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 an method: In a prospective study, axillary and IM SN have been identified by a preopertaive 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) wih 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 IIIB, and may help to adapt adjuvant radiochemotherapy.

References

[1] Ann Surg Oncol 2000, 7: 188-192.

678 POSTER

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

M. Welnicka-Jaskiewicz[1], R. Zaucha[1], J. Wojcik-Tomaszewska[1], T. Burski[2], K. Kuziemski[3], J. Jassem[1]. [1] *Medical University of Gdansk, Oncology & Radiotherapy, Gdansk, Poland;* [2] *Medical Univerity of Gdansk, Nuclear Medicine, Gdansk, Poland;* [3] *Medical University of Gdansk, Lung Disease and Tuberculosis, Gdansk, Poland*

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 deffects 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 to 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 and 24 cases, treated in our institution between 1997 and 1999. Thirty-five patients were reffered 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 prescibed treatment course with acceptable tolerance. Grade 1-2 fatigue and grade 1-2 dyspnoe 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 deffects seen on myocardial scintigrams and localized in the apex and anterior wall of the heart. Further detailes of this study will be presented.

679 POSTER

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

I. Langer[1], M. Zuber[2], W.R. Marti[1], D. Oertli[1], J. Torhorst[3], F. Harder[1]. [1] *University Hospital of Basel, Department of Surgery, Basel, Switzerland;* [2] *Kantonsspital Olten, Department of Surgery, Olten, Switzerland;* [3] *Institute for Pathology, University of Basel, Pathology, Basel, Switzerland*

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(12%) 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.

680 POSTER

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

D. Landau[1], S.L. Morris[1], N. Sacks[2,4], G. Gui[2], R. A'Hern[3], G. Ross[1]. [1] *The Royal Marsden NHS Trust, Radiotherapy, London, England;* [2] *The Royal Marsden NHS Trust, Surgery, London, England;* [3] *The Royal Marsden NHS Trust, Medical Computing and Statistics, London, England;* [4] *St Georges Hospital, Surgery, London, England*

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.

681 POSTER

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

B. Guix[1,2], I. Henríquez[1], F. Finestres[1,2], A. Martínez[1], J.I. Tello[1], J.A. Lejarcegui[1,2]. [1] *Fundació IMOR, Institut Mèdic Onco-radioteràpia, Radioterapia, Barcelona, Spain;* [2] *Universitat de Barcelona, Radioterapia, Barcelona, Spain*

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

the long term experience in a prospective group of patients (pts) with stage I-II breast cancer treated by conservative surgery, external beam radiotherapy (EBR) and brachytherapy boost to the tumor bed by LDR or HDR implants. The aim of the study was to analyze the results obtained in terms of: local control, disease control, cosmesis and early and late side effects and to compare them with the results obtained witout boost.

Methods: 938 consecutive pts with stage I (494 pts) or II (444 pts) breast carcinoma were treated between 12/1981 and 03/2000, with conservative surgery and EBR (50.4Gy/28 fx/5.5 w) followed by LDR (637 pts) or HDR (301 pts) implants. Both groups were comparable in patients and treatments characteristics.

EBR dose was 50: 4 Gy to the breast in all patients and to the supraclavicular fossa if nodes were positive. Brachytherapy was given 2 or 3 w. after radiotherapy. LDR doses were 20 Gy for tumors without intraductal carcinoma and 1 cm or more margins (group 1); 25 Gy for tumors with intraductal component or 5-10 mm margins (group 2); and 30 Gy for tumors with extensive carcinoma in situ or margins <5 mm (group 3). HDR brachytherapy doses were calculated with the L-Q model, to be equivalent for early effects to those of LDR. Doses per fraction of 200-250 cGy at the 85% isodose line were administered, in 2-3 fr every day for 3-5 days. Total HDR dose was of 18 Gy for group 1 pts; 20 Gy for group 2 pts and 22 Gy for group 3 pts.No patient was lost for follow-up.

Results: All pts completed treatment. During the 20-year follow-up, there were 70 local recurrences;70 distant metastases and 22 deaths. Actuarial results at 20 years were: local control 90.4%; disease free survival 85.4%; and survival 97.4%. Cosmesis was good or excellent in 92.4% of the pts. 10 pts (6/291 (2%) for LDR and 4/284 (1.8%) for HDR) developed moderate or severe breast fibrosis. Treatment satisfied the patients expectatives in 93.9% of the LDR group and 97.2% of the HDR group.

Conclusions: Brachytherapy boost was a very effective treatment. The local control, disease free survival and survival compared favorably with the results reported in no-boost treated patients. The good results obtained made brachytherapy the treatment of choice to boost the tumor bed in breast cancer patients treated conservatively.

682 POSTER

Is a high number of uninvolved nodes in early breast cancer an indicator of poor outcome?

V. Vinh-Hung[1], G. Csemi[2], T. Burzykowski[3], J. Van de Steene[1], G. Storme[1]. [1] *Oncologisch Centrum, AZ-VUB, Radiotherapy, Jette, Belgium;* [2] *Bács-Kiskun County Hospital, Surgical Pathology, Kecskemét, Hungary;* [3] *Limburgs Universitair Centrum, Center for Statistics, Diepenbeek, Belgium*

Purpose: Camp et al recently hypothesized that a high number of uninvolved axillary nodes (nneg) in N0 breast cancer might be an indicator of poor prognosis (Cancer 2000;88:108). Is there supportive evidence from the SEER data? In N0 and N+?

Study Type: Retrospective cohort analysis.

Patients: women aged 40-69 from the SEER 9-registries 1988-1997, T1-T2 M0 breast cancer, who underwent axillary dissection with 4-35 nodes examined.

