for salivary glands increased to 18 month and next diminished to 60 months. For spinal cord there was observed significant progression of intensity late toxicity (mild functional) during second year after irradiation.

Conclusions:

1. SOMA-LENT scale seems to be adequate in the clinical practice for the estimation of late radiation toxicity of H&N region tissues.
2. Ongoing study has preliminary nature and is being continued.

39.
PULSED DOSE RATE BRACHYTHERAPY – DESCRIBING OF A METHOD AND A REVIEW OF CLINICAL APPLICATIONS

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Introduction: Pulsed Dose Rate (PDR) treatment is a new brachytherapy modality that combines physical adventages of high-dose-rate (HDR) technology (isodose optimization, radiation safety) with the radiobiological adventages of low-dose-rate (LDR) brachytherapy.

Pulsed brachytherapy consists of using a stronger radiation source than for LDR brachytherapy and is giving a senes of short exposures of 10 to 30 minutes in every hour to approximately the same total dose in the same overall as with the LDR. Modern afterloading equipment offers some advantages over intersitial or intracavitary insertion of separate needles, tubes, seeds or wires. Isodose volumes in tissue can be created flexibly by a combination of careful placement of the catheter and adjustment of the dwell times of the computerized stepping source. Automatic removal of the radiation sources into a shielded safe eliminates radiation exposures to staff and visitors. Radiation exposure is also eliminated to the staff who formerly loaded and unloaded a multiplicity of radioactive sources into the catheters, ovoids, tubes etc.

Material and methods: This retrospective study based on summarized clinical investigations analyses the feasibility, differences between methods of brachytherapy and preliminary oncologic results of PDR brachytherapy.

Since July 2000 15 patients were treated in Greatpoland Cancer Center using PDR brachytherapy. They were 10 patients with recurrent brain malignant glioma, 2 with recurrent nasopharyngeal cancer, and patients with lip cancer, recurrent breast cancer and recurrent salivary gland cancer. Only patient with lip cancer was treated radically. Nucletron PDR unit with 1 Ci source and PLATO planning system were used.

Results: Short time of observation doesn't allow to draw a radical conclusions. On the ground of literature and preliminary own results it seems that PDR brachytherapy is save and efficient method of treatment. The most important complication was a local infection in place of implanted catheter. In some cases (for example in patients with recurrent malignant glioma after teletherapy) PDR brachytherapy perhaps could be a treatment of choice.

40.
COMPARISION OF TWO ACCELERATED RADIOTHERAPY REGIMENS IN MANAGEMENT OF LOCALLY ADVANCED NON-SMALL CELL LUNG CANCER (NSCLC) – HYPERFRACTIONATED CONVENTIONAL ACCELERATED RADIOTHERAPY (RAHIP) AND ACCELERATED CONFORMAL RADIOTHERAPY WITH CONCURRENT BOOST (RT-BOOST)

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Background: Repopulation during radiation therapy may compromise the results of the treatment of NSCLC. In spite of the data showing an improvement of therapeutic ratio with shortening of the total treatment time, there is no univoque way of doing it. Current study was conducted to compare two different regimens of accelerated radiotherapy.

Material/Methods: From March 1999 to November 2000 forty patients with stage III NSCLC were included. Twenty-eight pts. (70%) received 3-4 cycles of induction chemotherapy (cis-platinum, vepeside). Twenty-six p. were treated according to RAHIP schema, 14 pts. according to RT-BOOST schedule. RAHIP

consisted in radiotherapy twice-daily delivered: first week: 2x1,20 Gy "elective fields", the remaining three weeks 1,80 Gy "elective fields" and 1,20 Gy boost on involved areas by oblique fields. Total dose was 57 Gy. Conventional treatment techniques were employed. RT-BOOST technique was conformally planned and delivered, total dose was 56,7 Gy in 21 fractions (per fraction: 1,9 Gy to limited elective areas and concurrent boost of 0,8 Gy to the GTV) and 26 days.

Results: With a follow-up period ranging from 1 to 19 months, there is no difference in the compliance with the treatment-plan, treatment tolerance and response rate in the two analysed groups. In all but two patients treatment plan was realised. In RT-BOOST group treatment was discontinued in one patient, because of prolonged III° EORTC/RTOG oesophageal toxicity. In RAHIP group in one patient treatment was prolonged by 10 days because of pneumonitis (II° lung toxicity). One case of III° oesophageal toxicity was observed in each group. There was no increase in toxicity among patients receiving chemotherapy before radiotherapy. The response rate was similar in both analysed groups (RAHIP: 73% PR, 7,5%, CR; RT-BOOST: 65% PR, 7% CR). Estimated by Kaplan-Meier actuarial one-year survival rate method was 66% and actuarial one-year progression free-survival rate was 58% for the entire group.

Conclusions: Preliminary results of accelerated radiotherapy for locally advanced NSCLC seem promising. Additionally a good compliance with the treatment in both groups allows to work out a phase III study dealing with this problem.

41.
ESTIMATION OF DOSE DISTRUBUTION ACCORDING TO DOSE VOLUME HISTOGRAMS (DVH) IN CONFORMAL RADIOTHERAPY

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Aim: The evaluation what kind of statistical informations concomitant with DVH are essential in estimations of dose distribution in conformal planning of radiotherapy.

Method: Un the base of test case -- cancer of the base of tongue, irradiation plans for different sizes of irradiation boost field margins were analysed. DVHs - differential and cumulative for selected critical organs and target volume have been accounted. On base of standard deviation and minimal doses in select volumes target and critical tissues have been estimated. Then probability of local control the risk of complications have been expected.

Results and discussion: The modelled results show, that graphic representation of DVH is not sufficient information itself in estimation of dose distribution. Statistical parameters like modal dole, standard deviation determine essential supplement of graphic dose distribution. Especially standard deviation contains indispensable information. The histogram differential and cumulative should be used together for estimations of dose distribution. It appears that estimation of dose distribution in target volume should be based on cumulative histogram and estimation of dose distribution in critical organs - on differential histogram.

42.
RESULTS OF DAILY CONTROL OF PATIENTS SETUP TREATED ON HOLYCROSS CANCER CENTRE IN KIELCE BETWEEN 1 APRIL 2000 AND 31 MARCH 2001

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Purpose: Presentation of quality control system being in force in Kielce and results of patients' setup reproducibility and repeatability.

System description: Almost all patients treated in our hospital begin theirs treatments on Monday. For every patient treated with radical intent portal films are taken and compared with reference images obtained at simulator during the first fraction. After digitizing of both portal and reference films the comparison is performed by means of PIPS-PRO software. Comparison has to be completed until Wednesday morning when results are presented to radiotherapists on check meeting. Action levels specific to individual localization are defined and if difference between portal and reference film exceeds the specific level, another portal film is taken on the next day. If the difference still exceeds the action level the patient is directed again to simulator and the procedure starts from the very beginning. Until 31.01.2001 more than