

were treated with axillary+supraclavicular (A+S) fields in 95(92.2%) PM patients and in 37(48.1%) patients with BCT. Internal mammary field was added in 14(13.6%) PM patients and in 11(14.3%) BCT patients. Routine chest x-ray was performed 6 weeks after the completion of RT. Patients with abnormal chest x-ray findings or clinically diagnosed RP had spiral CT of the chest with 40 mAs. Alveolar consolidation, pleural effusion, glassy appearance and BOOP syndrome was accepted as RP in CT. 6 months later CT was repeated. All scans were evaluated by the same radiologist without knowing the clinical status. Patients with clinical symptoms received steroids and antibiotics for 15 days and the treatment results were reported.

Early pulmonary changes (within 6 months after the end of RT) was observed in 20(11.1%) out of 180 patients. 16 patients had clinical symptoms and 11 of them were correlated with radiological findings. 4 patients had radiological findings without clinical symptoms. 11 patients out of 16 with clinical symptoms received steroid and antibiotic treatment. Clinical response to treatment was 15 days in 8, 20 days in 2 and 30 days in 1 patient. Radiological complete response was observed in all treated patients. 5 patients without treatment had late clinical response and all these patients had signs of pulmonary fibrosis on their CT scans. Observed RP was calculated to be more in PM patients compared to BCT patients ($p=0.029$) with chi-square test. Electron or photon fields in chest wall RT and A+S field addition was not found to be significant for occurrence of RP.

Early treatment of RP detected by clinical and radiological signs provided faster response with less chronic changes in lung, after adjuvant RT for breast cancer patients. RP occurred more in PM than in BCT patients in our study group.

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POSTER

Prognosis of chest wall recurrence compared to mammary recurrence: long-term follow-up of a matched pair analysis

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Background: Local recurrence remains a major concern after primary treatment of breast cancer and has a major impact on subsequent survival. While most studies report a poorer survival rate in patients with a local recurrence after mastectomy than after breast conservation, it remains controversial, whether different risk profiles at the time of primary diagnosis may account for this difference.

Methods: Matched pair analysis of 134 patients with newly diagnosed locoregional recurrence of breast cancer without evidence of systemic disease. Matching criteria included the primary surgical treatment, tumor size, nodal status, and age. The significance of various prognostic parameters at the time of primary diagnosis and at the time of recurrence were evaluated, by univariate and multivariate analyses, with respect to survival after recurrence. The median follow-up was 8.4 years.

Results: Risk factors at the time of presentation, such as tumor size and lymph node status, were comparable between both groups. Local recurrence occurred on an average 9 months earlier in patients after mastectomy ($P=0.08$). Univariate analysis showed that lymph node status ($P=0.0001$) and disease free interval from primary treatment to local recurrence ($P=0.0002$) were the most significant single prognostic factors for survival after local recurrence. Breast conservation alone was shown to be of marginal statistical influence (only $P=0.05$). However, multivariate analysis demonstrated that the combination of disease free interval and the primary surgical treatment modality is the most significant independent risk factor for cancer related death ($P=0.0001$).

Conclusion: Local recurrence after mastectomy seems to be associated with worse survival than after breast conserving therapy. Early onset of chest wall recurrence, moreover, represents the highest independent risk for cancer associated death.

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POSTER

Breast cancer: locoregional relapse after mastectomy without postoperative radiotherapy

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Purpose: To analyse the pattern of relapse and survival in patients (pts) with breast cancer operated on with radical surgery and not irradiated postoperatively.

Materials: From 1970 to 1998, 2384 pT1-4 breast cancer patients (pts) underwent mastectomy without postoperative radiotherapy (RT). Median

age was 55 years (yrs). Premenopausal pts were 909. Distribution by pTNM was the following: T1 690, T2 1294, T3 177, T4 223; N0 1144, N1 1098, N2 60, N3 1. 625 pts had 1-3 positive axillary lymph nodes (N+), 303 4-9 N+, and 235 10+ N+. There was lymphovascular invasion (LVI) in 88 out of 186 pts. Margins were positive in 250 out of 2270 pts. 397 pts were ER and/or PgR positive, 187 pts were ER and PgR negative. 520 pts received chemotherapy, 677 pts were given endocrine therapy.

