

and 4 second tumors developed during follow-up. Five-year actuarial overall, cause specific and breast-recurrence free survival is 94.6%, 100% and 90% respectively.

Conclusion: This study confirm that BCS and DR is an effective alternative to mastectomy in the treatment of DCIS of the breast.

1030

POSTER

LYMPHEDEMA FOLLOWING CONSERVATIVE MANAGEMENT OF EARLY STAGE BREAST CANCER

P.R. Anné, C.M. Triau, J. Coen, J.T. Efrid, S.N. Powell

Department of Radiation Oncology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, U.S.A.

The risk of developing lymphedema after axillary dissection and radiation is lifelong. The reported incidence varies, but underrepresents mild or asymptomatic arm edema. We retrospectively analyzed 237 patient records for arm lymphedema (LE). 185 patients had available morbidity data and were free from axillary recurrence. Median f/u was 43 months. Patient complaints and examination with arm measurements were used to assess the LE, which was graded as mild, moderate, or severe.

The 5-yr actuarial incidence of LE is 28%. The incidence of developing mild LE was 23%, of moderate or severe LE, 7%. Of 38 events, 28 were mild, 9 moderate, and 1 severe. The 5-year actuarial incidence increased as the level of axillary dissection increased, and as the number of nodes sampled increased: no dissection performed (n = 46) 13%, Level 1 (n = 47) 27%, Level 2 (n = 56) 41%, Level 3 (n = 23) 30%. As it can be difficult to determine high axillary dissection levels retrospectively, arm morbidity was also assessed using the number of lymph nodes dissected. The 5-yr actuarial incidence of LE is: None (n = 46) 12%, 1-10 (n = 54) 29%, 11-20 (n = 65) 40%, > 20 (n = 20) 39% (P = 0.05). These differences were more marked in those patients receiving radiation to the axilla or supraclavicular fossa (n = 132): 61% and 53% for a level 2 and 3 dissection vs. 10% and 25% for no dissection or a level one dissection (P = 0.001).

Morbidity is reduced with a less extensive dissection of the axilla, especially if the patient receives adjuvant radiation to the axilla. The extent of the axillary dissection should be sufficient only to establish the risk of systemic disease.

1031

POSTER

COLLIMATORS IN ASYMMETRIC MODE AND 3D PLANNING. APPLICATIONS IN BREAST CANCER

R. Ballester, J. Cadenal, A. Melero, A. Castel, V. Tuset, A. Arellano

Radiation Oncology Department, Badalona, Barcelona, Spain

Introduction: The possibility of use linear accelerators with two pairs of opposing collimators operating independently (asymmetric mode), allows beam modifications in habitual treatment planning. These modifications can be verified in 3D planning. We reported a variation in breast cancer treatment planning to avoid inhomogeneities at toracoclavicular fields' junction.

Technique: 1.—Patient positioned in an adjustable inclined plane to maintain the chest wall in line with the treatment couch. This position avoids collimator rotation in the tangential fields.

2.—Treatment planning in a conventional simulator or CT. The 3D dosimetry with multi-image CT display allows us to know dose distribution in the whole target volume.

3.—Treatment delivered using a LILAC with two pairs of asymmetric collimators and three isocentrics beams. The isocenter was at the junction beams.

(a) Superior longitudinal half beam in asymmetric mode, (with secondary field blocks to avoid humeral articulation) to treat the axillo-supraclavicular fosse.

(b) Inferiors longitudinal half beams in asymmetric mode, to cover the breast or the chest wall with two tangential fields. (i) They can be also in asymmetric mode in transversal collimator (a quarter of field) to avoid lung radiation.

Conclusion: Our dosymetric 3D study verifies the perfect dose homogeneity in treatment fields junction using collimators in asymmetric mode. This radiation technique allows to do diary treatment without moving the patient or the treatment couch. The progressive introduction of informatic control systems in treatment radiotherapy (performing collimators size, gantry angulation and other radiation parameters) makes easy to reproduce this technique diary.

