reactions, acute diarrhea, extreme skin fibrosis, myelitis, fistula, plexopathy, pneumonitis, strictures, cerebellar ataxia, skin edema and chronic diarrhea.
Conclusions: The establishment of an international tissue bank of the rare group of patients with extreme hypersensitivity to radiotherapy was proven to be feasible and should enable in-depth molecular studies.

Poster discussion presentations (Wed, 23 Sep, 11:15−12:15)

Radiotherapy

2008 POSTER DISCUSSION

Second malignancies in high dose volumes of first tumor radiotherapy

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Purpose: To characterise second tumors that developed in or near the high dose volume of a previous radiotherapy, with regard to their frequency, entities, latency and dose dependence.
Patients: 9944/15449 tumor patients of the radiation oncology department in Ulm, who were treated between 1981 and 2003, survived at least one year after radiotherapy. One hundred of these patients developed second tumors in or near the irradiated volume of this first therapy but with a different histopathological type, suggesting an independent carcinogenesis.
Results: Major primary entities were breast cancer (27%), lymphoma (24%) and pelvic gynecologic tumors (17%). Main second tumors were carcinomas of the upper (18%) and lower (12%) gastrointestinal tract, head and neck tumors (10%), lymphoma (10%), breast cancer (9%), sarcoma (9%) and lung cancer (8%). Overall second tumor latency was 7.4 (1−42) years in median. Short latencies were observed in second colorectal cancer (3.5 years) and leukemia (4.3 years), while for second sarcoma the delay was 11.7 and for second breast cancer even 17.1 years. The relatively frequent second tumors of the upper gastrointestinal tract were associated with median radiation doses of 24 Gy. In contrast, second colorectal cancer and sarcoma developed after median doses of 50 Gy.
Conclusions: Between 1 and 42 years after first tumor radiotherapy, 1% of the patients developed second tumors in or near the irradiated site, i.e. after median to high radiation doses. Follow-up after first radiotherapy clearly must be extended beyond the usual 5 years to identify potentially radiation induced second malignancies. For an estimate of the risk and dose response relationship, a case-case and a case-control study will be performed as part of the EC-funded ALLEGRO study on early and late health risks from radiation therapy.

2009 POSTER DISCUSSION

Prevalence of erectile dysfunction in men with prostate cancer (PCa) prior to definitive radiotherapy: a prospective assessment

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Background: To measure and assess the prevalence of erectile dysfunction (ED) in patients with localized prostate cancer, who are candidates for radical curative radiation treatment.
Materials/Methods: Starting November 2007, 62 patients with higher risk prostate cancer were prospectivelly assessed using the validated instrument International Index of Erectile Function-5 (IIEF-5) to evaluate the pretherapeutic erectile function status prior to planned definitive radiation therapy. Median initial PSA was 13.45 ng/ml, median Gleason score was 7, and median clinical T category was T2c. Patients were grouped for analysis in five groups: I (IIEF-5 score 22−25, no ED), II (score 17−21, minimal ED), III (score 12−16, mild to intermediate ED), IV (score 8−11, moderately severe ED), and V (score 5−7, severe ED).
Results: Median age at assessment was 69.6 years. From the analyzed 62 patients 34 (55%) showed a severe ED (group V), 3 pts. (5%) a moderately severe ED, 10 pts. (16%) a mild to intermediate ED, 9 pts. (15%) a minimal ED, and only 6 pts. (10%) no evidence of ED (10%). The cumulative evidence for severe and moderately severe ED was 60%.
Conclusions: Evaluation of erectile dysfunction with the International Index of Erectile Function-5 was feasible and not time-consuming. However, the prevalence of erectile dysfunction prior to radiotherapy was quite pronounced, which questions the value of post therapeutic ED status assessment without knowledge and comparison with base levels.

2010 POSTER DISCUSSION

Prospective evaluation of lung radiation acute toxicity in non small cell lung cancer (NSCLC): impact of the timing

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Background: the incidence and severity of acute radiation pneumonitis (ARP) after conformal radiation therapy (RT) for NSCLC remain controversial. The literature is incomplete, while different classifications are often used and timing of evaluation are heterogeneous. A prospective complete evaluation of ARP is proposed through a French multicentric study (preliminary results of the ongoing Gating 2006 randomized protocol).
Material and Methods: 65 pts, median age 63 y. [44−79], good performans status, sex ratio 6.2 were evaluated for ARP. All of them had proven non- metastatic NSCLC, treated either with curative RT in post operative situation (32%) or as exclusive treatment (68%). They had clinical, functional evaluation, thoracic computed tomography (CT) and FDG PET-scan before RT (or before surgery if appropriate). Median dose of RT was 66 Gy [40−70], 2 Gy/fr., 5 days a week. ARP evaluation included clinical, functional and CT evaluations 6−8 and 12 weeks after the end of RT. All the CT evaluations were reviewed by a panel of experts and ARP was scored according to the RTOG (acute) classification. ARP was considered as moderate in case of clinical symptoms (grades 1−3), CT abnormalities (gr. 3) without needs of specific treatment (gr 1−2). ARP was considered as severe in case of severe clinical symptoms ($\geqslant$gr. 3), CT abnormalities (gr. 3) and needs of corticoids or oxygen at least in the management (gr. $\geqslant$3).
Results: At 6−8 weeks, 10 pts (15%) had moderate ARP and 4 (6%) others had developed severe ARP.
At 12 weeks, 19 pts (29%) had moderate ARP and 3 others (5%) had developed severe ARP. 14 pts (22%) had no sign of ARP at the first evaluation but had ARP at 12 weeks. In contrast, 6 pts (9%) had ARP at 6−8 weeks (1 severe ARP among them) while at 12 weeks, they had no sign of ARP left.
The only significant predictive factor for severe ARP was the normal lung volume irradiated over 5 Gy (V5). Neither clinical factor (age, sex, smoking status, histology), treatment (surgery, concomitant chemo/corticoids), baseline functional parameters (FEV1, diffusion parameters), nor other RT parameters (photon energy, number of fields, . . .) were associated with ARP.
Conclusions: ARP is generally underestimated due to the lack of prospective complete evaluation. After conformal modern RT, the incidence of severe complications requiring treatment reaches about 5%, while moderate ARP without need of treatment is seen in about 30%. The timing of ARP evaluation is highly critical and should not happen too early, while more than one third of the patients develop ARP after 6−8 w. after the end of RT.

2011 POSTER DISCUSSION

Temporal lobe damage following active scanning proton radiation therapy for skull base tumors

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Background: In several reports on particle therapy, temporal lobe (TL) changes constitute the most frequent normal tissue damage after high dose skull base irradiation. For critical normal tissues with defined OAR tolerance threshold doses, toxicities have been successfully minimized. In contrast a TL threshold has not been established yet. Our aim was to perform a dose-volume correlation with clinical outcomes in patients treated for skull base tumors with high dose proton radiotherapy.
Material and Methods: Between October 1998 and November 2005, 62 patients with chordomas and chondrosarcomas of the skull base have been treated at Paul Scherrer Institute (PSI) with proton radiation therapy using the spot scanning technique. Median total dose for chordomas was 73.5 Gy (RBE) (range, 67–74 Gy (RBE)) and 68.4 Gy (RBE) (range 63−74 Gy (RBE)) for chondrosarcomas. Radiotherapy was delivered at 1.8 – 2 Gy (RBE) dose per fraction. Toxicity was assessed according to the Common Terminology Criteria (CTCAE v.3.0). Volumes for both TLs and brain parenchyma were defined retrospectively on planning CTs. Dose volume histogram analysis was performed evaluating the dose that 3 cc