1258 POSTER

Desmoplastic small round cell tumour in children and adolescents

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Desmoplastic small round cell tumour (DSRCT) is a rare highly aggressive neoplasm. We report six cases of children and adolescence aged 6.9 to 17.5 years with DSRCT (5 abdominal, 1 paratesticular) registered by the Italian Cooperative Group (ICG) for soft tissue sarcoma over a 9-year period. Patients received a multidisciplinary treatment, including aggressive initial or delayed surgery and radiotherapy. Chemotherapy regimen was based on the use of ifosfamide, vincristine, dactinomycin, and doxorubicin/epirubicin.

Complete surgical resection was possible only for paratesticular primary. Among the patients with abdominal lesions, macroscopically radical excision was possible in only one case. All patients received multidrug chemotherapy, and tumour reduction was obtained in four patients. No relapses were evident in the irradiated fields in four patients who received radiotherapy. Two patients remained progression-free 22 and 63 months after diagnosis, one is in the third complete remission, whereas three patients died 10 to 25 months after diagnosis.

Our results confirm an extremely aggressive nature of DSCRT despite multimodality treatment, although DSRCT seems to be chemosensitive. Longterm survival can be achieved in selected cases. Surgery plays a crucial role, especially when the tumour is confined. Radiotherapy is useful in achieving local control of the disease. The best chemotherapeutic regimen has yet to be established, though some evidence points towards an intensive use of alkylating agents.

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Thyroid cancer in Bulgarian children and adolescents. Prognosis and facts ten years after Chernobyl accident

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Purpose: 1.To compare thyroid cancer (TC) rates one decade before and after Chernobyl accident as well as tumour histology, biology and treatment outcome for both periods. 2. To make a prognosis on radiogenic TC risk among the irradiated children population.

Methods: In the period 1987-1996 26 cases aged 6-19 were diagnosed and treated for differentiated TC. Ten years before, 19 children and adolescents underwent treatment for TC. The International Commission of Radiation Protection coefficients were applied to assess radiogenic TC in 2,1 million contaminated childrens' thyroid glands after Chernobyl.

Results: No difference in TC rate, age, sex and pTpNM were recorded for both groups. Recurrence rate was also similar (6,6% vs. 13,3%) leading to nearly equal 92% 10-years and 83% 15-years progression free survival. 24 radiogenic TC cases were predicted to occur in 2,1 million irradiated children over 50- years time interval after 1986. They could not been distinguished over the spontaneous rate.

Conclusion: The low predicted risk of radiogenic TC in young Bulgarian population and real facts on steady TC rate with similar cancer biology and outcome probably will probably relieve public and medical anxiety due to Chernobyl irradiation.

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Survival of Ewing's sarcoma patients in Hungary

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Background: Patients with localised Ewing's sarcoma treated with combined modality (surgery, chemotherapy, radiotherapy) have the acturial 5-,10-, and 15 years disease free survival 35-51%, 32-43% and 32-37%. Local recurrences are not common (15-25%), but incidence of distant metastases are 44-56% at 5 years. Four prognostic factors may associate with a worse overall survival and disease free survival, presence of distant metastases at diagnosis, axial primary site, older patient age and large tumour size.

Procedure: Between January 1987 and February 2000, 46 patients (25 male and 21 female, mean age 12,2 years, range 5-18 years) with Ewing sarcoma were analysed retrospectively. We examined the clinical characteristic, treatment and outcome. The tumour was located centrally in 18 patients (39,1%) in the extremities in 24 patients (52,2%)and other sites in 4 (8,7%) cases. These patients were treated with a multimodal approach characterised by surgery, chemotherapy and radiotherapy.

Result: With a median follow-up of 46 months (range 10-128 months) for the surviving patients 20% failed distantly, 7% failed locally and 30% suffered from the progression of previously esteblished metastatic disease. The overall survival was 51,8 months. The 5 year overall survival and disease free survival were 44,7% and 35,1%.

Conclusion: Our results are in correspondence with the international results and the combined modality treatment is effective in patients with Ewing sarcoma.

1261 POSTER

Preliminary results of three dimensional conformal therapy for pediatric brain tumor

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Purpose: Radiation therapy is a effective treatment modality for pediatric brain tumor.

However long-term survivals of pediatric brain tumor show some radiation induced neurotoxicity.We used three dimensional conformal therapy tosolve these problems and compared the isodose distribution, DVH and NTCP to standard radiationtherapy.

Methods and Materials: From June 1995 to December2000, thirty five patients with pediatric brain tumor were treated by three dimensional conformal therapy in Asan medical center. All had CTsimulation. Multiple structures were contoured,including tumor, both eyes, brain stem, pituitary gland, cochlear area, and spinal cord. Three dimensional dose distribution were calculated fortarget and normal brains organs for the standard pararell opposed plan and three dimensional conformal plan. We also analysed the value of DVH,NTCP to compare both techniques in each case.

Results: We used 5 to 7 beams with staticnoncoplanar technique in three dimensional conformal therapy. Three dimensional conformal therapy technique showed better target coverage than standard radiation therapy technique. Three dimensional conformal therapy technique also reduced 30-40% of radiation dose to normal brain organs comparing to standard radiation therapy technqiue.