Results: 517 pts (21.6%) developed a locoregional relapse (LRR). The pattern of first LRR by site was the following: isolated chest wall 227; supraclavicular nodes 139; internal mammary chains 32; axillary nodes only 18; multiple sites 101 (51/101 with involvement of supraclavicular regions). Risk of supraclavicular relapse increased with number of involved axillary nodes (N0: 3%; 1-3 N+: 6%; 4-9 N+: 14%, 10+ N+: 24%). 914 pts developed distant metastases (38%) and 231 had second tumors (including 135 breast cancers). The 10-year actuarial risk of LRR was: pT1 15% vs pT2 25% vs pT3 35% vs pT4 35% (statistically significant: ss); pN0 16% vs pN+ 31% (ss); pT1N0 14% vs pT1N+ 19% (not significant: ns); pT2N0 18% vs pT2N+ 32% (ss); pT3N0 25% vs pT3N+ 37% (ss); pT4N0 9%, vs pT4N+ 42% (ss); N0 (14%) vs 1-3 (N+ 20%) vs 4-9 (N+ 38%) vs 10+ N+ (58%); age: < 35 yrs 39% vs 36-49 yrs 25% vs 50-69 yrs 23% vs 70+ yrs 18% (ss); positive margins 44% vs negative margins 21% (ss); negative receptors 36% vs positive receptors 24% (ss); presence vs absence of LVI (50% vs 30%: ss). The Cox regression analysis confirmed pT, number of N+, pN and age as major independent prognostic factors for LRR; receptors status was also significant.

Conclusions: According to the current analysis, pts with pT2-4 and N+ lesions or with 4+ N+ or < 35 year old or with positive margins or negative ER and PgR or with LVI have got a > 30% 10 year actuarial risk of LRR that should be taken into account when planning postoperative RT. The minimal volume of postmastectomy RT should include the whole chest wall but the addition of the supraclavicular/axillary apex region merits consideration, especially for pts with 10+ N+.

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POSTER

Sentinel node dissection in breast cancer: the Gustave-Roussy institute experience

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Purpose: Sentinel node biopsy (SNB) accurately predicts axillary status, thus avoiding axillary dissection if the sentinel node (SN) is negative. We used this technique during two phases: during the first period, all patients were submitted to axillary dissection; in the second period, among patients with a tumor size below 15mm, only those with positive SN had axillary dissection.

Methods: During the learning phase (1997-1999) localization of SN was achieved with radio-colloid only. Since 1999, we used both radio-colloid with pre-operative lympho-scintigraphy, and per-operative staining with patent blue, with subdermal injections.

Results: In the first series (65 patients) the mean tumor size was 22 mm, the detection rate was 66% with a positive SN in 40% of patients. There was no false negative and the SN was the only metastatic node in 76% of patients. In the second series (109 patients) mean tumor size was 14 mm, the detection rate was 96%. 39% of the SN were metastatic, the SN being the only positive node in 50% of these cases, and bearing micro-metastasis in 10 cases. Per-operative frozen section examination of the SN was used if it was macroscopically suspicious and completion axillary dissection performed only in patients with positive SN.

Conclusion: Our experience confirms that SN mapping using both the radio-colloid and the dye techniques is the procedure of choice for axillary nodes staging in patients with small size (< 15 mm) breast cancer, without palpable axillary node.

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POSTER

Internal mammary (IM) sentinel lymph node (SN) detection and excision in breast cancer

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Purpose: Identification and dissection of SN can replace axillary dissection in trained centers, in patients where the tumour is less than 3 cm and

without clinically detected axillary node. Identification of metastatic IM is an independent prognostic factor (1). There remains to establish feasibility and meaning of search and dissection of IM SN, when they are identified by a preoperative lymphoscintigraphy.

Material and method: In a prospective study, axillary and IM SN have been identified by a preoperative lymphoscintigraphy and by using a gamma probe and injection of blue dye (bleu patenté V) during the operation. Dissection of IM nodes was made through the corresponding identified intercostal space.

Results: From May 1999 to January 2001, SN have been searched in 89 patients (age 32-80) with breast carcinomas T1-T2 (<3 cm). Axillary SN have been identified in all. IM SN have been detected in 5/89 patients (5.6%). Three patients had the primary tumour located in the upper inner quadrant, one over both upper quadrants and one over both lower quadrants. Dissection of IM SN has been performed by using the same incision as the primary tumour in 2 patients and with a complementary incision in 3. No metastatic disease was discovered in the IM SN, whereas positive axillary nodes were identified in one of these 5 patients. IM SN dissection carried no morbidity.

Conclusion: Identification of metastatic IM SN would upgrade a primary breast cancer from stage I to IIB, and may help to adapt adjuvant radiochemotherapy.

References

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POSTER

The assessment of cardiovascular injury and early and late lung complications after irradiation for breast cancer

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Radiotherapy plays an important role in the prevention of locoregional recurrences after mastectomy and breast-conserving surgery for breast carcinoma. Therefore, better techniques to reduce treatment-related pulmonary and cardiovascular side effects are warranted. The risk of cardiac and lung toxicity is not well established. This study was designed to assess prospectively the occurrence and location of myocardial perfusion defects in left- in comparison to right-sided breast cancer patients as well as to delineate lung complications following radical radiotherapy. All patients were consented before inclusion in the trial.

