sults were stratified for micrometastases (p=0.00005) and nuclear grade (p=0.0004), but not histologic grade (p=0.15) nor histologic grade (p=0.69).

Conclusion: Cytologic imprint to evaluate sentinel lymph node status intraoperatively has the potential to allow the performance of sentinel node biopsy and axillary dissection during the same operative time in 59% of women who need axillary dissection based on sentinel lymph node positivity, with the remainder receiving axillary dissection subsequently.

Friday, 22 March 2002 16:30–18:00

PROFFERED PAPERS

Treatment of early disease

411 ORAL

Impact of a boost dose of 16 Gy on local control in patients with early stage breast cancer older than 50 years of age

C. Vrieling[1], H. Bartelink[1], L. Collette[2], A. Fourquet[3], J.C. Horiot[4], J.J. Jager[5], M. Pierart[2], P. Poortmans[6], H. Struikmans[7], W. Van den Bogaert[8]. *[1] The Netherlands Cancer Institute, Radiotherapy, Amsterdam, The Netherlands; [2] EORTC, Brussels, Belgium; [3] Institut Curie, Radiotherapy, Paris, France; [4] Centre G.F. Leclerc, Radiotherapy, Dijon, France; [5] RTIL, Radiotherapy, Heerlen, The Netherlands; [6] Bernard Verbeeten Institute, Radiotherapy, Tilburg, The Netherlands; [7] University Hospital, Radiotherapy, Utrecht, The Netherlands; [8] University Hospital Gasthuisberg, Radiotherapy, Leuven, Belgium*

Purpose: To measure the impact of a boost dose of 16 Gy as part of breast conserving therapy, on local control in patients older than 50 years of age.

Patients and Methods: In the EORTC "boost versus no boost" trial, 5569 early stage breast cancer patients underwent tumorectomy followed by whole breast irradiation of 50 Gy. 3692 patient older than 50 years of age, with a microscopically complete excision of the tumor, were randomized between no boost or a 16 Gy boost. A significance level of 0.01 or less was used for subgroup analyses. The median follow up was 5.1 years.

Results: Patients in the no boost group had a 5-year local recurrence rate of 4.1% (95% CI: 3.1 - 5.1) compared with 3.0% (95% CI: 2.0 - 3.8) for patients in the boost group (p = 0.02). The hazard rate on local recurrence was reduced with a factor of 0.65 (99% CI: 0.40 - 1.04). Multivariate analysis showed that performance status, excision volume and pathological tumor size were significantly related to local control. According to these factors a prognostic score was defined, leading to three different prognostic groups with a 5-year local recurrence rate of 2.5% (95% CI: 1.8 - 3.3), 4.5% (95% CI: 3.2 - 5.8) and 8.6% (95% CI: 4.9 - 12.2), respectively. The influence of the boost on local control was assessed for the different groups separately, but the boost did not improve local control significantly in any of the prognostic groups.

Conclusions: In contrast to the findings in patients younger than 50 years of age [1], the boost did not improve local control significantly for patients with early stage breast cancer older than 50 years of age. Also, no subgroups of patients older than 50 years of age who might significantly benefit from the boost dose could be defined. Although longer follow-up is needed before definite conclusions can be reached, thus far the influence of the boost on local control for patients older than 50 years of age seems limited.

References

[1] Bartelink H, Horiot JC, Poortmans P, Struikmans H, et al. Recurrence rates among women treated with high-dose radiation for early breast cancer. N Eng J Med 2001; 345, 1378-1387

412 ORAL

Breast conserving therapy for early breast cancer. Brachytherapy or photon beam boost: a randomized study

M. Greco[1], L. Lozza[2], S. Tana[2], A.M. Cerrotta[2], G. Gardani[3], R. Kenda[4], M. Gennaro[1], C. Ferraris[1], R. Zucali[5]. *[1] Istituto Nazionale Tumori, Breast Unit, Milan, Italy; [2] Istituto Nazionale Tumori, Radiotherapy, Milan, Italy; [3] Università Bicocca, Milan, Italy; [4] Fondazione Maugeri, Radiotherapy, Pavia, Italy; [5] San Donato Milanese, Radiotherapy, Milan, Italy*

Purpose: The results of breast conserving treatment using breast irradiation and a boost to the tumour bed with either interstitial 192 Iridium implants or photon beam were reviewed.

Materials and Methods: From 1990 to 1994 at the Istituto Nazionale Tumori of Milan 111 patients with T1 or T2 * 2.5 cm breast carcinoma were treated with Tumorectomy, Axillary dissection and breast irradiation (T.A.RT.). The breast was treated with tangential fields using 60 Co or 6 MV photons to deliver 46 Gy in 2 daily doses, in 5 weekly fractions. Patients were randomised to receive a 14 Gy boost with a photon beam (T.A.RT.f: 60 patients) or a brachytherapy implant (T.A.RT.Ir: 51 patients). Radioopaque clips placed by the surgeons in the tumour bed were used to determine the volume to be boosted. High-energy photon beams were used and the dose was given by conventional fractionation in T.A.RT.f group. Patients randomised for T.A.RT.Ir needed a second hospital admission to have a multi or, less frequently monoplanar low dose rate 192 Ir implant performed with after loading technique.

Median follow up was 7 years. We compared occurrence of Ipsilateral Breast Cancer Recurrence (IBCR), to assess local control, and Overall Survival.

Results: No significant difference was observed in terms of IBCR (6.2% vs 6.1% in T.A.RT.f and in T.A.RT.Ir respectively). For tumours up to 1.5 cm the incidence of IBCR was 2.7% in T.A.RT.f and 3.7% in T.A.RT.Ir groups. When tumour was > 1.5 cm, the rate was 9.1% and 4.3% respectively. No local relapses were found in patients up to 55 years old treated with T.A.RT.Ir vs a 6.7% in T.A.RT.f group. The opposite was observed for patients over 55 years (11.1% in T.A.RT.Ir vs no events in T.A.RT.f).

OS was 89.9% in TART f and 94% in TART Ir pts.

Conclusions: Although a small number of patients were included in this trial, after a 7 years median follow up, our results suggest the following. There is no significant difference in local control and overall survival for patients treated with either photon beam or interstitial 192 Ir implant boost.

Photons and brachytherapy to boost the tumour bed are equivalent options and the choice should consider radiation safety and cost.

