1–4), DTIC (200 mg/m^2, days 1–4) and doxorubicin (25 mg/m^2, days 1–2) augmented in time and administered in 14-day-intervals made possible by subcutaneous administration of G-CSF (30 × 10^6 IU/d) on days 5–13. According to the randomization protocol, 28 patients received adjuvant HA-RT only, whereas 31 patients were treated with additional adjuvant ACT. After a mean observation period of 41 ± 19.7 (range: 8.1–84) months, 16 patients (57%) after adjuvant HA-RT vs. 24 patients (77%) after adjuvant HA-RT + ACT were free of disease ($p > 0.05$). Within the HA-RT group, tumor relapses occurred in 12 patients (43%; 6 patients with distant metastases, 2 with local relapse, 4 with both) vs. 7 patients (23%; 5 patients with distant metastases, 1 with local recurrence, 1 with both) from the HA-RT + ACT group. Mean relapse-free survival ($p = 0.1$), time to local failure ($p = 0.09$), time to distant failure ($p = 0.17$) as well as overall survival ($p = 0.4$) did not differ significantly between the two treatment group. However, subgroup analysis of grade 3 soft tissue sarcoma revealed a significant advantage of both relapse-free survival ($p = 0.03$) and time to distant failure ($p = 0.03$) in patients receiving HA-RT + ACT ($n = 25$) as compared to patients treated with HA-RT only ($n = 16$).

Treatment-associated toxicity in patients receiving HA-RT + ACT included alopecia of WHO grade 3 in all cases, leukopenia of WHO grades 1 and 2 in 19 patients (61%), grade 3 in 4 (13%) and grade 4 in 4 patients (13%), thrombocytopenia grades 1 and 2 in 7 patients (23%), grade 3 in 1 patient (3%) and grade 4 in 1 patient (3%). Non-hematologic toxicity consisted of stomatitis WHO grade 3 in 1 patient (3%). In 2 patients (6%), ACT was discontinued after 2 cycles due to impairment of wound healing. Acute local toxicity was mild (2 versus 3 moist desquamations in the HA-RT and HA-RT + ACT groups, respectively). Severe late local toxicity consisted of two infected endoprostheses (one in either group), one fracture of an irradiated thigh (HA-RT + ACT), and one case of severe fistulation with bone necrosis leading to amputation without evidence of local relapse (HA-RT + ACT).

We conclude that the addition of adjuvant ACT to adjuvant HA-RT in patients with surgically adequately removed grade 3 STS significantly improved relapse-free survival as well as time to distant failure. Furthermore, the inclusion of ACT should be considered in the treatment of grade 3 adult STS.

1076 POSTER

Prognostic factors in completely resected liposarcomas (LPS)

P.H.A. Nijhuis[1], P. Sars[1], W.M. Molenaar[2], H. Schraffordt Koops[1], H.J. Hoekstra[1]. *[1]Groningen University Hospital, Surgical Oncology, Groningen; [2]Groningen University Hospital, Pathology, Groningen, Netherlands*

Purpose: The aim of this study was to identify prognostic factors regarding recurrence and survival after complete resection of LPS.

Patients and Methods: All consecutive LPS (reviewed diagnosis), treated with curative intent at the G.U.H. from 1977–1997, were analyzed.

Results: 66 pts (35, 31; median age: 53 (range 11–80) years) were reviewed. 49 primary LPS, 17 recurrent LPS. Histology: myxoid n = 31, well-differentiated n = 22, dedifferentiated n = 7, pleomorphic n = 3, nos n = 3. Grade I: n = 48, grade II: n = 10, grade III: n = 6, nos: n = 2. During a median follow-up of 58 (range: 5–210) months, 20 pts developed a local recurrence (30%), and 11 pts distant metastases (17%). At analysis, histologic subtype and anatomic site were the only independent prognostic factors regarding local recurrence, tumor grade regarding distant metastases, and histologic subtype and tumor grade regarding disease-free and overall survival. Retroperitoneal localization, dedifferentiation and grade II–III were negative prognostic factors. Size, primary/recurrent LPS, and type of resection were not independent prognostic factors.

Conclusion: LPS have a relatively mild biologic behavior, with exception of dedifferentiated LPS and grade II–III tumors. Independent prognostic factors regarding recurrence, metastasis and survival are anatomic site, histologic subtype, and grade.

1077 POSTER

OSAD93: A multicentric pilot study of high dose ifosfamide (HDI) and CDDP in adult patients (PTS) with non metastatic osteosarcoma

J.-Y. Blay[1], A. Thyss[2], M.C. Demaille[3], D. Cupissol[4], H. Roché[5], Y. Merrouche[6], M. Brunat-Mentigny[1], P. Soler-Michel[1]. *[1]CAC Lyon; [2]CAC Nice; [3]CAC Lille; [4]CAC Montpellier; [5]CAC Toulouse; [6]CHU Besancon, France*

Purpose: Based on previous results in adults (Proc. ASCO 1993, abst. 1646), a multicentric pilot study of neoadjuvant chemotherapy with HDI and CDDP was initiated in pts > 16 years (ys) with osteosarcoma, in 1993.