Methods: 1) descriptive analysis by 5-year survival (OS) estimates. 2) multivariate analysis by proportional hazards models.

Results: 1) N0 (37519 cases): OS with 4 nneg was 92% (88-95%, 95% confidence interval), with 34 nneg 93% (87-98%). N+ (16978 cases): OS with 0 nneg was 50% (44-56%), with 10 nneg 80% (77-83%), with 20 nneg 85% (81-89%), with 30 nneg 91% (82-100%). 2) N0: nneg's risk ratio (RR) was 0.990 (0.983-0.996) (RR<1 indicates improved survival with higher nneg). N+: RR was 0.970 (0.963-0.976).

Discussion: higher nneg was associated with improved or plateaued survival; no consistent association with poor outcome was found.

683 POSTER

Surgical treatment of chest wall radiation-induced injuries

J.L. Guimarães[1], M. Ribeiro[1], J. Pontes[1], J.M. Fernandes[2], G. Santos[2]. [1] *Instituto Português de Oncologia, Plastic Surgery - Surgical Oncology I, Porto, Portugal;* [2] *Instituto Português de oncologia, Surgical Oncology I, Porto, Portugal*

Introduction: Radiotherapy is a therapeutic modality frequently used in the treatment of breast cancer. Its acute effects are normally solved by conservative means, but as its action evolves over time, its long term effects can be shown by progressive atrophic lesions and new tumors. Treatment of these situations is the excision of the affected structures and reconstruction of the chest wall by well vascularised tissues, whish has not been submitted to radiotherapy.

Patients and Methods: Between January 1990 and December 2000, 43 women with radio-induced ulcers after mastectomy and radiotherapy have been submitted to surgical treatment. The mean age of these patients was 65,6 years and there were performed a total of 46 pedicled myocutaneous flaps. Our first choice was Latissimus Dorsi myocutaneous island flap, in its classic version or extended. As second choice, we used the TRAM flap, and, when it was possible, in these cases, we used the flap also to perform breast reconstruction.

Results: As post-operative immediate complications there was infection in 9 patients and partial loss of the flap in three patients (3/46).

As late complications there was the reappearance of fistulas in two patients.

Complete healing was achieved in all patients.

Conclusion: As all the patients were successfully treated, we conclude that our therapeutic strategy was convenient and safe and, at least, contributed significantly for a better quality of life of these patients.

684 POSTER

Axillary sentinel lymph node biopsy (SLNB) for breast cancer: attempt to standardize surgical technique

G. Péley[1], I. Sinkovics[2], J. Tóth[3], E. Farkas[4], I. Köves[5]. [1] *National Institute of Oncology, Surgery, Budapest, Hungary;* [2] *National Institute of Oncology, Nuclear Medicine, Budapest, Hungary;* [3] *National Institute of Oncology, Pathology, Budapest, Hungary;* [4] *National Institute of Oncology, Surgery, Budapest, Hungary;* [5] *National Institute of Oncolgy, Surgery, Budapest, Hungary*

This study was performed first to determine the accuracy of SLNB in breast cancer and second to elaborate a simple and easily reproducible technique. Factors affecting the success rate and the sensitivity of SLNB were also investigated.

Patients with clinically node negative breast cancer up to 5 cm in size were enrolled in this prospective feasibility study. SLNB was performed by the dual-agent injection technique.

A total of 110 patients underwent lymphoscintigraphy for SLNB between December 1997 and February 2000. Three consecutive groups of patients were defined according to the particle size of the colloid and the injection sites of the tracer and the dye and the time of surgery: A (30-80 nm, peritumoral colloid and periareolar dye, same day), B (31 patients) (200-600 nm, peritumoral colloid and dye, next day) and C (38 patients) (200-600 nm, subareolar colloid and peritumoral dye, next day). The mean number of SLNs per patients was 1,8 in every group. The success rates were 84%, 97% and 100% in groups A, B and C, respectively. The only factor that affected significantly the success rate was the learning process. The sensitivities were 79%, 86% and 94% in the same groups, respectively. The sensitivity was 94% in pT1 and 80% in pT2 tumors and while it was improved from 80% to 100% in pT1 tumors it was not changed (78% versus 81%) in pT2 tumors stratified by the learning curve.

SLNB with the dual-agent injection technique with subareolar injection of 99mTc labelled 200-600 nm particle size colloid on the day prior to surgery is a simple and easily reproducible technique with high sensitivity in pT1 breast cancer petients. In pT2 tumors the sensitivity was lower than in pT1 tumors, but this difference was statistically not significant.

685 POSTER

Method prevention of seroma formation after breast surgery

N. Anikousko[1], V.E. Cheshuk[1], I.A. Yaremchuk[3], O.I. Sidorchuk[1], V.V. Zaychuk[1], V.M. Drozdov[2]. [1] *National Medical University, Oncology, Kiev, Ukraine;* [2] *Kiev City Oncological Hospital, Surgery department, Kiev, Ukraine;* [3] *National Medical University, Surgery, Kiev, Ukraine*

Purpose: decreasing of seroma formation volume, decreasing of seroma expression and duration after breast cancer surgery utilizing electrocautery dissection.

The most common complication following after breast cancer surgery utilizing electrocautery (mastectomy) is seroma formations that worsen quality of patient's life and increasing in patient's day. Various methods utilizing for decreasing of seroma volume and duration: post-surgical drainage, pressure garment, sew of skin flap on etc.

We are proposing the method of prevention seroma formation by processing of surgical wound by 0,15% sterile solution of sorbent's suspension "Silliard-P"(Silicium dioxydatum colloidale) before suture.

Method: 78 patients were studied. 1-group patients underwent radical