413 ORAL

The BASO II trial of adjuvant radiotherapy. V. None and tamoxifen. V. None in small, node negative, grade I tumours

R.W. Blamey, U. Chetty, A. Mitchell. *On behalf of the British Association of Surgical Oncology (BASO) Breast Group; Nottingham City Hospital, Nottingham Int. Breast Education Centre, Nottingham, UK*

Tumours (n = 1172) with excellent prognosis (≤2 cm, LN negative, Grade I), age <70, treated by wide local excision (WLE) with histologically clear margins randomised to WLE only, WLE + RT, WLE + Tamoxifen (TAM) or WLE + TAM + RT.

Centres could enter to all 4 arms (or) elect regarding RT and enter the TAM comparison (or) elect regarding TAM and enter the RT comparison.

This analysis is of the first 1122 to follow up date 30 June 2000 (median 35 months, range 1–104). 33 have died: only 7 with or from breast cancer.

	Randomised comparison					
	RT	no RT	TAM	no TAM	RT + TAM	Neither
n	554	549	208	207	96	95
LR	7	20	2	8	0	6
LR% PA	0.4	1.2	0.3	1.3	0	2.1
	χ^2 5.14 p < 0.02		Exact Test p 0.06		Exact Test p 0.01	

Conclusion: In this excellent prognostic group although the LR rate without RT is satisfactory at 1.2% PA, it reaches 2% PA in cases not given neither RT nor TAM.

414 ORAL

Intraoperative radiotherapy in boost modality after breast conserving surgery in breast cancer patients

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Introduction: Conventional radiotherapy after breast conserving surgery is confined to 50 to 55 Gy external beam radiation therapy (EBRT) to the whole breast and 10 to 16 Gy external boost radiation to the tumor bed or

brachytherapy to the tumor bed. Aim of this study was to anticipate the boost radiation into the surgical procedure in a dedicated unit and thus provide a high precision boost and avoid the possibility of a "geographic miss" of an external boost radiation.

Methods: From October 1998 to December 2000 160 patients with stage I and stage II breast cancer were operated in our dedicated IORT facility. After wide local excision of the tumor, the tumor bed was temporarily approximated by sutures to bring the tissue in the radiation planning target volume. A single dose of 9 Gy was applied to the 90% reference isodose with energies ranging from 4 to 15 MeV, using round applicator tubes 4 to 8 cm in diameter. After wound healing the patients received 51 to 56 Gy EBRT to the whole breast.

Results: No acute complications associated with IORT could be observed. In five patients a secondary mastectomy had to be performed because of tumor multicentricity or excessive intraductal component in the final pathological report. Two patients developed rib necroses. In seven patients wound healing problems occurred. After a mean follow up of 18 months (minimum 8 months, maximum 35 months) no local recurrence could be observed. Cosmesis of the breast is very good.

Conclusion: Preliminary data suggest that IORT in boost modality after breast conserving surgery could be a reliable alternative to conventional postoperative fractionated boost radiation by accurate dose delivery and avoiding of a geographic miss, by enabling of smaller treatment volumes and complete skin sparing and by reducing of the postoperative radiation period for 7 to 10 days.

415 ORAL

Exclusive radiation therapy after neoadjuvant chemotherapy for locally advanced breast cancer: experience of a single academic institution

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Purpose: To evaluate a single academic institution experience as exclusive radiation therapy (RT) after neoadjuvant chemotherapy (Neo-CT) for the treatment of locally advanced breast cancer.

Material and Methods: A retrospective study of 53 breast cancer patients stages T2-4b, N0-1, M0 (58% stages T3-4) treated between 1989 and 1996 by

Neo-CT and RT was done. Neo-CT was prescribed to propose further conservative treatment or because of local inflammatory signs. Chemotherapy protocol FEC50 was used for 64% of patients. Following CT, breast and regional node areas were treated by megavoltage RT because of clinical complete response (CR) or surgery refusal. Median dose delivered were respectively: breast 55 Gy, axilla 65 Gy, sub and sus clavicular 55 Gy, internal mammary 50 Gy. Boost to the tumor was mostly delivered by electrons (79%) with a median dose of 21 Gy. Clinical response was evaluated at the end of CT and 2 months after RT. Recurrence free survival and overall survival were estimated by the Kaplan-Meier method and comparisons done by the Log-rank test. Predictive factors of recurrence or survival were obtained by Log-rank test for categorical data and Cox model for continuous data.

Results: Rates of CR are respectively 47% after Neo-CT and 91% after RT. With a median follow-up of 7 years [4-12], 6 isolated Loco Regional Recurrence (LRR) (12%) and 9 LRR with metastasis (19%) are diagnosed. The only predictive factor of LRR is chemotherapy response (p=0.005). At 5 year, LR free survival is 66% for overall population, but is 87% for patients with CR after chemotherapy and only 46% for patients with no CR after chemotherapy. The only predictive factor of overall survival is chemotherapy response (p=0.04). At 5 year, overall survival for entire population is 65%, but 80% for patients with CR after chemotherapy and 52% for patients with no CR after chemotherapy. At the date of point, conservation of breast is observed for 27 out of 31 alive patients (87%). No grade 3-4 radiation therapy complications is reported.

Conclusion: In our experience, exclusive locoregional breast radiation therapy following clinical complete response after neoadjuvant chemotherapy could be an alternative for conservative treatment of breast cancer.

416 ORAL

Paget's disease of the nipple: A multi-focal manifestation of higher risk disease

A. Kothari[1], H. Hamed[1,3], N. Beechey-Newman[1,3], C. D'Arrigo[2], A. Hanby[4], K. Ryder[3], I. Fentiman[1,3]. *[1] Guy's Hospital, Hedley Atkins Unit, London, United KIngdom; [2] Guy's Hospital, ICRF Pathology Laboratories, London, United KIngdom; [3] Guy's Hospital, ICRF Department of Academic Oncology, London, United KIngdom; [4] St. James' University Hospital, Department of Histopathology, Leeds, United KIngdom*

Background: The treatment of Paget's disease by mastectomy has recently been challenged in favour of breast conserving techniques. A large series of patients treated with mastectomy has been reviewed to assess the feasibility of less radical surgery.

Methods: 70 women with a clinical diagnosis of Paget's disease were reviewed. The type, grade, receptor and node status, and the mammographic and pathological extent of the underlying breast malignancy were determined. The survival of patients with invasive disease was compared with matched controls without Paget's disease.