1032

POSTER

INTRAARTERIAL CHEMOTHERAPY (IAC) (MITOMYCIN-CISPLATIN) IN PATIENTS WITH LOCOREGIONAL (LRP) OF BREAST CANCER RESISTANT TO CONVENTIONAL THERAPIES

F. Colagiovanni, J.C. Salvidea, M.L. Kotliar, M. Vilanova, R.D. Chacon
Clinica Independencia, Alexander Fleming Institute, Buenos Aires, Argentina

Breast tumors with LRP present a great difficulty even for palliative control, when they are resistant to conventional treatments. IAC has been used in few occasions and bibliography reports do not clearly refer application timing and the real usefulness of the procedure. Since May 1991 to March 1995, 20 patients with breast cancer in LRP underwent 44 chemotherapy courses (range 1-6, average 2). All the patients were pre-treated; 20/20 systemic chemotherapy, 1 to 3 lines, none CDDP; 20/20 hormonotherapy and 18/20 radiotherapy. IAC was performed by femoral route according to Seldinger's method, selective catheterism of internal mammary artery. Of these patients 3/20 had metastatic disease at the start of the chemotherapy. Treatment plan was cisplatin 100 mg/m² and mitomycin 10 mg/m², every 21-28 days with hydration and antiemetics. 3/20 patients had complete response, including 1 pathological complete response; 5/20 partial response greater than 50%; 7/20 with response minor than 50%; 2/20 stable disease and 3/20 progressive disease. Response duration ranged between 4 and 18 months. Two of the patients with complete remission are still alive (16-18 months) and free of disease. Complications related to the technique observed in the 44 courses performed were: wound hematoma and wound infection in 1 case each. No cases of severe neutropenia have recorded. **Conclusions:** IAC is a procedure with low morbidity; objective response was 40% in patients resistant to standard treatments. These results suggest that IAC may be used in earlier stages (SIII).

1033

POSTER

THE EFFECTS OF PRIMARY CHEMOTHERAPY ON THE COMPLEXITY OF BREAST CANCER SURGICAL TREATMENT

R. Hegg, C.A. Ruiz, W.W. Rezende, L.C. Teixeira, A.C.S.D. Barros, A.C.T. Nisida, J.A. Pinotti, I.F. Aguiar

The goal of this trial is to analyse the effect of primary chemotherapy on the complexity of the surgical treatment of breast cancer. From Feb 1990 through Oct 1994, 233 patients with palpable early stage breast cancer (stages I, II and III UICC/AJC) diagnosed through needle biopsy, received pre-operative chemotherapy with Epirubicin (50 mg/m²), Cyclophosphamide (500 mg/m²) and 5-Fluorouracil (500 mg/m²) administered by IV infusion for 3 courses on 21 days cycles. The mean age of the group was 50.6 years (26-69). The response regarding clinical stage is summarized below.

Clinical Stage	Number of Patients (%)	CR (%)	Clinical response PR (%)	SD or PD (%)
I	27 (12)	12 (44)	11 (41)	4 (15)
II	98 (42)	13 (13)	56 (58)	29 (29)
III	108 (46)	7 (7)	81 (75)	20 (18)

With these results, 57 of the patients underwent less extent surgical treatment (41% QUART instead of radical mastectomy and 16% TART instead of QUART). No life-threatening complications were seen due to chemotherapy. The data demonstrate the feasibility of primary chemotherapy in early stage breast cancer, providing significant reduction in the extent of surgical treatment.

1034

POSTER

INCIDENCE OF LYMPHOEDEMA AND IMPAIRED SHOULDER FUNCTION AFTER AXILLARY DISSECTION

A.M. Cady, C. Pertsch, T. Jørgensen

Surgical Department K, Bispebjerg Hospital, University of Copenhagen, Denmark

Aim: To assess the occurrence of lymphoedema and impaired shoulder function after axillary dissection, and to identify factors predicting these conditions. **Material:** 124 consecutive breast cancer patients, who had an axillary dissection a.m. Cady were invited for an examination median 17 months after the operation (range 14-20). They filled in a questionnaire about function and symptoms of the ipsilateral arm. At the day of examination circumference and function of the ipsilateral arm was compared with the contralateral arm. **Results:** Participation rate was 77% (95/124). Objective measurements disclosed lymphoedema in 6%, reduced flexion in 25%, reduced abduction in 21%, and reduced

rotation in 16%. Symptoms from the arm included swelling in 25%, reduced motility in 40%, fatigue in 44% and pain in 32%. Significant predictors for both objective and subjective complaints were high age (>60 years) and high number of removed lymphnodes. *Conclusion:* Axillary dissection leaves patients with considerable arm morbidity.

