series of CT and MR scans with target volume and organs at risk marked on each slice by the radiotherapist. The planner has to select the positions of isocentres (up to 3), collimator diameters, number and range of the arcs. Additional parameters for optimization procedure are the total dose proportions delivered by each arc. The treatment plan evaluation is based on the analysis of DVHs for target volume and also for organs at risk (orbits, optical nerves, brain stem) in order to minimize the dose and volume irradiated. It was accepted that the dose uniformity factor, defined as a ratio D_{min}/D_{max} within the target volume, should be not less than 0.8, and should approach 0.9 as much as possible.

The above-presented system of quality control, specifying tolerance limits of controlled parameters, assures safe and precise dose delivery in stereotactic radiotherapy.

58.
INFLUENCE OF TOTAL TIME OF SURGERY AND POSTOPERATIVE RADIOTHERAPY ON THE OUTCOME PATIENTS WITH ADVANCED LARYNGEAL CARCINOMA

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Aim: to evaluate influence of total time of combined treatment on locoregional outcome of treatment in group patients with larynx cancer.

Material/Methods: We performed retrospective analysis of 254 patients with with stage III or IV squamous cell carcinoma of larynx who were treated between 1993 and 1996. There were 236 men, 18 women, median age was 56.3 years . Surgery consisted of total laryngectomy and elective/ selective neck dissection. Patients postoperativly were irradiated in coventional way with total dose of 60 Gy. We used shrinking field technique with lateral opposed photon fields to tumor bed and upper-mid neck nodes. Supraclavicular regions (lower neck lymph nodes) were treated with an anterior field. Total time of combined treatment (from the surgery to the end of radiotherapy) was an average 92 days (range, 65 – 131 days). The interval between surgery and the beginning of radiotherapy was an average 45 days (range, 22 – 78 days) and time of irradiation was an average 45 day (range, 40 –74 days).

Results: Prolongation overall time of combined treatment beyond 90 days is strongly correlated with decreasing of locoregional outcome of treatment (p=0.00036). Also decreasing in outcome of treatment was noted when interval time between surgery and beginning of radiotherapy was more than 50 days (p=0.022) and when the time of irradiation was longer than 44 days (p=0.0026).

Conclusions: Decreasing of total time of combined treatment (surgery and postoperative radiotherapy) is crucial in patients with advanced cancer of larynx.

59.
VERIFICATION OF THE 3-D DOSE CALCULATION ALGORITHM DURING TOTAL SKIN ELECTRON IRRADIATION WITH THE ROTARY-DUAL FIELD TECHNIQUE

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Total skin electron irradiation is the commonly used procedure in the treatment of mycosis fungoides. The aim of this paper was to verify the elaborated algorithm for dose calculation during total skin electron irradiation with rotary-dual fields technique (TSEI-RD).

Material and method: Authors modified the 2-D algorithm published by Podgorsak taking account of dose distribution along the body midline and doses in the body on a larger depth than in the skin. Depth-dose function, beam profile were measured in TSEI-RD conditions (spoiler, source-skin distance SSD=350 cm, field size: 36 x 36 cm at 100 cm). Cylindrical vax phantom was used to calculate and then to measure the doses in a depth of 0.4 cm during exposure to the electron beam of 6 MeV (at the output of Clinac-2300CD accelerator). Phantom was rotating with the pre-calculated speed during constant exposure to two fields executed one by one in each fraction. Thermoluminescent detectors (TLD) were used for *in-phantom* dose measurements and Marcus ionization chamber was used for calibration of TLD. Dose homogeneity on the phantom surface was checked for three phantoms with different diameters of 20, 30 and 40 cm. Phantoms were irradiated at different rotating speeds.

Initial results: Doses measured by TLD were on average by 4% lower than doses pre-calculated using the modified algorithm. Mean doses normalized to those pre-calculated and their standard deviations (both in per cents) were respectively: 96.1% and 0.4 % for phantom with diameter of 20; 96.5% and 0.7% for diameter of 30 cm and 96.0% and 0.8% for diameter of 40 cm.

Conclusions: Measured doses proved correctness of elaborated algorithm. Very low standard deviations are resulting from regular cylindrical shape of the phantoms.

60.
FACTORS DETERMINING LOCAL CONTROL IN PATIENTS (Pts) 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 clinical outcomes still remain far from satisfactory. The aim of this study was to evaluate retrospectively factors determining local control in a large series of consecutive LABC pts managed with RT as the primary locoregional treatment.

Material and methods: The records of 261 primarily inoperable LABC pts treated between 1991 and 1997 at two institutions: Medical University of Gdansk, Poland and Velindre NHS Trust, Cardiff, UK were analysed. All pts received megavoltage RT to the breast with two tangential fields, and 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 pts RT constituted the only local treatment and the remaining 20 pts were subsequently subjected to mastectomy. Most pts 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 2.1), T4 disease ($p<0.01$; RR 2.9) and involvement of supraclavicular lymph nodes ($p<0.01$; RR 2.4) were the most significant clinical factors, whereas response to RT ($p<0.01$; RR 1.2) and NTD ($p<0.01$; RR 0.7) were the most important therapeutic factors. Increasing the total dose to the tumour by 10 Gy was associated with 30% reduction of local relapse.

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.

61.
THE OUTCOMES OF THE CONVENTIONALLY FRACTIONATED RADIOTHERAPY IN THE PROSPECTIIVE AND RETROSPRCTIVE STUDIES. IS THE MEANING OF CONVENTIONALITY THE SAME?

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Aim: to discuss some problems of the "conventionality" in the prospective and retrospective studies finished last year at the RT Department in Warsaw. The phase III clinical trial. The study was conducted according to the evidence based rules. Cancer of the larynx - glottis and supraglottis T1 - T3 N0 M0 WHO 0 - 1, 395 cases 196 in experimental, 199 in conventional arm. The retrospective study concerned all patients with the cancer of larynx treated radically in the II department in years 1989 to May 1995. 372 patients T1- T4, N1-N3, M0. The prospective material 150 patients were selected [age 75 and less, WHO 0-1, T1-T3, N0, M0] employing the same selection criteria as in the prospective study. The comparison was performed with the conventional arm of the clinical trial [199 cases].

Results of the study: Significant differences were recorded in the: ? performance status and in the number of T1 and T3 cases, ? compliance to protocol in the total dose and the overall treatment time, ? response to treatment in the whole group and in the particular stages These results indicate the very demanding selection of cases and much more rigorous compliance with the therapeutic protocol in the prospective study.