Results: The underlying malignancy was invasive in 58%. Despite the fact that only one third presented with a palpable mass the malignancy was frequently extensive, being confined to the retro-areolar region in only 25%. The true extent of the disease was underestimated by mammography in 43% of cases. Of the patients with DCIS 96.5% were high grade and 100% of the invasive cancers were also of high cyto-nuclear grade. Overexpression of the c-erb-B2 oncogene was detectable in 83%. Patients with Paget's disease had a significantly worse survival than matched controls, but this difference was eliminated if they were also matched for c-erb-B2 status.

Conclusions: Paget's disease is often associated with extensive underlying malignancy which is difficult to accurately assess either clinically or mammographically. As a consequence cone excision of the nipple would have resulted in incomplete excision in 75% of cases. The underlying disease is of high grade and is frequently c-erb-B2 positive with a resulting poor prognosis. Aggressive local and systemic treatment therefore would seem to be merited

417 POSTER

The impact of age in breast cancer patients with small tumours

J. Abreu de Sousa[1], H. Rodrigues[2], H. Silva[1], M. Augusto[2], D. Brito[1], C. Dias[1], C. Azevedo[2], G. Santos[1]. *[1] Portuguese Institute of Oncology, Surgical Department, Porto, Portugal; [2] Portuguese Institute of Oncology, Medical Department, Porto, Portugal*

Introduction: Breast conservative surgery is the preferential treatment for small breast cancer tumours (Stage I and II). Many studies report high local recurrence rate in young women. The aim of this study was to evaluate the impact of age on the outcome of breast cancer patients with small tumours.

Methods: Two hundred ninety one breast cancer patients with tumours smaller than 3 cm submitted to surgery between March 1985 and November 1992 were divided into two age groups: a) patients with 35 years or less b) patients with more than 35 years integrated in a breast cancer surgical protocol. The total was 291 patients being 162 young women and 129 with more than 35 years; the median age was 33 for the first group and 55 for the second. The comparability of the groups was assessed in terms of clinical factors, histological factors and treatment related factors. Outcome was evaluated for overall and disease free survival.

Results: With a median follow-up of 90 months the local recurrence rate in breast conservative surgery group was 20% in women < or = 35 years and 2,8% for women >35 years; in the mastectomy group was 7,9% and 6,9% respectively. The distant recurrences in breast conservative surgery group were 11,4% in women < or = 35 years and 16,9% for women >35 years; in the mastectomy group were 29,9% and 22,2% respectively.

There were statistically significant differences between the two groups for overall and disease free survivals (OS and DFS). OS at 5 and 10 years for young women was 83% and 72% and for old women was 93% and 87% (p=0,003). DFS at 5 and 10 years for young women was 74% and 56% and for old women was 90% and 83% (p= 0,0008).

Conclusions: Young women with breast cancer 3cm or less do significantly worse when compared with older women in terms of recurrences, OS and DFS.

Among the women treated with conservative surgery, despite the small number of local recurrences, they occurred predominantly in the youngest patients.

418 POSTER

Cystosarcoma phyllodes: experience in a Scottish district general hospital

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Objective: Cystosarcoma Phyllodes (CSP) is a rare fibro-epithelial breast tumour where long term outcome is often not well documented. The aim of this study was to determine the clinical outcome of forty-eight patients treated at a Scottish district general hospital (DGH).

Patients and Methods: All patients treated for CSP between January 1986 and September 2000 were included in this study. Data was collected from histopathology records and review of case notes. The information obtained included patient demographics, mode of presentation, clinical findings, date of diagnosis, pre-operative investigations, type of operation, tumour size, detailed histology findings, incidence of recurrence, further surgical management and follow up details. All the slides were reviewed by a histopathologist to exclude any fibroadenoma. Classification into benign, intermediate and malignant was based on the criteria outlined by Norris and Taylor.

Results: More than 1500 breast cancer patients were treated at Law Hospital Carluke, Scotland between January 1986 and September 2000. At the department of histopathology, 48 cases of CSP were diagnosed during this period. Median age of presentation was 40 years (range 20-66). Sixteen percent were post menopausal women. Most of the patients presented with a painless hard lump. Lumpectomy was preferred option in 46 patients (96%). Two patients underwent mastectomy as primary treatment. Both tumours were >10 cm in diameter in small breasts and in one patient the pre-operative biopsy revealed a malignant Phyllodes tumour. Pathology of the cases demonstrated 87% to be benign, 7% intermediate and 6% malignant pathology. Thirty-four percent had incomplete excision histologically but recurrence occurred in only 3 benign lesions at 18,30 and 85 months after initial surgery. Mean follow up was 56 months (range 14-120) and all patients are well.

Conclusion: Breast conservation approach and appropriate margin clearance at the time of primary surgery is important in all patients with CSP and even those histologically defined as malignant will have good long term prognosis.

419 POSTER

The impact on cosmetic outcome of two different boost techniques after conservative treatment of early breast cancer

L. Lozza[1], S. Tana[1], A.M. Cerrotta[1], G. Gardani[2], R. Kenda[3], C. Ferraris[4], M. Gennaro[4], M. Greco[4]. [1] *Istituto Nazionale Tumori, Radiotherapy, Milan, Italy;* [2] *Università Bicocca, Milan, Italy;* [3] *Fondazione Maugeri, Radiotherapy, Pavia, Italy;* [4] *Istituto Nazionale Tumori, Breast Unit, Milan, Italy*

Purpose: To evaluate the influence on the aesthetical results of a radiotherapy boost to tumor bed with either photon beam or intersitial 192 Iridium implant in patients (pts) treated with tumorectomy, axillary dissection and 46 Gy whole breast irradiation (TART).

Materials and Methods: Twenty-nine consecutive pts, representative sample of 111 pts randomized in a prospective study realized at the Istituto Nazionale Tumori of Milan from 1990 to 1994, were assessed for this study of cosmetic outcome. The boost dose of 14 Gy was delivered with photon beams in 15 pts (TART f) and with brachytherapy multi or, less frequently, monoplanar implants in 14 pts (TART Ir). A couple of photographs was taken immediately before the start of whole breast irradiation and after 2 years or more, during follow up, to detect delayed changes. The cosmetic evaluation was conducted with three different approaches: a) subjective judgement of pts. by means of a simple self assessment questionnaire; b) subjective judgement of a 3-members panel (1 surgeon, 1 radiation therapist, 1 nurse); c) objective judgement with use of a computerized analysis of digitalized images, to compare anthropometric parameters before and after the treatment assigned.