Study group consisted of 51 patients aged 32 to 66 years (median 48) with right- and left-sided disease in respectively 27 and 24 cases, treated in our institution between 1997 and 1999. Thirty-five patients were referred for radiotherapy after surgical procedures and 16 patients had locally advanced disease. Twenty-six patients received systemic treatment. Radiotherapy was delivered with the use of Co60 or LA electron irradiation of the thoracic wall in mastectomized patients, or two tangential photon beams in other patients. All patients received elective radiotherapy to the locoregional lymph nodes. Clinical examination, lung scintigraphy and myocardial scintigraphy were performed before treatment, and after 6 and 12 months during the follow-up period. All patients finished the prescribed treatment course with acceptable tolerance. Grade 1-2 fatigue and grade 1-2 dyspnoea occurred in eight patients each. Scintigraphic abnormalities of different degree occurred in all patients at 6 and 12 months following radiotherapy. There were two cases of clinically relevant diffuse changes, and two cases of pulmonary microembolism. No cases of myocardial infarct or cardiac failure were recorded. Ten of the 27 patients with left-sided disease had slight perfusion defects seen on myocardial scintigrams and localized in the apex and anterior wall of the heart. Further details of this study will be presented.

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POSTER

Prospective follow-up study of breast cancer patients after sentinel lymphadenectomy (SLND)

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Purpose: The axillary lymph node status is the most important prognostic factor in breast cancer. As reported in different studies as well as in our

validation study tumour-negative sentinel nodes (SLN) accurately predict tumour-free axillary lymph nodes. Serial sectioning and immunohistochemistry of SLN increase the incidence of micrometastasis. We analyzed our data after a median follow-up of 19.5 months (1-43)

Methods: Between September 1997 and April 2001 189 patients with breast cancer were prospectively enrolled and underwent SLND with tumour resection. SLN were detected using vital blue dye and 99mTc labeled colloid. Completion axillary lymphadenectomy (ALND) Level I and II was performed, if SLN contained macrometastasis or were not identified. Axillary complications and recurrences were evaluated.

Results: SLN were identified in 180 (95%) of 189 patients. 81 (45%) had tumour-positive SLN, 60 (33%) containing macro- and 21 (26%) micrometastasis. All patients with SLN macrometastasis underwent completion ALND. 38 (63%) patients with ALND also had tumour-positive Non-SLN. There were no postoperative axillary complications nor recurrences after SLND alone. We observed one axillary recurrence (0.6%) after SLND and completion ALND in a locally advanced tumour. 5 (3%) patients suffered from distant metastasis.

Conclusion: The SLN concept helps to avoid two third of ALND in breast cancer patients. There were no local complications after SLND. We did not observe any axillary recurrence after SLND alone after a median follow-up of 19.5 months so far. The significance of SLN micrometastasis is unclear and further investigations are needed.

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POSTER

The impact of radiotherapy on the outcome of immediate post-mastectomy breast reconstruction using implants, with and without myocutaneous flap transfer

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Introduction: The role of post-mastectomy radiotherapy (RT) in improving the rate of local recurrence of breast cancer and overall survival is now well established. Breast reconstruction offers improved cosmesis, body image and quality of life and is increasingly being used. This study aimed to investigate the impact of RT on immediate post-mastectomy breast reconstruction (IPMR) with implants, with and without latissimus dorsi (LD) myocutaneous flap transfer.

Methods: We retrospectively reviewed the notes of 262 women who underwent 312 IPMR performed by two surgeons at the Royal Marsden and St George's Hospital from August 1994 to May 2000. Median follow up was 22 months. The end-point was the need for surgical revision, defined as implant removal, replacement, repositioning, pocket refashioning, capsulotomy or wound debridement.

Results: 161 IPMR were implant only and of these 21 received RT and 140 did not. The need for surgical revision was 38% and 28% respectively. A time dependant, multivariate analysis revealed that RT is significantly associated with increased revision rates for implant only IPMR (RR 2.06, 95% CI 1.12 - 3.78).

151 IPMR involved LD flap repair and of these 79 received RT and 72 did not. The need for surgical revision was 14% with or without RT, no significant increase with the addition of RT (RR 1.64, 95%CI 0.69 - 3.9).

Of the 100 IPMR receiving RT, 43 had surgery first and 57 had RT prior to surgery, with no difference in revision rates, p=0.955. LD Flap IPMR were associated with a significantly reduced revision rate compared to implant only IPMR regardless of whether RT was given (p=0.003).

Conclusion: Our experience confirms that RT impacts adversely on the outcome of implant-only IPMR. In patients with LD flap IPMR we have found no significant increase in the need for surgical revision. It is therefore our recommendation that patients likely to require adjuvant RT post mastectomy should be offered LD Flap reconstruction rather than implant only.

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POSTER

Conservative treatment of breast cancer: 20-year results boosting the tumor bed by brachytherapy

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Background: Boost to the tumor bed has been demonstrated to increase local control in stage I-II breast cancer treated conservatively. We present