

Results: Post-treatment the circumference, calculation volume, edema ratio were significantly reduced (P<0.001). The edema reduction ratio is −55.6±57%. The edema ratio is no scientifically relationship with onset time and age. The edema reduction ratio is no correlation with edema onset time, age and edema ratio.

Conclusion: The D.L.T program is effective in treatment of lymphedema post-breast cancer. Because there are only 20 cases, we need more cases to determine the relationship during edema reduction ratio, edema ratio, age, and onset time. The long-term result of D.L.T. treatment will be follow-up in the future.

315 POSTER

Lymphatico-venous communications protect against development of breast cancer-related lymphoedema

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Introduction: A number of apparent anomalies surround breast cancer-related lymphoedema, such as why only a minority of women are affected following standard treatment, and the regionality of the swelling, with parts of the arm often 'spared'. This study aims to prospectively investigate the possible protective role of lymphatico-venous communications within the arm.

Methods: A total of 7 women were investigated prior to breast cancer surgery to include a Level II axillary clearance, and 3 months post-operatively. Radiolabelled protein was injected into the hand, with subsequent measurement of rate of clearance from the depot and appearance in blood sampled from both the ipsilateral and contralateral basilic vein.

Results: None of the women had developed lymphoedema at 3 months. There was no significant change in either depot clearance or rate of appearance of protein in contralateral blood samples following surgery. However, there was a significant increase in protein levels in ipsilateral venous samples following surgery.

Conclusions: Lymphatic function following axillary node clearance is maintained by an increase in local vascular access within the arm via lymphatico-venous communications, bypassing any obstruction to lymphatic flow at the axilla.

Thursday, 18 March 2004 16:00–17:15

PROFFERED PAPERS

Radiotherapy

316 ORAL

Significance of margins of excision on breast cancer recurrence (on behalf of the EORTC Radiotherapy, Breast Cancer Groups)

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Purpose: The association between positive resection margins and the risk of ipsilateral breast tumor recurrence (IBTR) after breast-conserving therapy (BCT) is controversial. The absolute width of what minimizes the risk of IBTR is uncertain. This study examines the interaction between margin status and margin width on the risk of 5-year IBTR.

Patients and Methods: A series of 1866 patients with clinical Stage I or II breast cancer, who participated in the EORTC 'boost versus no boost trial', were retrospectively compared for 5-year estimates of IBTR. In the study population, 44% of patients with involved surgical margins and 100% of patients with microscopically uninvolved margins had an institutional central pathology review. The median follow up time was 81 months. Final margin status (FMS) was determined by the distance of invasive or in situ carcinoma from inked surgical margin: negative (no residual tumor or at least 2 mm from inked margin), close (less than 2 mm from inked margin), or positive (inked margin involved). All patients underwent tumorectomy followed by whole breast irradiation of 50 Gy. Patients having a microscopically complete excision (FMS close or negative) were randomized to receive no boost or a 16 Gy boost, while patients with a microscopically incomplete excision (FMS positive) were randomized to receive a boost dose of 10 or 26 Gy. In the study population, the FMS was negative in 74%, close in 12%, and positive in 14% of patients respectively.

Results: The 5-year local tumor control rate for patients with positive, close and negative margins was 90%, 92%, and 95% respectively (p<0.002). Patients with close margins benefited the most from a boost dose among the patients with a microscopically complete excision (p<0.003). Patients under 50 years of age with FMS close or negative benefited significantly from the boost dose (p<0.0002). When FMS and age were included in a multivariate model for local control, there was a significant interaction (p=0.001) between the two variables. There was an increase in the relative risk of IBTR for age less than 50 years old within the close FMS category (p<0.001). A comparison of radiation dose in the positive margin group revealed that an increase in radiation dose (low boost dose 10 Gy versus high boost dose 26 Gy) did not significantly improve the local tumor control rate. The local control rate in the low boost dose group was 90% compared to 92% in the high boost dose group (p>0.288).

Conclusion: There is an increased risk of local recurrence as the final margin status distance from the inked resection margin becomes smaller. In patients less than 50 years old with microscopically complete excision, a boost dose of 16 Gy significantly improves the local control rate. Patients with positive margins have a two times higher risk of local recurrence compared to the negative margin group. High boost dose radiation does not fully overcome the adverse effect of positive margins.

317 ORAL

Breast conserving therapy: comparison of conventional radiation fields to field arrangements based on delineation of breast glandular tissue after CT-scanning in treatment position

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Introduction: Breast cancer patients receiving breast conserving therapy have a good prognosis. This stresses the importance of efforts to optimize local tumor control, reduce late toxicity of treatment and improve cosmetic outcome. Conformal radiotherapy might enable better target coverage, a decrease of dose inhomogeneity in the target and sparing of normal tissues. In our institute we ran a study to prepare the introduction of routine use of CT planning and Intensity Modulated RadioTherapy IMRT) with or without target delineation.

Patients and Methods: 19 patients with leftsided breast cancers received conventional determination of tangential fields as well as a planning CT scan in treatment position. The glandular breast tissue (GBT) and the 'gross tumor volume' (GTV) for the boost were delineated on all CT slices by 4 radiation oncologists and 1 radiologist. Inter observer variability was studied. Coverage of the 'planning target volume' (PTV) for the breast glandular tissue by the conventional fields was explored. 3D-CT planning was performed using the PLATO Radiotherapy Treatment-planning System (RTS). Multileaf collimation was utilized in the CT-planned tangential fields. Supplementary fields were applied if indicated to improve dose homogeneity. Dose volume histograms (DVH) for target volumes and normal tissues were derived from CT-planning and will be studied for conventional planning. These will be compared with each other.

Preliminary Results: Interobserver variability was low for delineation of the glandular tissue but high for the boost GTV. Coverage of the GBT-PTV by conventional fields was sub-optimal in 17 of 19 patients. Coverage of boost PTV by conventional fields will be studied. Improvement of dose homogeneity was indicated and realized by the use of CT-planning in 16 of 19 patients. Comparison of both radiation techniques regarding dose homogeneity in the target volume and normal tissue exposure, by DVH's, will be presented.

Conclusions: Conformal Radiotherapy in breast conserving therapy improves target coverage and enables the decrease of dose homogeneity. Interobserver variability with respect to the delineation of the boost is high.