Results: In terms of subjective cosmetic scores, pts and members of the panel agreeded in considering the TART f results the best ones. This depended on the high rate of evident teleangectasia (57%) and fibrosis (35.7%) in the TART Ir group. For both these parameters the incidence was 6.6% in the TART f pts. The final aesthetic result was excellent/good in 80% of TART f pts. and 64% TART Ir pts. The median value of self-assessment scale was 8 (range 0-10) for TART f pts. and 7 (4-10) for TART Ir pts. A good cosmetic outcome in terms of shape and simmetry was confirmed in both groups by computerized analysis.

Conclusions: A global satisfactory cosmesis was recorded in both groups. Patient's own evaluation and 3-members panel highlighted better result in the TART f group, while computerized analysis showed similar results in shape and simmetry. Loss of cosmesis due to alteration of shape and simmetry seems to be related with surgical technique rather than radiotherapy procedure. At the opposite, teleangectasia and fibrosis represent failure due to radiation treatment, particularly when Iridium implants are adopted.

420 POSTER

Comparison of cosmetic outcome between peroperative implants and implants after external beam treatment in the breast conserving treatment for breast cancer

B.R. Pieters[1,2], A.A.M. Hart[2], N.S. Russell[2], E.P.M. Jansen[2], J.L. Peterse[2], J. Borger[2], E.J.T. Rutgers[2]. [1] *Academic Medical Center / University of Amsterdam, Radiotherapy, Amsterdam, The Netherlands;* [2] *The Netherlands Cancer Institute / Antoni van Leeuw, Radiotherapy, Amsterdam, The Netherlands*

Purpose: To compare cosmetic results and determine factors affecting cosmesis between patients treated with a peroperative implant vs. an implant after external beam radiotherapy to deliver the boost dose after excision of invasive breast cancer.

Methods: In the period 1989-1997 118 patients had a peroperative implant as part of a breast conserving treatment for breast cancer. Forty-seven patients were eligible for the cosmetic analysis. These patients were matched with 123 patients drawn from a cohort treated between 1979-1988 with an implant 3 weeks after external beam radiotherapy. The surgical therapy consisted of a wide local excision with or without a total axillary clearance.

The brachytherapy dose was 15-25 Gy continuous low dose rate. All patients received whole breast irradiation to 50 Gy.

Cosmetic results were assessed by a panel of three radiation oncologists on a set of four photographs by a 4-point (0-3) scale, with the highest score for poor cosmesis. Analysis of variance was used to compare the cosmetic results between cases and controls. In an additional analysis the results were adjusted for variables, which were found to be related with cosmetic results in the EORTC 'boost vs. no boost trial'(22881/10882): tumor in the inferior part of the breast, volume of excision and clinical tumor stage.

Results: The mean sum score for cases was 6.02 (SE 0.33) and 5.16 (SE 0.23) for controls (P=0.037). However, additional adjustment for tumor localization, excised volume and clinical T-stage resulted in means of 5.81 (SE 0.36) for cases and 5.31 (SE 0.22) for controls (P=0.26). This change is mainly due to the effect of T-stage. Factors associated with cosmetic outcome were tumor localization (inferior the worse: P=0.0001), excised volume (the larger the worse: P=0.081), and clinical T-stage (the higher the worse: P=0.016).

Discussion: No difference in cosmetic outcome was found between brachytherapy modality. The panel judged the cosmetic outcome fair to good for both cases and controls. This study seems to confirm the conclusions of the EORTC study regarding the associations with cosmetic outcome of tumor localization, excised volume, and clinical T-stage.

Conclusion: Peroperative implants or implants after external beam radiotherapy for brachytherapy boost in the breast conserving treatment for breast cancer leads to comparable cosmetic results.

421 POSTER

Effect of longer FU on OS benefit due to adjuvant RT for breast cancer

J. Van de Steene, V. Vinh-Hung, G. Storme. *Az-Vub, Oncology Center, Radiotherapy, Brussels, Belgium*

Purpose: To evaluate the effect on overall survival (OS) of adjuvant radiotherapy (RT) for breast cancer, when the follow-up (FU) time of the considered trials increases.

Procedure: Update and time-lapse analysis of 4 papers: Cuzick (Cancer Treat Rep 1987) and the EBCTCG (Oxford University monograph 1990, N Engl J Med 1995, Lancet 2000) relating to the unconfounded adjuvant RT trials (surgery (S) versus same surgery plus RT (SRT)).

Results: The table shows [odds ratio/2p] in each cell (SRT vs S). C1: publication of which the data are borrowed. C2: overall odds ratio (OR) of the trials in the paper. C3: OR of the updates of the cohort of the 8 trials

Abstract 421 – Table

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
Cuzick	1.02/	1.02/	0.88/			0.94/		0.86/	1.04/	1.04	0.91/		1.06/	0.88/	1.18/
1987	0.3	0.3	0.2			0.5		0.1	0.3	0.3	0.5		0.2	0.08	0.4
Oxford	0.99/	1.01/	0.90/			0.98/		0.89/	1.01/	1.04/	0.93/		1.06/	0.90/	0.96/
1990	0.8	0.8	0.1			0.8		0.2	0.7	0.4	0.5		0.3	0.09	0.6
NEJM	0.97/	0.98/	0.91/	0.91/	0.94/	0.89/	0.89/	0.86/	1.02/	1.01/	0.88/	0.88/	1.02/	0.88/	1.06/
1995	0.3	0.5	0.07	0.07	0.2	0.03	0.03	6E-3	0.5	0.8	0.05	0.02	0.7	2E-3	0.3
Lancet	0.96/	1.00/	0.90/	0.88/	0.87/	0.86/	0.86/	0.85/	1.02/	1.03/	0.86/	0.86/	1.03/	0.87/	1.06/
2000	0.06	0.9	0.01	6E-3	2E-3	8E-4	9E-4	2E-4	0.4	0.4	4E-3	5E-3	0.4	2E-5	0.3

in the Cuzick paper. Gain in odds reduction (GOR) recent versus old trials: C4: overall/cutoff 1970; C5: cohort of 36 trials of NEJM paper (NEJMcoh.)/cutoff 1970; and C6: NEJMcoh./cutoff 1975. GOR of large (>600 pts) versus small (<600) trials: C7: all trials; C8: NEJMcoh. C9: OR of all both recent (>1970) and large (>600 pts) trials. OR of all either old (< = 1970) or small (<600 pts) trials: C10: all trials; C11: cohort of 6 old or small Cuzick trials. GOR due to classical fraction dose (1.8–2.0 Gy/f) versus other: C12: all trials with specified fraction dose; C13: NEJMcoh. OR of all trials with high (C14) or low (C15) increase of non-breast-cancer mortality (NBC) due to RT (following Lancet). C16: OR of trials without specified NBC in Lancet.

