Purpose or Objective: If radiotherapy (RT) combined with extended resection is part of the standard treatment of high risk extremity soft tissue sarcomas (ESTS), the evidence regarding the optimal target volume of RT ensuring local control (LC) is not very robust. But it is well known that toxicity is directly related to the RT volume and the delivered dose. The development of image-guided radiotherapy and implementation of better target volume conformation could reduce toxicity without compromising outcome. Here we evaluate the definition of RT volume according to clinical, surgical and histological factors.

Material and Methods: Between the 1st January 2008 and the 31st December 2009, 173 patients from eleven centers with ESTS were retrospectively evaluated, all patients having had resection with pre- or post-operative RT. Primary endpoint was to evaluate the target volume and RT dose and their impact on LC and patterns of local relapse (LR). Secondary endpoints were: impact of surgery’s quality on LC, patterns of relapse and RT volume. Impact of RT dose on LC and patterns of LR. Impact of histological type on LC and on recurrent pattern. Impact of RT volume on toxicity (CTC V.04).

Results: Median age was 60 years [19-91]. 32% of patients had upper limb and 68% lower limb STS. Median tumor size was 75mm [17-270]. RT was preoperative in 12% and postoperative in 88% of cases. Quality of surgery was R0 in 62%; R0 after second surgery in 11% and R1 in 27% patients. Intraoperative tumor fragmentation rate was 6% in expert centers and 16% in non-expert centers. Most frequent histologic types were liposarcoma (31%) and myxofibrosarcoma (13%). Median dose was 54 GY [36-70]. Median PT1V and PT2V volumes were 864cc [25-5122] and 443cc [20-1613] respectively. LR rate was 11.20% (n=20); 45% within PT1V, 28% in the PT2V. 18% at the edge of the RT volume and 9% outside. 21.4% of patients had a metastatic failure. Regarding toxicity, we observed 19.6% and 15.2% of G1 and G2 fibrosis, 19.6% and 12.5% of G1 and G2 edema, 12.6% and 4.5% G1 and G2 pain, 3.4% and 6.9% of G1 and G2 joint stiffness, 5.2% and 6.9% G1 and G2 neuropathy. Bone fracture occurred in 3.2% of cases. After univariate analysis, intraoperative tumor fragmentation was related to a higher risk of LR (22% vs 8% p=0.004) and distant metastasis (50% vs 17% p= 0.0029). Including scar drainage in the RT field was correlated to a lower LR rate (9% vs 29% p= 0.015). Upper limb location was correlated with higher risk of neuropathy (p=0.049) and lower limb location was correlated with edema (p=0.024). Dose > 60 Gy did not impact on LC but was correlated with pain (p=0.021). No significant correlation with fibrosis could be identified.

Conclusion: As in other studies, the quality of surgery is the most important prognostic factor predicting outcome. Most of LR were within the PTV field translating a correct target volume definition. Toxicity was acceptable. A prospective evaluation is warranted.

Poster: Clinical trial: Paediatric tumours

PO-0769

Survival benefit for patients with diffuse intrinsic pontine glioma (DIPG) undergoing re-irradiation


1UMC Utrecht, Radiation Oncology, Utrecht, The Netherlands
2Institut Gustave Roussy, Radiotherapie, Villejuif, France
3The Royal Marsden NHS Foundation Trust, Clinical Oncology, Sutton- Surrey, United Kingdom
4Hospital Universitari Vall d’Hebron, Oncologia Radioterapica, Barcelona, Spain
5University Hospitals Birmingham NHS Foundation Trust, Oncology, Birmingham, United Kingdom
6Radboud University Medical Center, Radiation Oncology, Nijmegen, The Netherlands
7St Joan de Deu, Pediatric Hematology and Oncology, Barcelona, Spain
8Utrecht Cancer Center, Radiation Oncology, Utrecht, The Netherlands
9Georg-August-Universität Göttingen, Pediatric Hematology and Oncology, Goettingen, Germany
10VU Medisch Centrum, Pediatrics, Amsterdam, Germany
11Georg-August-Universität Göttingen, Pediatric Hematology and Oncology, Goettingen, Germany

Purpose or Objective: Radiotherapy remains the cornerstone of treatment for patients with DIPG. Nevertheless, median overall survival of patients initially responding to radiotherapy is poor. The role of chemotherapy as second-line treatment remains elusive. Purpose of this study is to analyze the benefit and toxicity of re-irradiation at the time of disease progression.

Material and Methods: At the time of disease progression 27 children, aged 2 to 16, underwent re-irradiation (10 fractions of 1.8, 2.0 or 3.0 Gy) alone (N=21) or combined with systemic therapy (N=6). At first diagnosis, all patients had symptoms for ≤3 months, ≥2 signs of the neurological triad (cranial nerve deficit, ataxia, long tract signs), characteristic features of DIPG on magnetic resonance imaging or biopsy proven high-grade glioma. An interval of 3 months after first-line radiotherapy was required before re-irradiation. A group of 39 patients fulfilling the same diagnostic criteria receiving radiotherapy at primary diagnosis, followed by best supportive care (N=10) or systemic therapy (N=19), were eligible for a matched-cohort analysis.

