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?

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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

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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

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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

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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

mastectomy by Patey utilizing electrocautery which performed processing of surgical wound (all surface of wound) by 0,15% sterile solution of sorbent's suspension "Sillard-P" before application of suture. 1-group consist of 18 patients. 2-group (control group) consist of 60 patients which underwent radical mastectomy by Patey utilizing electrocautery without of wound processing.

Results: The existence of seroma in 1-group was short duration and disappeared on 5-th day. In 91% of cases just 3-times puncture was performed. In 8,3% patients had seroma duration about 3 week, which can be explained as not qualitative processing of axillary's region by sorbent's suspension. 85% of patients in control group had seroma with duration about 2 week.

Conclusions: Processing of surgical wound by 0,15% "Sillard-P" suspension preventing seroma, decreasing of seroma volume and duration, improve breast cancer patient's quality of life and decreasing in patient's day.

686 POSTER

Sentinel node biopsy in breast cancer: are there differences according to the time of radioisotope injection?

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Introduction: Lymphoscintigraphy is essential for a highly accurate sentinel node (SN)mapping and biopsy. There have been reports supporting the isotope injection in the morning of the surgery and others defending the previous day injection. At our institution we got logistic advantages with the day-before procedure. Nevertheless, we do not know whether this fact results in misidentification or higher number of SN. We compare the results of two groups of patients, trying to assess the differences between them.

Methods: We studied a series of 105 consecutive patients with cN0 breast cancer, submitted to the SN procedure, from Jul/99 to Jan/01. Sixty-one received the same-day injection (group A) and 44 received the isotope the day before surgery (group B). We used a combination technique, with peritumoral Tc99m sulphur colloid injection, subareolar Patent Blue V dye injection and gamma-probe detection. Statistical significance was assessed using Chi-Square and Mann-Whitney tests.

Results: The two groups are similar according to patient and tumor characteristics. There were no statistical significant differences in the studied variables between the two groups. Although, the results seem to be somewhat better in the day before injection group of patients. Lymphoscintigraphy showed hot spot's in 91.8% of group A and 95.5% in group B patients (p=ns). The mean number of hot spot's was 1.4 in group A and 1.6 in group B patients (p=ns). The mean number of excised sentinel nodes was 1.39 in group A and 1.45 in group B patients (p=ns).

Conclusions: These two distinct schedules for radioisotope administration yielded similar results. However, our institutional logistics prompted us to definitely choose the day before injection.

687 POSTER

Factors determining locoregional control and late sequelae in patients with locally advanced breast cancer (LABC) managed with radiotherapy (RT) as the primary locoregional treatment

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Introduction: RT plays an important role in the management of LABC, yet its clinical efficacy still remains far from satisfactory. The aim of this study was to evaluate retrospectively factors determining local control and late sequelae in a large series of consecutive LABC patients managed with RT as the primary locoregional treatment.

Material and methods: The records of 261 primarily inoperable LABC patients treated between 1991 and 1997 at two institutions: Medical University of Gdansk, Poland and Velindre NHS Trust, Cardiff, UK were analysed. All patients received megavoltage RT to the breast with two tangential fields, whereas the adjacent lymph node areas were irradiated using customised fields. Due to a large scale of RT doses and fractionation schedules, normalised total dose (NTD) was calculated for all patients using a linear quadratic model. In 241 patients RT constituted the only local treatment and the remaining 20 patients were subsequently subjected to mastectomy. Most patients received chemotherapy and/or endocrine therapy prior or after RT.

Results: Within the median follow-up of 37 months, locoregional recurrence occurred in 95 of 251 evaluable pts (38%). Three-year and five-year locoregional-free survival rates were 59% and 48%, respectively. At multivariate analysis of variables predicting the risk of locoregional relapse, inflammatory carcinoma ($p<0.01$; RR 1.96), T4 disease ($p=0.01$; RR 2.58) and involvement of supraclavicular lymph nodes ($p=0.04$; RR 1.99) were the most significant clinical factors, whereas response to RT ($p<0.01$; RR 1.52) and NTD ($p<0.01$; RR 0.75) were the most important therapeutic factors. Increasing the total dose to the tumour by 10 Gy was associated with an average 25% reduction of local relapse. Thirty nine patients (16%) experienced late radiation sequeale. Multivariate analysis showed that radical mastectomy performed after RT was associated with the reduced risk of arm oedema ($p<0.01$; OR=5.0), whereas neoadjuvant chemotherapy decreased the risk of subsequent teleangiectasia ($p<0.01$; OR=0.4).

Conclusions: Due to large heterogeneity of LABC pts, judicious tailoring of RT, particularly in terms of dose prescribing, is essential to increase the chance of locoregional cure. Therapeutic gain, however should be weighed against the increased risk of late complications.

688 POSTER

Improved cosmetic outcome by use of 3D-conformal boost RT and remodeled conserving surgery for early breast cancer

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Purpose: To evaluate factors determining cosmetic outcome, survival and failure pattern in patients treated with breast conserving therapy for early breast cancer.

Methods: From 2/1992 to 5/1999, 219 women with early breast cancer underwent breast RT with various technique of boost RT following various technique of breast conserving surgery. Median age of all pts was 44 ys old (range 20-67 ys old) and 170 pts were on premenopausal status. 159 pts underwent quadrantectomy and surgical defect was remodeled with fat reapproximation since 1996. All received tangent whole breast RT with total dose of 50.4 Gy in 28 fractions followed by a boost RT to the tumor bed, 10-15 Gy. Breast only was irradiated in 169 pts and breast and regional nodal area were irradiated in 50 pts. Technique for a boost RT to tumor bed included electron in 45 patients, Ir-192 HDR brachytherapy in 12 pts, 3D-conformal RT in 116 pts and 2D-photon in 6 pts. 20 pts with Tis did not receive a boost RT. 100 patients received chemotherapy concurrently with RT. Median follow-up was 44 mos with a range 3-112 mos. Cosmesis was determined by the physician and patients, scored to be excellent, good, fair and poor.

Results: 194 pts were alive without disease at the last follow-up. 5 pts (2%) failed in the breast; 2 salvaged by MRM, 1 salvaged by MRM and CT, 1 alive with disease after MRM and 1 alive with disease, on CT at the last follow-up. 12 pts (5%) developed distant metastasis. 5 yr overall and disease free survival were 94%, 95% respectively. Factors determining the survival include nodal involvement, presence of EIC, lymphatic invasion, number of node involved and multifocality. Chemotherapy was not a factor determining the survival but group of patients who received nodal RT showed poorer survival. 168 pts were scored for the cosmetic outcome at their last follow-up; 114 pts (68%) scored as excellent, 46 pts (27%) as good and 8 pts (5%) as fair.

Conclusion: The group of patients who received a boost RT with 3D-conformal and who underwent remodeled BCO showed much improved cosmetic outcome (excellent group was increased from 20% to 70%).

689 POSTER

The benefit of individualized custom bolus in the postmastectomy radiation therapy: Numerical analysis with 3-D treatment planning

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Purpose: With the improved survival rate of patients with breast cancer by postoperative chemoradiotherapy, meticulous radiotherapy techniques to