Conclusions: There is no indication that longer FU decreases the benefits due to RT. Update and cohort analysis show no changes in the clinical effects, but a systematic increase of the statistical significance. Begin year of trial, number of patients in the trial, fraction dose and prevention of late toxicity become at each update more significant. These results strengthen the hypothesis that the seemingly benefit in the recent trials is not (only) due to a shortage of FU, but is an inherent characteristic of the recent, large or well performed trials, independent of FU time.

422 POSTER

Intraoperative electron radiation therapy (IOERT) in the quart sequence: A pilot study

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We evaluated the tolerance of a single dose of 800–1500 cGy, delivered with an electron beam at a high pulsed dose-rate from a non isocentric, IOERT dedicated linear accelerator, (Novac 7, Hitesys), to the tumor bed during surgery in patients with breast cancer undergoing conservative treatment, instead of the boost of the traditional QUART sequence. From May 1999 to September 2000, we enrolled 27 breast cancer patients with cT1-2, cN0. The first 6 patients received a starting dose of 800 cGy, the second 6 received 1000 cGy, 10 patients 1200 cGy and the last 5 patients received 1500 cGy. The pulsed dose (5 pulses/sec) varied between 3.6 to 8.7 cGy per pulse. The diameter of the collimators ranged from 4 to 8 cm with a flat (15 patients) or 22.5° beveled (12 patients) termination. Electron energy was 9 Mev in 6 cases and 7 Mev in 21 cases. In 3 cases, we used two fields of treatment. In 6 patients, we included the wounded skin's edges in the field of treatment. Three patients had a prosthesis mentor 320/25. External Beam Radiation Therapy (EBRT) with conventional schedule, 40 Gy total Dose, was performed after wound healing. The median gap between IOERT and EBRT was 8 weeks. Two pts with adverse prognostic factors undergoing chemotherapic regimen, including doxorubicin or Taxanes, received EBRT after the completion of CHT. One patient (in the first step dose), in which irradiation was performed over a prosthesis implant had a skin lesion 8 months after IOERT (after 4 cycles of doxorubicin and 4 cicles of CMF complicated by frequent mastitis). She received EBRT 10 months after IOERT. No significant increase of healing time or surgery-related morbidity was observed; only one patient (receiving the second step dose of 1000 cGy), with a large serum collection in the axilla, showed delay in scar formation. Four patients developed mastitis that needed antibiotics and non steroideal anthiphlogistic medication.

Cosmesis was good in 26/27 patients.

Conclusions: This treatment is well tolerated for all IOERT delivered doses. A phase II study will evaluate the impact of this treatment on local disease control. Actually we had not breast releapse in these patients.

423 POSTER

New radiotherapy techniques should be used after conservative breast cancer surgery

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Purpose: To evaluate the necessity of three dimensional (3D) conformal radiotherapy after conservative breast cancer surgery.

Materials and Methods: Fifty T1 patients treated with breast conservation surgery and referred for post operative radiotherapy were studied. Each patient was first planned on the conventional simulator. Chest contour was obtained on the central, superior and inferior borders of the tangential field. Two dimensional (2D) dosimetric planning was done. Then, each one had a dosimetric computed tomography (CT) scan imaging with 3D planning. The 2D planning was virtually superposed on the 3D plan. The planned treatment volume (PTV) including the gland and the concerned chest wall was compared to the irradiated volume taking into consideration the coverage of that PTV. The conformity index (CI), which in our study is the ratio of the PTV to the irradiated volume, is studied for every patient and an average is calculated.

Results: The average CI obtained is 1.07. This represents a partial (7%) geographic miss in PTV in 2/50 patients (4%). The geographic miss is in the proximal part of the lower outer quadrant.

Conclusion: 3D conformal radiotherapy is necessary in breast irradiation after conservative surgery. It ensures total coverage of the targeted volume.

424 POSTER

Multiclinician involvement in protocol-driven management of early breast cancer patients in Australia: High standards and excellent outcomes can be maintained

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Introduction: A radiation ontology centre is referred patients from many surgeons and medical oncologists who often practice in a number of institutions. This study assesses the impact of such referrals on outcomes.

Methods: Analysis of data in a prospective database on 465 patients treated by breast conservation for stage I, II disease.

Results: 49 surgeons and 20 medical oncologists from 57 hospitals in Victoria, Australia, referred the 465 patients to one centre for radiotherapy. Management was by in-house protocol requiring complete excision (negative margins) of tumours ≤4 cm. Radiotherapy technique and dose were standardised (45 Gray in 20–25 fraction plus 15 Gray in 5 fraction electron boost). Systemic therapy was determined by medical oncologists. At median FU of 51.1 mo. the acturial 5 yr breast cancer specific survival, RFS, and isolated local recurrence were 90.8% (95% CI 87.6–93.9%), 82.9% (95% CI 79-86.6%) and 3.1% (95% CI 1.4–4.8%) respectively. 98% of patients retained both breasts. Outcome was not influenced by the percentage of women seen by a particular medical oncologist or surgeon. However, isolated local recurrence was, on multivariate analysis, significantly reduced by the use of radiotherapy and adjuvant tamoxifen and by pathological tumour size.

Conclusion: Even when true multidisciplinary clinic care is not possible because of geography and the number of clinicians and institutions involved, a high level of clinical outcome is possible when guidelines are followed.

425 POSTER

Breast cancer in women aged 25 years or less

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Background: Although several studies have examined the problem of breast cancer in young women aged ≤35 years at diagnosis, there are only occasional cases reported in very young women aged ≤25 years and no series are available. The presentation, tumor biology, behavior and outcome of breast cancer in very young women are not known and the rarity of breast malignancy within this age group could lead to diagnostic delays.

Methods: Tumour characteristics and survival of 15 women, treated in this unit, aged ≤25 years at the time of diagnosis have been reviewed and compared with women aged 26-35 years under the care of Guy's Breast Unit during the same period of time. Where appropriate, the two groups were individually matched for tumour size (clinical measurement) and histologic grade.

Results: There were 15 cases, with a median follow-up of 108 months and a median age of 24 years. The median duration of symptoms was 4 weeks, and the median tumour size was 20 mm. Two patients had DCIS only, while the other 13 had invasive carcinomas, none of which were grade I. A mastectomy was performed on 8/15 (53%). Axillary nodal metastases were present in 4/12 (33%). Of the 13 cases of invasive disease 9/13 (69%) recurred and died of breast cancer. Median disease free survival for patients with invasive disease was 86 months. There was no difference in overall survival between the patients aged ≤25 years and those aged 26-35 but taken together young women ≤35 had a worse prognosis than women between 36 and 65 due to a higher incidence of high grade and oestrogen receptor negative tumours.