1035

POSTER

RESULTS OF LOCALLY ADVANCED BREAST CANCER TREATMENT

E.A. Korotkevich, T.G. Milevskaya

Research Institute of Oncology and Medical Radiology Health Ministry of the Republic of Belarus, Minsk, Belarus

During 1982–1992 469 patients with locally advanced non-inflammatory breast cancer (T4N0—66, T4N1—269, T4N2—134) were treated using the following regimen: radiotherapy (RT) + radical mastectomy + RT + chemotherapy (5-Fluorouracil + Cyclophosphan) + hormonotherapy (ovariectomy, Tamoxifen). The medical age was 50 years. Preoperative RT was carried out at a single dose of 4 Gy to a total dose of 20 Gy for 5 days. 285 patients received concurrent additional irradiation of the tumor at a total dose of 10 Gy. Postoperative RT was performed using a single dose of 2 Gy, 10–12 days, total dose—20–24 Gy.

The cumulative 5-year and 10-year survival rate amounted to 57 + 2% and 39 + 4% respectively. 5-year survival without recurrence made up 46 + 2%, 10-year—30 + 3% 5-year loco-regional tumor control was in 94 + 1% of the patients, 10-year—90 + 2%.

1036

POSTER

TAMOXIFEN ALTERS IMMUNOCOMPETENCE IN BREAST CANCER PATIENTS

Ž. Kusić, A. Bolanča, N. Đaković, J. Lukač

Department of Oncology and Nuclear Medicine, University Hospital "Sestre milosrdnice", Zagreb, Croatia

Tamoxifen (TM) has been described as having also mechanisms of action other than antiestrogenic, interfering with other events not mediated by estrogen receptors, and probably acting as an immunomodulating agent. In this work, natural killer (NK) cell activity and granulocyte (G) and monocyte (Mo) phagocytic functions were determined in 27 patients with ductal invasive breast carcinoma, stage I–III, before, 7 months and 14 months following postsurgical telecobalt radiotherapy (RT, total dose 40–55 Gy), divided into two groups, one of them (13 patients) receiving tamoxifen and the other one (14 patients) free of further therapy (CONTR). There was no difference in any function in CONTR group during the follow up. In TM group, slightly depressed 7 months after RT, NK cell activity increased at 14 months post-RT. G ingestion declined 7 months post-RT and remained depressed. Even Mo ingestion decreased 14 months after RT. The results obtained indicate longer-lasting suppressive effect of TM therapy on phagocytic functions.

1037

POSTER

BREAST CANCER IN ELDERLY: MANAGEMENT AND CLINICAL OUTCOME IN 317 PATIENTS

L.M. Martin, E. Calitchi, Y. Ormezuine, F. Feuilhade, B. Brun, L. Chosièrre, P. Piedbois, J.-P. Le Bourgeois

CHU Henri Mondor, Créteil, France

This is a retrospective study including 317 patients aged 70 years and over referred to our department between 1980 and 1990 for breast cancer. 113 out of 238 women with resectable disease (84 stage I–II, 154 stage IIIa) underwent a conventional treatment (surgery and/or radiation therapy), 64 underwent a no conventional combination of treatment (limited surgery and/or hormone therapy and/or radiation therapy), 40 underwent a single no conventional therapy (hormone therapy, radiotherapy, or limited surgery), 21 were not treated. 79 have a no operable extended disease (47 stage IIIb, 32 stage IV) and were treated with a combination of treatment. Five years local-regional control in patients with resectable breast carcinoma was significantly higher (76%) in conventional treatment group than in other therapeutic groups (48% for no conventional combination treatment and 34% for single treatment). No significant difference in 5 years survival rate was noted between conventional therapy group and no conventional combination therapy group (respectively 64 and 60%) whereas 5 years survival rate was significantly lower in single therapy group (39%) (chi square test). In patients with resectable disease, 29% of the deaths were related to breast carcinoma in the conventional treatment group, 37% in the combination group and 84% in the minimal treatment group. Conventional treatment did not

lead to a higher frequency of complication than that of younger population. 5 year survival rate was 65% in the extended disease group. High survival rates and frequency of deaths related to breast cancer call for validated guidelines in elderly. Combinations of no conventional treatments give good 5 years survival rates emphasizing the interest of this therapeutical approach.

