

was performed to determine whether Hb is also of prognostic importance in postoperatively irradiated patients.

Methods: Between 1970 and 1990, 486 male patients with UICC '92 stage III or IV (distant metastasis free) SCC of the H&N were irradiated to 60 Gy following radical resection. From this group selected for homogeneity patients were entered into this retrospective study if a pre-radiotherapy Hb value could be obtained ($n = 420$). Local recurrence rates stratified by tumor location, stage and Hb (rounded to integers from 11 to 16) were estimated by the Kaplan Meier method.

Results: Higher Hb levels were consistently associated with better locoregional control. This was highly significant, i.e. by stage (III/IV): oral cavity $p = 0.02$ ($p = 0.0001$), larynx ($n.s./p = 0.0001$), oropharynx ($p = 0.004/p = 0.0001$) and hypopharynx ($p = 0.0002/p = 0.0001$). In a multivariate analysis using a proportional hazards model Hb had more impact than stage, grading or clean margins.

Conclusion: Hb content can be measured effortlessly. Yet it is a most important prognostic factor for local regional tumor control in H&N cancer treated by radiotherapy. The present study shows that this also holds for postoperative irradiation of locally advanced disease.

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POSTER

Image resolution and geometric accuracy of digital reconstructed radiographs (DRR) in conventional and helical computed tomography

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Purpose: Conventional and/or Helical Computed Tomography (CT) is the basic imaging modality for virtual simulation and 3D conformal radiation therapy. In how far is the quality of the DRR's (resolution, geometric accuracy) depending on the slice parameters?

Methods: The influence of slice thickness, table speed and increment on resolution and geometric accuracy of the DRR's was studied at a SOMATOM PLUS S using conventional and helical imaging. Spheric phantoms and patients with bronchus carcinoma, infradiaphragmatic irradiation of Hodgkin's disease with CT-angiography and interstitial brachytherapy of the floor of mouth and pelvis have been studied.

Results: Good quantitative geometric accuracy and an excellent DRR-resolution is obtained by the use of small values for slice thickness, table-speed and increment. In patient examinations, Helical CT offers excellent reduction of breath and motion artefacts. Interstitial implants are visualized in an excellent manner.

Conclusions: Helical CT is a powerful tool for virtual simulation by offering improved DRR image quality and improved geometric accuracy within a minimum of time. It is superior to conventional CT.

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POSTER

Electron beam portal imaging for routine documentation in radiation therapy

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Purpose: For quality assurance in radiotherapy, portal imaging of photon beams has become a common standard. Electron beams are usually documented at the X-ray simulator, which leads to an increase in the simulators workload. The image quality and the feasibility of portal electron beam documentation with high sensitive film-foil combination was evaluated.

Methods: In 30 patients with cancer of the head&neck, thoraxwall and pelvic region treated at a Clinic 20 with electron beams from 6 to 16 MeV Photons prior to electron treatment, from the linac with the X-ray-images from the simulator.

Results: In all 30 patients, anatomic structures were visible in portal images and x-rays pictures. Identification of soft tissue structures was better in the portal imaging mode than in the X-rays. Only for small fields with no characteristic structures inside, X-ray simulation is still recommended for its better demarcation of surrounding tissues.

Conclusions: Electron portal imaging with high sensitive film-foil combination is a very powerful method in quality assurance for documentation of electron beams with various energies. The workload of the simulation staff is reduced.

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POSTER

Postoperative radiotherapy in endometrial cancer: Analysis of 325 cases

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Purpose: In this retrospective study endometrial cancer cases who had postoperative radiotherapy were evaluated and the prognostic factors affecting disease-free and recurrence-free survival rates were assessed.

Methods: Three hundred twenty-five cases with endometrial cancer who referred to our department between January 1986 and January 1996 for postoperative radiotherapy were evaluated retrospectively to assess the prognostic factors affecting survival.

Results: The age range was between 35–83 (median 56). Histologically 83.4% were adenocarcinoma. 5.8% were adenocarcinoma with squamous component, 5.5% were clear cell carcinoma and 5.2% were serous papillary adenocarcinoma. 63.2% of the patients had Stage I, 18.2% had Stage II, 15.7% had Stage III and 2.8% had Stage IV disease. External radiotherapy was given with 1.8–2 Gy daily fractions to a total of 45–64.8 Gy (median 54 Gy) and 54.2% of the patients were applied intracavitary RT. Local recurrence, distant metastasis and grade III–IV late morbidity rates were 8%, 19.5% and 3.6% respectively. Five year overall, disease-free and recurrence-free survival rates were 79.5%, 75.2% and 93.9% respectively.

Conclusion: In univariate analysis the prognostic factors which influence disease-free survival rate were histologic type other than adenocarcinoma ($p < 0.001$), advanced stage ($p < 0.001$), high histologic grade ($p = 0.013$), myometrial invasion more than 1/2 ($p = 0.004$) and positive peritoneal cytology ($p < 0.001$). The same prognostic factors except histologic type also influence the recurrence free survival rate. In multivariate analysis the prognostic factors which influence disease-free and recurrence-free survival rates were histologic grade and histologic type respectively.

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POSTER

Intraoperative HDR brachytherapy of Ewing's sarcoma

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Background: Non mutilating surgery for Ewing's sarcoma often has to resect the tumor with narrow margins. An additional HDR brachytherapy may improve local control.

Methods: From 4/91 to 3/95, 20 patients (mean age 18.7 y., m:f = 13:7) were treated with an additional intraoperative brachytherapy boost after preoperative radiochemotherapy. 9 tumors were located in the pelvis, 6 at the upper and 5 at the lower extremity. There were 10 Ewing's sarcomas, 5 atypical ES, 3 PNET and 2 extraosseous ES. Brachytherapy was performed using a flab technique. The applied doses were 10 to 20 Gy. Mean follow up is 24 m.

Results: No complications were noted during and after brachytherapy. On average, the duration of surgery was prolonged for 2 h 20 min. Postoperative complications were seen in 40%. 2 patients needed a surgical revision after the first operation. Postoperative chemotherapy could be continued in time, on average after 19 days. Up to now, 1 patient had a combined local and local relapse.

Conclusion: Intraoperative HDR brachytherapy seems to be a well tolerated possibility to boost the tumor bed in case of narrow resection margins.

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POSTER

Histopathological and biochemical evaluation of wound healing following preoperative irradiation, chemo-irradiation and intra-peritoneal 5-fluorouracil (5-FU) in the rat

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Purpose: Neo-adjuvant chemo- and radiotherapy for colo-rectal carcinoma could affect mechanical and biochemical parameters of anastomotic healing. Therefore, the aim of this study was to investigate the effects of such protocols on colonic anastomotic healing.