Conclusions: This study suggests that among young women with breast cancer there is no difference in prognosis between the very young and the young. Despite two thirds being node negative, the high mortality rate indicates a need for an optimal selection of adjuvant therapy among these cases.

426 POSTER

Intensity modulated radiotherapy in the treatment of early breast cancer

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Ipswich Hospital is the Varian (UK) reference site for Intensity Modulated Radiotherapy. We wished to use the facility that this offers of "electronic compensation" to improve the dose distribution across the breast tissue in the irradiated Breast-especially in the Cranio-Caudal axis which is often ignored. As participants in the UK Standardisation of Radiotherapy in the treatment of Early Breast Cancer (START) trial we asked their Quality Assurance team to estimate the dose distribution this technique would produce using their three dimensional Breast Phantom. The maximum dose was reduced from 115.1% to 111% but more importantly the volume of breast tissue receiving more than 105% of the prescribed dose was reduced from 319cm3 to 101cm3. Encouraged by this we introduced this technique into clinical practice. In the first patient treated the maximum dose was reduced from 110.3% to 107.2% and the volume receiving more than 105% was reduced from 37cm3 to 8cm3. Currently a pilot of ten patients is being evaluated and the updated results will be presented including the practicalities of introducing this technique routinely.

427 POSTER

Breast carcinoma in women younger than 35 years

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During 1988–1997, 60 breast cancer patients younger than 35 years were referred to our department. Their files were retrospectively reviewed in order to examine clinical presentation, treatment modalities and outcome of this particular subgroup of patients. The median age was 33 years (22–35). 95% were diagnosed because of breast lump, 5% due to nipple discharge. Mammography was performed in 58% of patients and was positive for cancer in 69% of them. 51 patients (85%) presented with clinical operable disease, 7 (12%) had locally advanced tumors and two patients (3%) had metastatic carcinoma at diagnosis. 56 patients (93%) had radical operation 59% mastectomy and 41% breast conserving surgery. 62% of tumors were P2–P3 and 54% had involved axillary nodes. Estrogen receptor status was recorded in 42 patients and was positive in 24 (59%). 57 patients (95%) received chemotherapy, 38% CMF and 57% anthracyclines containing combinations. Median follow up in alive patients is 103 months (42–156). 23/56 NED patients relapsed (41%) within 8–129 months from diagnosis (median 24, mean 36). The most common relapse site was locoregional disease (43%) followed by bone metastases (39%). The actuarial 5 and 10 year survival rate is 69% and 49%.

Conclusions: Breast cancer patients younger than 35 years frequently present with large and node positive tumors. The sensitivity of mammography is relatively low. The high local relapse rate is to be considered when therapy is recommended. The overall survival does not seem different from older breast cancer patients with same stage of disease at diagnosis.

428 POSTER

Breast conserving therapy (BCT) in elderly women. analysis of 200 cases

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Material: Analysis of 196 women (200 breast cancers, BC) aged 70 years or more who underwent BCT for stage I-II BC from 1979 to 1998 in Strasbourg (120) and Perugia (80). According to clinical size, we noted 40 T0, 80 T1, 61 T2 (< 4 cm) and 19 Tx.

Treatment: 99 quadrantectomies, 101 lumpectomies and 185 axillary dissections were performed. All patients underwent whole breast irradiation at median dose of 50 Gy, with a boost in 190 cases. 32 and 131 patients received chemotherapy and Tamoxifen, respectively.

Histology: We found 164 ductal infiltrating carcinomas (IC) (SBR 1: 35, SBR 2: 85, SBR 3: 25, NS: 19), 24 lobular IC and 12 other types. In 51 out of 180 (28.3%) cases, axillary nodal involvement was observed. Tumor excision was considered complete in 184 out of 196 cases (93.8%). Estrogen and/or progesterone receptors were positive in 146 out of 170 assessed cases (85.9%).

Results: With a median 70-month follow-up, we observed three local recurrences (LR) and one nodal recurrence (NR). Six women developed a contralateral BC and 20 metastases (with a median delay of 31 months). 16 women developed another cancer. Overall survival rates were 81% and 62% at 5 and 10 years.

Conclusion: BCT followed by radiotherapy to the breast provides excellent local control and disease-free survival in elderly women with stage I-II BC and should be considered as a standard treatment in patients without severe comorbid disease.

429 POSTER

External beam irradiation plus iridium 192 implant or electron beam boost after breast-preserving surgery in women with early breast-cancer

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Purpose: To analyze the impact of the boost on the local disease-free survival (LDFS), disease-free survival (DFS) specific overall survival (OS) and cosmesis, a retrospective study of external radiation therapy and Iridium 192 implantation or electron beam boost in early breast cancer managed conservatively has been undertaken at Institut Catal d'Oncologia.

Patients and Methods: From 1985 to 1997, 728 patients were selected for this study with a median follow-up period of 45 months (range 12-157). External radiation therapy was administered post-operatively to the breast combined with brachytherapy boost in 530 patients or electron beam boost in 198 patients. Mean given dose was 48.4 Gy (range 42-54) with external radiation therapy to the breast, and 16.8 Gy (range 10-27) and 13,6 Gy (range 10-25) were mean doses for brachytherapy and electron beam boost respectively. Eighty-six point five percent of patients received sistemic treatment. Variables have been tested for cosmesis. Univariate and multivariate analysis have also been carried out.

Results: Mean age of the patients was 53.9 years (range 25-81). Stages were distributed as follows: 483 patients (66,3%) in stage I, 239 in stage II (32.8%) and 6 in stage III (1%). Pathologic distribution was 611 patients

with infiltrating ductal carcinoma (83.9%) and 117 patients (16.1%) of a miscellaneous group. OS for the entire group was 90.2% and 86.6% at 5 and 7 years respectively. Probability of DFS was 85.5% and 75.1% at 5 and 7 years. The LDFS was 96.6% and 92.8% at 5 and 7 years. Univariated analysis showed differences in LDFS and DFS between brachyterapy and electron boost. Univariated analysis demonstrated that presence of intraductal comedocarcinoma and muscular or perineural invasion were pronostic factors for local relapse in brachytherapy group. Tumor dose bed of 70 Gy or higher had a negative impact in subcoutaneous fibrosis, while dose rate lower than 65 cGy/h was better for skin color in patients with brachytherapy boost. Electron beam boost dose did not shown any effect neither in subcutaneous fibrosis nor in skin color.

