

optimization, (2) a 3D plan using all slices with dosimetrist-guided optimization and (3) a computer-optimized plan with automatic contouring and constrained matrix inversion (CMI) optimization. The resulting dose distributions (DVH) on the same organs at risk were compared in order to verify that the automatic procedure did at least as good as the classical manual method. Results for the irradiated partial volumes of relevant organs are listed in the following table.

The total planning procedure took about 25 minutes of which less than 10 minutes were needed for human interaction.

Conclusions: This automatic technique shows acceptable results concerning the partial lung- and heart volume that was irradiated and the procedure reduces the work at the computer planning level at the expense of some more time at the simulator step (third beam).

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POSTER

High-dose-rate intracavitary brachytherapy alone in post-hysterectomy for endometrial carcinoma

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Purpose: To evaluate local control, toxicity and survival among patients (pts) with endometrial carcinoma stage I and II submitted to post-hysterectomy adjuvant high-dose-rate (HDR) intravaginal brachytherapy (IVBT).

Methods and Materials: Between April 1997 to December 2001, 71 pts with endometrial adenocarcinoma stage I and II who underwent total hysterectomy with bilateral salpingo-oophorectomy including negative lymphadenectomy were submitted to IVBT (HDR), as exclusive adjuvant therapy. The median age of pts was 64 (43-85) years. The surgical staging according (1988 FIGO classification), and histologic grade was the following: pT1b/G1-42 pts, pT1b/G2-18 pts, pT1b/G3-1 pts, pT1c/G2-4 pts, pT1c/G3-2 pts; pT2a/G1-3 pts, pT2b/G3-1 pts. Vaginal BT was given in 4 weekly fraction of 6 Gy, prescribed at 5 mm depth from applicator surface. Toxicity was evaluate according to EORTC/RTOG score

Results: With a median follow time of 34 (12-68) months, 70 pts are alive and one patient died with breast cancer without evidence of endometrial disease. The 5 years overall survival and disease free survival probability was 98,5% and 93,4% respectively. Recurrence were observed in four pts (5,5%) during the first 2 years: 1 pt experienced a low vaginal recurrence concomitantly with femoral nodes and was submitted to a external beam radiotherapy (EBRT), 2 pts developed a pelvic mass and were submitted to surgery followed by EBRT, and 1 pt with peritoneal carcinomatosis, after 11, 6, 15, and 14 months respectively. The median follow-up time after recurrence was 7,3(3-36) months. All patients were alive at end of the study. The overall late toxicity was low, and no grade 3 or 4 complication were recorded

Conclusion: Post-operative intravaginal BT in pts with surgical stage I and II endometrial adenocarcinoma, achieve local control, with minimal morbidity.

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POSTER

Definitive radiotherapy for cervical cancers: Retrospective analysis of 449 patients treated with external beam-radiotherapy (EBRT) and high-dose-rate-afterloading (HDR) with more than 5 years follow-up

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Purpose: Definitive radiotherapy in the treatment of cervical cancers is a treatment option with excellent clinical results. Presented were the results of a retrospective analysis of cervical cancers how were treated in our department of radiotherapy.

Material & methods: Between 1987 -1995; 449 pts. with cervical cancers were treated with a combined treatment schedule with curative intention. The treatment included in all cases external beam radiation (EBRT) and high-dose-rate afterloading with Iridium-192 (HDR-AI). Chemotherapy was not administered. The mean age of all patients was 53 years (27-85 years). The EBRT included in 440 patients only the pelvis, in 9 cases also the paraaortic lymph nodes. The single dose ranged from 1.8-2.0 Gy, the total dose from 38 Gy up to 60 Gy in point B. The HDR-AI ranged in 97% of the cases in 7-8 Gy single dose and 4 to 5 fractions. The total dose in point A was 68-75Gy (in 82% of pts.) and 50-56Gy in point B (96% of pts.).