Methods: 4 preoperative courses (crs) of SHOC (Ifosfamide: 3 g/m^2 d1 to d3 CDDP: 100 mg/m^2 d4) were given, followed by local treatment. Post operative chemotherapy was: *1)* 3 crs of SHOC in pts with ≤10% viable tumor cells, *2)* 3 crs of HOCA (Adriblastin: 60 mg/m^2, d1 to d2; Ifosfamide: 3 g/m^2 d1 to d2, CDDP: 100 mg/m^2 d3) in pts with >10% of viable tumor cells.

Results: 59 pts were included: 14 females/45 males; median age: 28 (range: 16–64). Tumor sites were: femur (25), tibia (10), humerus (6), flat bones (15), others (3). The toxicity of pre-operative SHOC was evaluated in 213 crs. Grade 3 and 4 neutropenia, and febrile neutropenia occurred after 19%, 40% and 10% of crs respectively; growth factors were administered in 20% of crs; grade 3 and 4 thrombopenia in 11% and 5% of crs respectively; grade 3 and 4 anaemia in 9% and 4% of crs respectively; grade 3–4 vomiting occurred after 21% of crs; grade 3 infections occurred after 5% of crs; 2/3 of patients underwent grade 3 alopecia after the 4th course; hospitalisation for toxicity occurred after 20% of crs. 53 pts underwent surgery after pre-operative SHOC (45 conservative; 8 radical). The pts who had progressed before surgery were considered as poor responders. Therefore, the histological response was: 16 (29%) good responders (Huvos 3–4), 40 (71%) bad responders (Huvos 1–2). With a 33 months median follow-up, overall and progression-free survival at 4 ys are 56% and 43% respectively.

1078 POSTER

Neoadjuvant radiochemotherapy (RCT) in soft tissue sarcoma

G.G. Grabenbauer[1], U. Schuchardt[1], W. Hohenberger[2], R. Sauer[1]. *[1]Dept. of Radiation Oncology; [2]Surgery, University Hospitals of Erlangen, Germany*

Purpose: To evaluate response, long-term control, functional outcome and toxicity following neoadjuvant RCT in advanced and recurrent soft tissue sacoma.

Methods: Between 1992 and 1998, a total of 23 patients in whom primary curative limb sparing surgery seemed impossible entered the study. Sixteen patients (pts) had primary and 7 pts recurrent sarcoma. The stages (UICC 1997) were: rIA (2), rIIA (5), IIA (4), IIB (2), III (7), IV (3). RCT consisted of an accelerated split-course radiation (1.5–1.6 Gy twice daily, median total dose 60 Gy, range 60–64 Gy, break of 1 week after 30 Gy) with concomitant chemotherapy using adriamycin (50 mg/m^2/d on days 2 and 30) and ifosfamide (1.5 mg/m^2/d on days 1–5, 29–33). Median follow-up was 26 months (range 2–92 months).

Results: 22 pts underwent surgery with a curative (R0) resection being achieved in 20/22 (91%) pts and gross residual (R2) tumor or unclear tumor margins (RX) in 1 pt, respectively. Effective tumor-downstagigng was documented in 4/22 (18%) pts (ypT0: 3 pts, ypT1: 1 pt). Long-term local tumor control after R0/X resection remained 100%. Delayed wound healing was only noted in 1/22 (5%) patient. Four pts developed distant metastases. Overall-, NED- and distant-metastases-free survival rates were 83%, 64% and 68%, respectively, at 3 years. Grade 3/4 neutropenia (WHO) was seen after 21/46 (46%) cycles of chemotherapy with one pt dying of sepicemia. The functional results were good to excellent in 18/22 (82%) pts.

Conclusion: Accelerated split-course radiation with 60–64 Gy and concomitant chemotherapy using adriamycin/ifosfamide is a safe and effective treatment for soft tissue sarcoma. This regimen may be considered in all cases with recurrent and advanced disease not amenable to primary curative or limb sparing surgery.

1079 POSTER

Surgical management of gastrointestinal stromal tumors (GIST)

S. Bonvalot[1], V. Boige, B. Apariccio, Ph. Lasser[1], D. Elias[1], A. Lecesne. *[1]Service de Chirurgie Générale, Institut Gustave-Roussy, rue Camille Desmoulins, 94805 Villejuif Cedex, France*

Purpose: Clarify the surgical treatment of GIST.

Methods: 56 patients were identified from a single institution database. Local (L) or metastatic (M) first recurrence (R) were studied according to the type of surgery: wedge resection (WR) or organ resection (OR). When stomach or rectum were resected, total (T) and partial (P) resection were compared (total/partial gastrectomy; anterior resection/rectum abdomino perineal resection)

Results: Median age was 55 years. Location: stomach (Stom) 25, duodenum (Duod) 6, small intestine (Small int.) 19, rectum (Rect) 6. 7 patients