Conclusion: We conclude that patients with early stages breast cancer undergoing external radiotherapy and boost can be effectively managed. Overall survival, long-term local control and cosmetic control are excellent.

430 POSTER

Response to preoperative chemotherapy for stage II-III breast carcinoma: a comparison of mammography, US and MRI

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Background: The relative value of clinical examination, mammography and ultrasonography (US) in the assessment of response to neoadjuvant chemotherapy for breast carcinoma (BC) has been previously investigated. However, few data are available about the role of magnetic resonance imaging (MRI) in this setting.

Purpose: To prospectively determine the most accurate modality among mammography, US and MRI to estimate the response to preoperative chemotherapy in stage II-III BC patients.

Methods: The chemotherapeutic regimen consisted of two courses of doxorubicin 60 mg/m2 and cyclophosphamide 600 mg/m2 (AC) followed by two courses of docetaxel 100 mg/m2 (D), all given preoperatively. Measurement of tumor extent was performed before chemotherapy (baseline), after two courses of AC (time 1) and after two courses of D (time 2). Response to therapy was evaluated by measurements of the longest tumor diameter. Imaging results were compared with each other and with the pathologic assessment. Preliminary findings are available for 16 patients.

Results: At baseline, US provided diameter values (mean diameter, MD: 32.4 mm) significantly smaller than MRI (MD: 43.2 mm) ($p<0.05$). Time 1 and time 2 MD values for mammography were 32.6 mm and 29.4 mm, respectively; for US 27.4 mm and 17.3, respectively; and for MRI 36.1 mm and 26.4 mm, respectively. These values suggest that all three methods do detect tumor shrinkage but with differences that reach statistical significance in certain comparisons (US vs MRI, time 1 and 2; US vs mammography, time 2). The comparison between the pathologically measured lesions (MD: 23 mm) and the preoperative imaging studies obtained at time 2 suggests that the closest values were obtained by MRI (MD: 26.4 mm), then by mammography (MD: 29.4 mm) and then by US (MD: 17.3 mm).

Conclusion: Although very preliminary, these data suggest that MRI is the most accurate method of evaluating tumor shrinkage under preoperative chemotherapy for stage II-III BC.

431 POSTER

Minimising cardiac dose by defining planning target volume (PTV) on an individual patient basis during left-sided breast irradiation

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There is an increase in cardiac deaths in patients treated with post-operative radiotherapy for breast cancer. The amount of radiation delivered to the heart should therefore be kept as small as possible. Conventional planning techniques for radiotherapy after breast conserving surgery use PTVs defined by the position of tangential beams that have entry/exit points at midline and mid-axilla. In many patients with left-sided tumours this inevitably leads to significant cardiac irradiation. We have used PTVs with individually-selected, but usually smaller, dimensions to try to avoid this.

For lateral tumours we have moved the medial edge of the PTV laterally to reduce cardiac irradiation, for medial tumours, the lateral edge is moved medially (compared to "conventional" positioning), sometimes adjustments to both are made. No cardiac blocks are used.

In 44 consecutive patients receiving radiotherapy to the left breast after conservative surgery, we have measured retrospectively the maximum depth of cardiac tissue within the simulator field.

In 38 patients no cardiac tissue was irradiated, the maximum recorded was 7mm., with a mean of 0.5mm, SD 1.6.

This shows that by attention to definition of individual PTVs, cardiac irradiation can be minimised.

432 POSTER

Large breast irradiation with a simple technique

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In patients with large breasts tangential irradiation after lumpectomy is technically difficult.

Tangential plans of large breasts comprise large volumes of lung, axilla and heart tissue,and even some volume of the opposite breast and lung.

Instead of classical positioning of the breast we encircled the breast with a plastic polyvinyl ring shaped tube. All five left sided breast cancer patients underwent CT scan planning both with and without plastic ring in conventional treatment positioning. Skin treatment portals at the midline and mid axillary were marked with radioopaque markers. The scan volume encompassed the region from just below the diaphragm to the lung apex.

Patient plans were evaluated with regard to dose-volume coverage of the breast target volume, ipsilateral lung, contralateral lung, heart and contralateral breast. Endpoints were maximum dose, minimum dose, and mean dose delivered to the target volume or critical structure.

As expected, the average volume of the left lung treated above a tolerance dose of 2000cGy was lesser than 10% in the ringed breast, whereas in the other method without ring the corresponding lung volume is 30%. The cardiac volume receiving a dose over 4500cGy was 2% in the ringed breast whereas, it was 15% in the breast without a ring. In conclusion, with the use of a simple technique with a fairly low expenditure, acute skin reactions and late cardiac and lung morbidity can be minimized in patients with large breast.

433 POSTER

Multidisciplinary care in Australia

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Multidisciplinary care can improve outcomes for women with breast cancer. In Australia, there are considerable challenges in developing a multidisciplinary approach to care because of the need to treat women in remote and sparsely populated areas and because of the mix of private and public health care.

The paper will describe resuls from a survey of current provision of multidisciplinary care in 60 hosptials across Australia. Nominated lead clinicians from 60 randomly selected hospitals, with low, medium and high caseloads, completed a questionnaire by telephone interview; six aspects of multidisciplinary care were assessed including communication and treatment planning within the team, access to all relevant disciplines, protocol development and audit. Results indicated areas where multidisciplinary care could be improved and indicated differences in multidisciplinary care provision by caseload category.

Preliminary results from the National Multidisciplinary Care Demonstration Project will also be presented; this project has examined the impact, acceptability and cost of implementing different strategies to foster multidisciplinary care in diverse sites across Australia. Several multi-site collaborations are participating in the project including rural and remote treatment facilities; the strategies are designed to foster all aspects of multidisciplinary care and to improve links between small treatment centres operating in rural and remote areas and larger facilities. A range of strategies have been explored including: videoconferencing; nurse-based links; shared protocols and education.

434 POSTER

Is the chest wall irradiation obligatory for postmastectomy radiotherapy of breast cancer patients ?

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Purpose: to determine the prognostic factors and their influence to the 5-year locoregional recurrence (LRR), distant failures (DF) disease-free survival (DFS) and overall survival (OS), depends on radiotherapy (RT) techniques (A - peripheral lymphatic without the chest wall versus B - with chest wall).