1038

POSTER

DUCT CARCINOMA IN SITU (DCIS) OF THE BREAST: RESULTS OF TREATMENT BY CONSERVATIVE SURGERY (CS) AND RADIOTHERAPY (RT)

F. Moreno, A. Martinez, J. Pera, C. Gutierrez, R. Galiana, M.D. Arnaiz, M. Cambray, S. Marin, J.C. Menendez, L. Petriz, D. Rodriguez, S. Villa Rad. Oncol. Department CSU Bellvitge, 08907 Hospitalet LL. Barcelona, Spain

To determine local control, survival and cosmesis in women with DCIS treated between 1985 and 1994 by CS and RT we analyzed the results of treatment in 44 patients. All patients had CS; 43 patients had RT to the entire breast and 36 had a sequential boost to the tumour bed. One of the 44 patients had a minimum pathologic margins at time of excision. The mean dose to the whole breast and primary tumour site was 50 Gy and 61.8 Gy, respectively. The mean follow-up was 36 months. *Results:* 3 pat. failed, only one in the same quadrant. The mean time to failure was 38 months. All patients are alive; two are free from disease after rescue surgery and the other one has nodal, pulmonary and bone metastases, being in chemo-hormonotherapy. Cosmesis are excellent or totally acceptable in most of the patients. We achieve high local control, survival and cosmesis.

1039

POSTER

POST-MASTECTOMY RADIOTHERAPY (RT) IN HIGH-RISK PATIENTS

D.A.L. Morgan, J.K. Berridge, A. Mitchell, A.J. Moloney, R.W. Blamey, T.O. Ellis, C.W. Elston

Departments of Clinical Oncology, Surgery & Histopathology, City Hospital, Nottingham NG5 1PB, U.K.

After mastectomy, the combination of Grade III tumour with nodal involvement incurs a high risk of local and regional relapse. We have previously reported (ISRO Meeting, Kyoto 1992) initial findings from a trial in randomly allocating such patients to receive postoperative RT (45 Gy in 15 fractions over 3 weeks), or not. From 9/85 to 9/91, 77 patients were recruited. All patients now have a minimum of four years from randomisation.

The results are:

	RT group (n = 36)	No-RT group (n = 41)	"p" value
Locoregional recurrence			
5 years	21%	64%	<0.0001
Free of any recurrence			
5 years	41%	21%	0.06
Survival			
5 years	56%	42%	0.23

The benefit of RT in controlling locoregional disease is re-emphasised by these mature data. The trial was closed after a short period of recruitment, having achieved significance for this end-point. The possibility that RT might have a wider role—in prolonging overall disease-free interval (and possibly survival)—now emerges, but cannot be unequivocally established from this study.

1040

POSTER

TREATMENT RESULTS IN BILATERAL BREAST CARCINOMA COMPARED TO UNILATERAL BREAST TUMORS

St. Mose, I.A. Adamietz, F. Saran, C. Thilmann, R. Pahnke, H.D. Böttcher

Department of Radiotherapy and Oncology, University Hospital Frankfurt/Main, Germany

Purpose: A review of published data does not provide a certainty whether survival rates are comparable or worse in bilateral breast cancer patients versus women with an unilateral tumor. Therefore, results of therapy in one-sided and both-sided breast carcinoma were retrospectively analysed.

Patients: From 1977–82 (follow-up 5–12 years) 531 breast cancer patients (T1-4N0-3M0) were treated by mastectomy (n = 416) or conserving surgery (n = 115). Postoperative radiotherapy was performed in