Results: The 5-year-results dependent on tumor stage (FIGO) were: Stage IA and IB (N=87) 87 ± 4%; stage IIA and IIB (N = 155) 79 ± 4%;

stage IIIA and IIIB (N = 194) 53 ± 4%; stage IVA (N = 13) 37 ± 18%. Anemia had also an impact on survival (11g/dL; p

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POSTER

Impact of anemia on tumor oxygenation and clinical outcome in cervical cancers treated with definitive radiotherapy

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Background: Hypoxia in general is a complex phenomenon. The presence of hypoxia in malignancies is associated with a decrease of prognosis. Anemia in patients with cervical cancers is also an independent predictor in poor outcome. In our investigation we have determined anemia and tumor oxygenation as prognostic factors in advanced cervical cancers who were treated with radiotherapy with regard to correlation of anemia and tumor hypoxia.

Material and Methods: 87 patients with locally advanced squamous cell cervical carcinoma FIGO IIB-IVA were investigated from March 1995 to Dec. 2000. All were treated with definitive radiotherapy with curative intent by a combination of external radiotherapy plus HDR-afterloading. The tumor oxygenation was measured using the Eppendorf-device prior to the radiotherapy and after 19,8Gy.

Results: The 3-year-survival was in stage IIB 72% (N=19); IIIB (N=59) 60%; IVA (N=9) 22% (total 57%). Our investigation showed a significant impact of change of tumor oxygenation during radiotherapy on survival: Cancers with high median pO₂ prior or during radiotherapy had a 3-year-survival of 68% in comparison to cancers with persisting hypoxia (38%). The survival of anemic patients (hb < 11g/dl) was significantly lower (31%) than of non-anemic patients (64%), p = 0,04. A correlation between hemoglobin-level and tumor-hypoxia during radiotherapy after 11 fractions was observed (p < 0,01). In a multivariate analysis only tumor stage (p = 0,003) and hemoglobin-level during radiotherapy showed a significant impact on overall survival (p = 0,005) and local response (p = 0,0001). The tumor-pO₂ measured after 19,8 Gy had a correlation to local control (p = 0,042). The pO₂, measured prior to radiotherapy, was without importance on clinical outcome.

Conclusions: Advanced stage and hemoglobin level during radiotherapy are independent prognostic factors in cervical carcinomas. In summary, the association between hemoglobin and hypoxia during radiotherapy suggest the importance of hemoglobin substitution in anemic cancer patients during radiotherapy.

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POSTER

Hemoglobin levels during radiation therapy and their prognostic influence on local control and survival of patients with endometrial carcinoma

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Background: Anemia is a common complication of cancer that has been associated with poor response to treatment and decreased survival in a number of malignancies.

Material and Methods: A retrospective chart review was undertaken to determine the effects of hemoglobin levels, measured prior to and during radiation therapy, clinical prognostic factors (e.g. age, body mass index, tumor stage) in altogether 996 endometrial cancer patients treated between 1986 and 1998. Most of them received adjuvant radiotherapy (724/996; 72.7%) but also many underwent primary radiotherapy, in particular because of concomitant diseases, e.g. which did not allow general anesthesia (185/996; 18.6%). None of the patients received recombinant human erythropoietin. Classification of anemia followed WHO recommendations (anemia < 11 g/dL). The difference between observed overall survival and its predicted value was computed by multiple regression analysis for each patient with respect to prognostic factors.

Results: Preoperative hemoglobin levels were of no prognostic value. Normal hemoglobin levels prior to treatment showed a trend towards improved survival in patients undergoing primary radiotherapy (p < 0.1). Anemia, however, was significantly associated with poor survival in patients undergoing adjuvant radiotherapy (p < 0.001). The course of hemoglobin during adjuvant radiotherapy played an important role. Survival was improved in patients without anemia compared to patients who developed anemia, who were anemic during radiotherapy, or those whose hemoglobin