Materials and Methods: Between 1985 and 1994, 507 consecutive breast cancer patients with stage IIA - IIIB received, at the Cancer Centre in Warsaw, peripheral lymphatic only (n-313)) and with chest wall irradiation (n-194) after mastectomy. The incidence of patients with histologically involved axillary nodes was 90%. On supraclavicular area, axillary and internal mammary nodes the total dose of 50 Gy in 25 fractions, over 5 weeks, with 60CO were given. The chest wall was irradiated with electrons to a total dose of 46 Gy at 90% izodose in 23 fractions over 5 weeks. Concurrently with RT, 67% of patients received systemic treatments (tamoxifen or CMF program). The median follow-up period was 99 months. All survived patents had 5-year follow-up. A multivariate analysis, using Cox regression model testing: stage, tumor size and location, age, total number of lymph nodes sampled, nodal ratio (NR = total number of axillary nodes involved divided by the number of axillary nodes sampled), pathological types and grading, vascular invasion, extracapsular axillary nodal extension (ECE) was performed for DFS and OS.

Results: The 5- and 10-year actuarial DFS and OS for the entire group were 50%, 43% and 62%, 42%, respectively. During the 5-year of follow-up in 226 - 46% of patients relapse occurred. Among them in 29 (6%) isolated LRR, while in 197 (40%) of patients DF were recognised - $p < 0{,}0001$.In technique A (without chest wall) and B (with chest wall): 38/313-12% and 23/194-12% isolated and with metastases LRRs were recognised during follow up. In multivariate analysis for DFS and OS age, location of tumor in breast, ECE and NR were the most important prognostic factors. Patients with NR > 60% had 2,2 times higher risk of recurrence or breast cancer death compare to patients with NR < 40%.

Conclusions: The small number of isolated LRR (6%) during the 5-year of follow-up indicates that both techniques with and without of chest wall irradiation were effective local treatment in our group of patients, contrary to systemic treatment (DF- 40%). Especially the axillary nodal ratio should be considered as useful prognostic factor, for chest wall irradiation.

435 POSTER

Perioperative HDR IR-192 brachytherapy boost in breast conserving treatment. Is it safe?

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The aim of the paper was to assess the safety of prioperative HDR Ir-192 boost delivered during breast conserving surgery for cancer.

The method was used in T1-T2 (up to 3 cm in mammography) N0M0 patients, with a distance between tumor edge and skin not less than 10 mm. After tumor excision and axillary lymph node dissection, the remaining breast tissue was widely mobilised. Brachytherapy needles were placed precisely into the tumor bed. The remaining breast tissue and subcutaneous layer were sutured accordingly over suction drains. The patient was moved to a nearby buncker in the OR, and HDR Ir-192 brachytherapy boost was delivered immediately, during the same general anaesthesia. The dose of interstitial HDR boost was 10 Gy. After 3-4 weeks all patients received external beam irradiation to the entire breast (median total dose 50 Gy).

Twenty six patients received the above treatment between November 1998 and October 2001. Their pathological stage was: pT1 - 18 pts, pT2 - 8 pts, pN0 - 17 pts, pN1 - 9 pts. Those with lymph nodes involvement received additionally chemotherapy (AC or CMF) and/or hormonotherapy. Median follow-up is now 21 months. No severe complications (i.e. local skin necrosis) were observed. Local infection requiring antibiotics was seen in two cases, and transient hematoma in additional three.

Conclusion: Perioperative HDR boost during breast conserving surgery for cancer is feasible and safe. We suggest that meticulous suturing of the remaining breast tissue and subcutaneous layer over a tumor bed containing brachytherapy needles provide adequate skin protection from necrosis, which might result from interstitial perioperative irradiation.

436 POSTER

Breast size, local relapse risk and prognosis after organ preserving therapy for early stage cancer

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Objective: Because of the potential difficulty in palpating masses in irradiated large breasts, we determined the incidence of local relapse and prognosis relative to breast size in patients subjected to organ preserving therapy for early stage cancer.

Methods: The "dosimetric" breast sizes of 78 women who underwent wide excisional surgery and breast irradiation (46 to 50 Gy/4.5 to 5.5 weeks) for early stage cancer between 1981 and 1998 were determined.

Results: At a median follow-up of 61 months, no significant difference in local recurrence rate was found among women with small (n = 21), medium (n = 23), or large (n = 34) breasts (20%, 5%, and 12% respectively, p = 0.34; the corresponding 8-year cumulative survival rates were 71%, 82%, and 71%, p = 0.70.

Conclusion: Patients with large breasts and early stage cancer treated by organ preserving therapy may not be at a higher risk of developing local recurrence and may not have a worse prognosis compared to women with smaller breasts.

437 POSTER

Role of lymphoscintigraphy in visualisation of axillary lymph-nodes remained after mastectomy with complete axillary lymph-nodes dissection

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Locoregional treatment of patients with breast cancer remain controversial. In respect to locoregional control combination of surgery and radiotherapy are superior to either modality alone. Nevertheless, in patients treated by mastectomy and complete axillary lymph nodes dissection (M+CLND) radiotherapy to axillar region is usually omitted, because all of this lymph nodes (LN) are considered to be removed by surgery.

Purpose: To evaluate axillary LN status in pT2-3N1 breast cancer patients treated by M+CLND.

Materials: Radical mastectomy with complete axillary LN dissection was performed by experienced surgeons (more than 10 years of surgical practice) in 12 women with T2-3 N1 breast cancer. Postoperative lymphoscintigraphy was made in a static mode. Acquisition was started 1hr after interstitial injection of 0.1-0.3 ml (100-150 MBq) of 99mTc-millicolloids into interdigital space of both hands. Simultaneous i/v administration of radiocolloids (74-140Mbq) was performed for better anatomical localisation of the visualised LN.

Results: Nine of 12 evaluated women had single residual LN in the operated axillar region. All of this LN were visualised as a small well defined areas of significantly increased tracer uptake. In all 9 cases size of detected axillary LN was estimated as 1cm or less. Two patients had 3 and more distinct LN directly in the axillary region each less than 1cm. Four of 11 women with visualised axillary LN had small supra- and/or infraclavicular LN detected by scintigraphy. Additionally, lymphatic vessels can be distinguished in 3 women.

Conclusion: LN scintigraphy can be effectively used for visualisation LN left in the axillar region after M+CLND. Therapeutic and prognostic value of this findings, as well as optimal loco-regional treatment strategy, remain undefined and needs further determination.