mainly Wertheim-Meigs or total histerectomy and bilateral anexectomy. After surgery 8 ptes had positive pap smear and 5 macroscopic residual disease. Twelve ptes treated with adjuvant external beam radiotherapy (EBR), (40–56 Gy), received between 15 and 25 Gy of low dose 192-Ir. In 2 ptes without EBR and in 1 re-irradiated pte, 60 Gy and 50 Gy were administered respectively in all cases the dose was administered at 0.5 cm from the vaginal mucosa. To optimize the dosimetric study, real-size CT slices (RSCTS) through the vaginal mould were performed the day after application.

Results: With a mean follow-up of 18 months, a complete response was obtained in 93% of ptes (14/15), with an actuarial local relapse free survival and overall survival of 78% and 90% respectively. One pte had progression within EBR and 2 ptes local relapse at 7 months. In 9 ptes the fat plane between the vaginal vault and rectum or bladder did not exist or the rectum was collapsed in the RSCTS. Complications: one vaginal stenosis (grade I), one hemorrhagic cystitis (reirradiated pte), 3 synechiaes (grade I) and 9 telangiectasias (grade I).

Conclusions: 1. Even unfavorable clinical staging, the individualized low-dose rate 192-Ir vaginal moulds permitted to obtain a high local control with a low morbidity. 2. Probably Magnetic Resonance Imaging might provide more definition of soft tissues.

482 PUBLICATION

The value of a 3-D-planning system for evaluation of lung dose in total body irradiation

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Purpose: Interstitial pneumonitis (IP) plays a prominent role in mortality after total body irradiation (TBI). For estimating the probability of IP the information of dose distribution in lung is of great importance.

Methods: Computed tomography (CT) scans were made through the thorax of 5 patients. With the information of the CT-scans and using a 3-D-planning system (TMS, Helax) individual volume-dose-histogramm, minimal and medium dose of lung were calculated for each patient. A multiple beam technique and a hyperfractionated regime (6 fractions of 2 Gy) were used.

Results: Median dose of right lung was 8.89–9.91 Gy (74.1%–82.6%), of left lung 8.72–9.65 Gy (72.7%–80.4%). Minimal dose, it means the dose, witch 100% of the lung volume is irradiated with and which is important for estimating pulmonary damage, was 7.73–8.46 Gy (64.4%–70.5%) for the right lung and 7.66–8.69 Gy (63.8%–72.4%) for the left lung.

Conclusion: By Using a 3-D-planning system volume dose of the lung can be calculated and the probability of lung damage by TBI estimated.

483 PUBLICATION

Ewing's sarcoma in childhood – The role of radiotherapy

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Purpose: Ewing's Sarcoma (ES) is a small, round cell tumour of childhood originating in bone. It is less frequent than osteosarcoma, representing 3% of pediatric cancer. Primary site was the most important prognostic factor reported in the analysis of IESS-I, being the pelvis the least favourable. Others includes, by the time of diagnosis, the presence of distant metastasis, serum levels of LDH > 350 U/l and a soft tissue involvement >8 cm. We evaluated the importance of radiotherapy (RT) as an adjuvant therapy in the treatment of ES.

Material and Methods: From January 1978 to January 1995, 24 children under 15 years old, with the diagnosis of ES, were treated in our Department. We analysed the distribution by age and sex, presenting symptom, the primary tumor site, the adverse prognostic factors in the first evaluation, treatments done and follow-up results.

Results: Fifty-four percent were male and 46% female. The median age was 11 years (range 2–15). The presenting symptom was local pain in all children, followed by swelling in 20 cases. The primary tumour sites were: pelvis in 7 cases, tibia in 6, shoulder girdle in 3, femur in 2, hand bones in 2, rib in 1, humerus in 1 and temporal bone in 1 case. Fourteen children (58%) presented with 3 or 4 adverse prognostic factors. All cases were treated with a combination of chemotherapy (CT) and RT, and 4 cases (17%) underwent surgical resection. With a median follow-up period of 51 months (range 5–212), 42% of the cases are free from disease, corresponding to the patients that presented only 1 or 2 adverse prognostic factors in the first evaluation. The patients who died in consequence of the disease, seven presented local tumor.

Conclusions: The importance of RT in the local control of these tumors is well established, as we could observe in our patients. However, the adverse prognostic factors had a great influence in the outcome of the children in the present study.

Soft tissue & bone sarcomas

484 ORAL

Association of tumour growth on nude mice and poor outcome in soft tissue sarcoma (STS) patients

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Purpose: Human tumour xenografts do not represent the whole biological variability of a tumour entity, since successful establishment of permanently growing tumour cell lines cannot be achieved from all cancer patients. Permanent growth in nude mice (PGNM) maybe associated with poor clinical outcome. We tested this hypothesis in a group of STS patients.

Methods: Small chunks from fresh tumour biopsies of 81 patients with STS were transplanted subcutaneously into NMRI-nu/nu nude mice. Tumour cell lines exhibiting growth in nude mice for more than 3 tumour passages were considered as permanently established. Clinical outcome of all patients was monitored with an median follow up of 38 months.

Results: 42/81 (52%) STS exhibited PGNM. High grade, high S-phase proportion and aneuploidy were significant predictors of PGNM. Overall survival (OS) at 3 years was 21% (±8%) for STS patients with PGNM and 50% (±9%) for patients without PGNM ($p < 0.01$). Considering only patients without distant metastasis at the time of biopsy ($n = 49$), 3-year-OS was 25% (±17%) and 71% (±15%) for STS with PGNM and without PGNM, respectively ($p = 0.02$). In a multivariate analysis, aneuploidy, PGNM, and tumour location at the trunc were independent factors associated with reduced survival time.

Conclusion: STS that are permanently growing on nude mice originate from patients with poor clinical outcome.

485 ORAL

Clinical impact of fusion transcripts detected in soft tissue liposarcoma and synovial sarcoma

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Purpose: Soft tissue sarcomas frequently express fusion transcripts encoded by gene fragments fused through translocation. We selected fusion transcripts of liposarcoma (FUS-TLS/CHOP), resulting from t(12;16)(q13;p11), and synovial sarcoma (SYT/SSX1-2) resulting from t(X;18)(p11.2;q11.2) to develop a polymerase chain reaction (PCR) based system for detecting minimal residual disease (MRD).

Methods: A nested PCR was established for both fusion transcripts. After RNA extraction of snap frozen tissue, peripheral blood or bone marrow aspirates, reverse transcription was carried out. We amplified the resulting cDNA with the nested PCR and analysed the product on agarose gels. 30 tissue samples of skin, blood, bone marrow and different soft tissue tumors served as controls. 23 patients with liposarcoma and 13 patients with synovial sarcoma were analysed.

Results: Of 23 liposarcomas investigated 8 revealed a fusion transcript. 11 of 13 suspected synovial sarcomas analysed showed a fusion transcript of identical length. None of the control tissues revealed a fusion transcript. Analysis for MRD revealed fusion transcripts in 1 of 4 intraoperative blood aspirates and 1 of 1 bone marrow aspirates.

Conclusions: Fusion transcripts of liposarcoma and synovial sarcoma are of potential benefit for gaining a definitive diagnosis in soft tissue sarcoma. Furthermore they can be useful in determining MRD.