Results: Median overall survival for patients undergoing re-irradiation was 15.9 months. For a similar median time to first progression (8.1 vs. 7.7 months; P=22), a significant benefit in median overall survival (15.9 [95% CI 13.0-20.0] vs. 10.3 [95% CI 9.4-12.5] months; P<.01) was observed in favor of patients undergoing re-irradiation compared to no re-irradiation. The median overall survival benefit of re-irradiation versus no re-irradiation was most pronounced in patients with a longer interval between end-of-radiotherapy and first progression (3-6 months: 11.1 vs. 8.7; P=.01; 6-12 months: 19.4 vs. 13.8; P=.02). On multivariable analysis corrected for age and systemic therapy, re-irradiation remained prognostic for overall survival (HR 0.43 [0.13-81]; P<.01). Clinical improvement after re-irradiation was observed in 15/20 (75%) patients. No grade 4 or 5 acute or late toxicity was diagnosed.

Conclusion: The majority of patients with DIPG, responding to first-line radiotherapy, do benefit of re-irradiation. A prospective data collection, supported by the SIOP-EHG/DIPG working group, will start for patients fulfilling the criteria of re-irradiation.

PO-0770

Subsequent colorectal adenomas in childhood cancer survivors: a DCOG LATER record linkage study


1Emma Children’s Hospital/Academic Medical Center, Pediatric Oncology, Amsterdam, The Netherlands
2Netherlands Cancer Institute, Epidemiology, Amsterdam, The Netherlands
3Netherlands Cancer Institute, Epidemiology, Amsterdam, The Netherlands
4Children’s Hospital, Pediatric Oncology, Amsterdam, The Netherlands
5University Hospitals Birmingham NHS Foundation Trust, Oncology, Birmingham, United Kingdom
6Radboud University Medical Center, Radiation Oncology, Nijmegen, The Netherlands
7Georg-August-Universität Göttingen, Pediatric Hematology and Oncology, Goettingen, Germany
8Utrecht Cancer Center, Radiation Oncology, Utrecht, The Netherlands
9Georg-August-Universität Göttingen, Pediatric Hematology and Oncology, Goettingen, Germany
10VU Medisch Centrum, Pediatrics, Amsterdam, Germany
11Georg-August-Universität Göttingen, Pediatric Hematology and Oncology, Goettingen, Germany
12Radboud University Medical Center, Radiation Oncology, Nijmegen, The Netherlands
13Georg-August-Universität Göttingen, Pediatric Hematology and Oncology, Goettingen, Germany
14Georg-August-Universität Göttingen, Pediatric Hematology and Oncology, Goettingen, Germany
15University Hospitals Birmingham NHS Foundation Trust, Oncology, Birmingham, United Kingdom
16Radboud University Medical Center, Radiation Oncology, Nijmegen, The Netherlands
17Strahlentherapie und Radioonkologie, Leipzig, Germany
18S360                                                                                      ESTRO 35 2016
This study shows a fairly high incidence of histologically confirmed CRAs in a large cohort of 5-year CCS and to quantify the contribution of associated treatment-related factors.

Purpose or Objective: The risk of colorectal adenomas (CRAs) in childhood cancer survivors (CCS) is unknown. In the general population and in individuals with cancer susceptibility syndromes, CRAs are associated with colorectal carcinoma (CRC) risk and this knowledge is the basis for colorectal cancer screening. To support recommendations for or against CRC screening among asymptomatic CCS, we aim to estimate the risk of histologically confirmed CRAs in a large cohort of 5-year CCS and to quantify the contribution of associated treatment-related factors.

Material and Methods: The Dutch Childhood Oncology Group-Late Effects After Childhood Cancer (DCOG LATER) cohort includes 6,168 five-year CCS treated between 1/1/1963 and 12/31/2001 in one of the seven Dutch pediatric oncology/hematology centers before age 18. Detailed information on prior cancer diagnosis and treatment was obtained, including information on radiotherapy (RT) dose, field, and fractionation schedule and chemotherapy (CT) dose per drug. Subsequent CRAs were identified by linkage with the population-based Dutch Pathology Registry (PALGA) for follow-up years 1990-2014, a unique resource for case ascertainment without selection bias from self-reporting. Among patients with CRA we also ascertained the occurrence of CRC based on cancer registry linkage.

Results: At a median follow-up of 23 years (range: 5-52) since childhood cancer diagnosis and a median attained age of 30 years, we identified 60 patients with at least one histologically confirmed CRA, of which 37 had >1 CRA. Most common CRA histology was tubular adenoma, followed by tubulovillous adenoma. Median age at first CRA diagnosis was 39 years and median time from childhood cancer diagnosis to CRA diagnosis was 28 years. Most CRA patients had been treated for leukemia (23.3%) or lymphomas (20.0%). Eight CRA patients also developed a CRC. Preliminary univariate analyses showed an increased risk of CRA associated with abdominal/pelvic RT (odds ratio = 2.7; 95% CI: 1.5-4.9).

Conclusion: This study shows a fairly high incidence of histologically confirmed CRAs in a relatively young population. However, these exploratory analyses need further in-depth medical file review to ascertain the potential for surveillance bias. More detailed analyses with multivariable risk models including RT dose and specific CT agents and the role of cancer susceptibility syndromes will be presented during the meeting. Also this study provides the baseline for a longitudinal assessment of CRA and CRC risk, as this population ages.