413 mg/m^2/day. Median age was 43 y (range 25–67 y). All had ECOG PS < 2. 5 patients received IFOS previously with sarcoma-progression. MTD was 413 mg/m^2/day and DLT proximal renal tubular acidosis (PRTA); no hemorrhagic cystitis or CNS-toxicity. At the Phase 2 recommended dose of 413 mg/m^2/day, 2 of 5 evaluable patients had stable disease. One patient with a liposarcoma had a 25% reduction in the tumor burden at 6 weeks, and a second patient with chondrosarcoma had stable disease for 5 cycles. Both these patients are ongoing.
Conclusions: Based on current clinical experience ZIO-201 has potential for the treatment of sarcoma including patients with IFOS-resistance. MTD is 413 mg/m^2/day; DLT is PRTA. There was no hemorrhagic cystitis; despite not using mesna nor was there CNS-toxicity. Bone marrow toxicity was only modest. Plasma levels at MTD exceed the IC50 of human sarcoma cells in vitro. The study continues to accrue patients.

7525 POSTER

Treatment of malignant sacral tumors except chordoma

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Background: Treatment of malignant sacral tumors represents one of the most difficult problems in musculoskeletal oncology. Because of the rarity of the disease and complicated anatomy (neurological and structural) of the sacrum there is no established method of treatment for these tumors and no comprehensive analysis has been reported so far besides chordoma. With these considerations in mind, this study was undertaken to ascertain the prognosis of patients with sacral tumors in order to help to define the role of various treatment methods in these rare malignancies.
Materials and Methods: Thirty-three patients with primary sacral tumors (excluding chordoma) treated in our institutes between 1987 and 2006 were retrospectively analyzed. There were 19 males and 14 females ranging in age from 10 to 76 years (median 35 years). The histologic diagnosis was Ewing's sarcoma/primitive neuroectodermal tumor (ES/PNET) in 8, chondrosarcoma in 8, osteosarcoma in 3, giant cell tumor (GCT) in 10 and other malignant tumors in 4. Tumors ranged in size from 4 to 18 cm (median 8 cm). Four patients had metastases at the time of diagnosis. Surgical excision of the tumor was performed in 12 patients: resection in 5 (margin negative 2, positive 3) and curettage in 7 (all for GCT). Radiotherapy (40−70 Gy) was applied in 20 patients (including 10 carbon ion radiotherapy). Chemotherapy was used in 16 patients.
Results: At the time of last follow up (median 36 months), 18 patients were disease free, 5 were alive with disease, and 10 had died. Thirteen patients (39%) had developed a local recurrence (ES/PNET 2, chondrosarcoma 5, osteosarcoma 2, GCT 3, other 1) at a median time of 14 months. Carbon ion radiotherapy could achieve a local tumor control in the majority of ES/PNET and approximately one half of chondrosarcoma or osteosarcoma patients. Ten patients (30%) developed distant metastases (ES/PNET 3, chondrosarcoma 2, osteosarcoma 2, others 3) at a median interval of 16 months. The 3- and 5-year overall survival rates of the patients (excluding GCT) were 55% and 38%, respectively. All surviving patients could walk with/without short leg orthosis.
Conclusion: The prognosis of patients with malignant sacral tumors remains poor despite modern multimodality treatment. Given the morbidity and poor functional results of the complete or high sacral amputation, carbon ion radiotherapy could be a valid alternative for these difficult-to-treat diseases.

7526 POSTER

Adjuvant radiotherapy for retroperitoneal soft tissue sarcoma

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Background: To evaluate clinical outcomes and prognostic factors of retroperitoneal soft tissue sarcoma treated with postoperative radiotherapy
Materials and Methods: The records of 24 patients with retroperitoneal soft tissue sarcomas who underwent postoperative radiotherapy between 1985 and 2003 were analyzed. Median follow-up duration was 71 months (range, 7–240 months). Twenty-two patients presented with primary disease and two patients presented with recurrent disease. Liposarcoma and leiomyosarcoma represented 75% of the tumors. Eighty-nine percent of the tumors were high grade (grade 2 or 3). Median tumor size was 13.5 cm (range, 3−50 cm). Complete excision was achieved in 68% of patients. Radiation dose ranged from 45 to 63 Gy (median, 50.4 Gy) with conventional fractionation.
Results: The 5-year overall, local recurrence-free, and distant metastasis-free survival rates were 67%, 57%, and 70%, respectively. Twelve and nine patients experienced local recurrences and distant metastases, respectively. Most common site of distant metastases was liver. On univariate analysis, adjacent organ invasion and age >60 years were significant risk factors predicting poor overall survival. Adjacent organ invasion remained significantly associated with a higher risk of death by multivariate analysis. An interval between surgery and the start of radiotherapy of >30 days was an adverse risk factor for local recurrence by univariate and multivariate analyses. Except one grade 3 diarrhea, no patient suffered grade 3 or higher complication.
Conclusion: Our results were comparable to those of reported. Adjacent organ invasion was a predictor of poor survival and recurrence. Delayed radiotherapy may compromise local control of retroperitoneal soft tissue sarcoma.

7527 POSTER

Postoperative radiation therapy in high-risk pigmented villonodular synovitis

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Background: Pigmented villonodular synovitis (PVNS) is an uncommon proliferative disorder, and appears pathologically thickened, reddish-brown synovium with numerous villous projections. It affects synovium, bursa, and tendon sheath, and is able to invade muscle, tendon, bone, and skin. The type of PVNS is classified into localized (LPVNS) and diffuse (DPVNS). Incompletely resected LPVNS or DPVNS has relatively high local recurrence rate after surgery, although the optimal treatment is microscopic or open synovectomy. This study observed the local recurrence rate and treatment-related complication after postoperative radiation therapy in patients with high-risk, incompletely resected PVNS.
Materials and Methods: Twenty-two patients treated with surgery and postoperative radiation therapy between March 1999 and September 2004 were reviewed. All patients have high-risk local recurrence factors which was DPVNS or incompletely resected LPVNS. Median age was thirty-eight years (range: 10−64 years) and 15 patients (68%) were female. Involved site of joint were Knee in 19 patients, ankle in 2, and hip in 1 patient. Seventeen (77%) patients had DPVNS, and seven (32%) patients had a recurrent disease in same joint. Irradiated dose was 20 Gy in 12 patients (55%), 26 Gy in 2 (9%), and 34 Gy in 8 patients (36%). Radiation field encompassed 5 cm margin beyond tumor bed or surgical sites in all treatment. Follow-up with MR or ultrasound imaging was done in 13 patients, and the other 9 patients were evaluated by physical exam or simple X-ray on follow-up.
Results: Median follow-up time was 24 months, and its range was 13−64 months. Four (18.2%) patients showed local recurrences in radiation field. Time to recurrence was 1 year in 2 patients, and 43, 59 months in the other 2 patients. Two patients received salvage operation or re-radiation therapy. Among 18 patients without local recurrence, fifteen (83.3%) patients had no complaint and good joint function after treatment, one patient had mild stiffness in irradiated knee joint, and the other two patients had mild pain.
Conclusions: Postoperative radiation therapy to high-risk pigmented villonodular synovitis is an effective treatment for local tumor control without severe complication.