

distant metastases died. Local recurrence is detected in two cases and second series of RT was applied. A case with regional recurrence was treated with CT alone. Two cases were lost in follow up (one having a pulmonary metastasis). The rest of the patients are disease free.

186

POSTER

# **CF252 INTERSTITIAL NEUTRON THERAPY OF MALIGNANT TUMOURS OF VAGINA**

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In 1987–1994 a total of 82 patients with malignant tumours of vagina, aged 29–81 years, underwent interstitial brachytherapy with Cf252. Needle sources (active length 20–30 mm) with an increasing activity on the ends were applied. The activity of the needle sources were 3–6  $\mu\text{g}$  of Cf. The application of special template devices made it possible to implant sources in a strictly preset geometry for the whole course of irradiation. Complete tumour regression was observed in 71 patients (86.6%), partial regression—in 6 patients, and in 5 patients no effect was observed. Five year survival was 46% for all treated patients. The radiation reactions were evident after 2–3 weeks and manifested as squamous epithelitis. In 2 cases radiation ulcers developed. *Conclusion:* The results of treatment with Cf252 neutron interstitial brachytherapy are encouraging and further active research in this new and exciting field of radiotherapy would be very useful.

187

POSTER

# **LOCAL RECURRENCE AFTER CONSERVATIVE SURGERY AND RADIOTHERAPY OF BREAST CANCER. RETROSPECTIVE ANALYSIS**

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We have analyzed 90 patients treated in our Institute for stage I and II breast cancer from 1989–1990.

All patients have been treated with limited surgery, lymphadenectomy and radiotherapy. The mean age was 51.8 years (r30–80). Menstrual status—32 patients were pre or perimenopausal (35.5%) and 58 (64.5%) were postmenopausal. Ductal infiltrant carcinoma was present in 78.8%. The mean dose received to the breast 58 Gy TD (r 60–70).

Final margin status was predictive factor for local recurrence. Sixty-two patients (68.8%) had negative margin status and only 5 of them (8.06%) developed local failure. On the other side all patients with positive margin status (28–32.2%) had developed local failure. Multivariate analysis for the other predictive factors and five year survival rate will be presented at the conference.

188

POSTER

# **RADIATION THERAPY OF PATIENTS WITH CERVICAL AND UTERINE CARCINOMAS IN CONDITIONS OF THE TUMOR RADIOSENSITIVITY MODIFICATION**

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A method of local application of radiomodifying preparations (metronidazole solved in dimethylsulfoxide-MZ in DMSO) in patients with gynecological cancer was developed to enhance a damaging effect of radiation upon the tumor.

The studies performed in the excised uterine operational preparations revealed that the MZ diffusion allows to create high MZ concentrations in tumors (6000–8000 mcg/g). A model of experimental radiotherapy of implanted mice tumors showed that local MZ application results in the enhancement of damaging effect of radiation upon tumor tissue.

Radiotherapy with MZ was given to 116 patients with uterine carcinomas and to 184 with the cervical ones. This method allowed to increase the rates of tumor radiation regression and to enhance a 5-year survival of the patients.

189

POSTER

# **FACTORS INFLUENCING TREATMENT FIELD ACCURACY IN FRACTIONATED RADIOTHERAPY**

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*Purpose:* Field placement errors can substantially contribute to local recurrences in radiotherapy. Demands for use of advanced treatment techniques have lead to improved patient fixation devices and improved portal verification systems. But fractionated treatment without patient fixation is still daily routine in most departments of radiotherapy. We evaluated the factors influencing treatment field accuracy in patients with fractionated radiotherapy without the use of fixation devices.

*Material and methods:* From 9/93 until 12/93 61 patients with isocentric opposing fields or single stationary fields of the thoracic or abdominal region were examined in respect of treatment field deviations from simulation film. We performed weekly portal verification films for each patient. The extend of treatment field deviation from simulation films were correlated to objective patient data (age, weight), subjective patient data (Karnofsky score, self assessed pain and anxiety scores) treatment intent (palliative vs. curative) and to daily workload.

*Results:* Deviations of treatment field borders varied from 0 cm to 3.8 cm (medium: 0.8 cm). The percentage of field placement errors >1 cm was significantly increased in patients treated in palliative intent ( $P < 0.025$ ). Factors influencing treatment field accuracy were the absolute number of patients per treatment machine and day, the self assessed pain score and the self assessed anxiety score during simulation or treatment.

*Conclusions:* Modern treatment techniques (linear accelerators, 3D-treatment planning, etc.) allow to reduce planning and treatment volumes. Therefore, an accurate treatment field set-up must be warranted in order not to compromise treatment results. To keep treatment field deviations as small as possible patient fixations should be used, the radiotherapist must adequately care for the patient's medical and psychological welfare and sufficient daily set-up time must be given.

190

POSTER

# **TLD-MEASUREMENTS OF THE INCREASE OF SURFACE DOSE DUE TO WOUND DRESSINGS DURING PERCUTANEOUS IRRADIATION**

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*Objective:* Since any prolongation of overall radiotherapy time may affect the outcome of treatment, skin protection promises to improve the results of percutaneous irradiation. Different non-irritant dressing materials have been tested in the treatment of radio induced skin lesions. However, the increase of skin dose caused by wound dressings may enhance skin reaction. Therefore we measured the dose due to different wound dressings.

*Material and methods:* Dose increase at the skin covered by wound dressings was measured during therapeutic irradiation. The investigated materials were a silicon-coated polyamide net (Mepitel, Mölnlycke), a hydrocolloid dressing (Varihesive, Merck&Co.) and an alginate dressing (Kaltostat, Convatec). Measurements were carried out by thermoluminescent dosimetry during irradiation with electrons (5 MeV to 40 MeV) and photons (6MV and Co60).

*Results:* Dose increase depended on quality and energy of beam and on the beam arrangement. For electrons absolute values at the surface were relatively high for all materials (85–96%), but there was only a small dose increase (5–10% compared to uncovered skin). For photons dose increase depended also on the material. The lowest dose increase was measured for Mepitel, the thinnest coating. During irradiation with a single stationary field perpendicularly to the skin dose values of 32% (6MV) and 43% (Co) related to the maximum dose and a dose increase of 39% and 65% were measured. For tangential fields (e.g. irradiation of the breast, head and neck) absolute dose values were higher (up to 60% (6MV) and 75% (Co)), but dose increase was much lower (up to 20%). The other coatings caused dose increase up to 156% related to the uncovered skin. Dose values of 85% of the maximum dose (Co) are possible.

*Conclusions:* Wound dressings need not be removed during irradiation with electrons, thin dressings like Mepitel need not be removed during irradiation with photons, but thicker coatings like Varihesive or Kaltostat should be taken away during photon therapy.