Conclusion: We concluded that three dimensional conformal therapy is very useful treatment modality for pediatirc brain tumor with improving target coverage and sparing normal brain organs.

1262 POSTER

The elective place of radiation therapy (RT) in the management of localized soft tissue sarcomas (STS) in children. An update of the MMT 89 study of the International Society of Pediatric Oncology (SIOP)

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Purpose: to evaluate the place of outcome of RT in a multi-institutional study in which chemotherapy (CT) plays a major role due to the high chemosensitivity and propensity for early dissemination in this age-group.

Methods: from 1/1989 through 11/1995, 352/664 (53%) children at "high-risk" with pathological central review received RT in their management. This included 1) systematic RT of "parameningeal" (PM) sites above 3 years= 132; 2) delayed RT if residual disease at the comlepletion of CT (generally 6 IVA= Ifosfamide, Vincristine, Actinomycine D)= 130; 3) RT as a part of salvage in failing children not irradiated initially= 90. Total dose was 45 ± boost administered either mono (QD=5*1.8-2Gy/W) or bifractionated (BID= 10*1.5/W).

Results: Irradiated sites were PM (50%), genitourinary (GU =11%), orbit (9%), extremities (9%), head and neck non PM (8%), others (13%). Compared with the entire population it represented between 17% (GU) and 84% (PM) cases. 75% were rhabdomyosarcomas. 5 years survival (S) and DFS were 66 and 60% vs 72 and 58% for the entire population. Mean age of children irradiated a the time of relapse was older than that of children irradiated in the initial corse (especially GU non bladder-prostate:

+ 93 months and "others": + 49 months). Their 5 years survival was similar (65%). BID regimen was elected only in 14% children and induced a higher mucosal toxicity ($p<0.001$) without affecting autcome.

Conclusion: In pediatric STS, in which long term survival and toxicity are equally important, RT can be confined initially to "high-risk" groups only. Delayed RT in "low-risk" ones who failed locally doesn't compromise the outcome.

1263 POSTER

Children osteosarcoma - treatment results and prognostic factors

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Objective: The aim of our study was to evaluate results of treatment and analysis of prognostic factors in children with nonmetastatic osteosarcoma.

Patients and methods: From 1987 to 1999 we treated 90 patients (pts) with classic high-grade osteosarcoma (OS), median age 15 years (range 3 to 18 yrs). 75 pts had large tumours with volume over 150 ml. The majority of pts (86%) had tumour in the region of the knee joint. Adjuvant chemotherapy after amputation was administered in 28 pts. Neoadjuvant chemotherapy was administered in 62 pts - intravenous or intraarterial in 46 and 16 pts, respectively (1 treatment- related death), followed by surgery (amputation in 32 pts, limb salvage in 26 pts, resection in 3 pts) and postoperative chemotherapy. Two- drug regimen (Adr, CDDP) was administered in 43 pts while 47 pts received chemotherapy by other protocols.

Results: During the 18 to 166-months follow-up period (Me=67 mts.), over-all survival rate was 62% and disease-free survival rate was 60%. Over-all survival rate was 49% in the adjuvant grip and 67% in the neoadjuvant group. The most significant prognostic factors were tumour volume (VT) and tumour necrosis. Over - all survival rate was 56% in pts with VT > 150 ml (75 pts) and 92% in pts with VT < 150 ml (15 pts). In the neoadjuvant group, 22 pts (36%) had over 90% tumour necrosis, 20 pts (32%) had 60-90% necrosis, and 20 (32%) had less than 60% necrosis. Over-all survival rates were 91%, 65% and 41% respectively. Significant differences in survival were also in relation to sex, duration of symptoms, LDH and alkaline phosphatase level, but not in relation to the type of chemotherapy applied (two-drug or multi-drug regimen) or the mode of preoperative chemotherapy administration (i.v./i.a.).

Conclusion: Tumour load and responsiveness to chemotherapy are two major prognostic factors in patients with nonmetastatic OS. The effects of Adr, CDDP regimen are similar to those of other more complex and toxic regimens.

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Natural killer (NK) cell activity, Interleukin-6 (IL-6) and tumor necrosis factor (TNF) in children with brain tumor

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Immunocompetence seems to play an important role in host tumor defense. The aim of this study was to evaluate the number of NK cells, NK cell activity, levels of IL-6 and TNF in patients (pts) with brain tumor (BT).

Patients and Methods: In 12/21 pts with malignant (M) BT and 9/21 pts with benign (B) BT, aged 2–14 years, serum levels of cytokine, number of NK cells and NK cell activity were determined prior to neurosurgery and oncologic treatment. IL-6 and TNF quantification in serum samples enzyme immunoassay was applied. The NK cell activity was measured by cytotoxicity assay with 51Cr-labeled K-562 target cells. The number of NK (CD16+) cells was determined by indirect immunofluorescence with OK-NK monoclonal antibody.

Results: Elevated IL-6 level was found in 83% of examined MBT pts and TNF level in 75% MBT pts ($p < 0.01^*$). Concentration of IL-6 and TNF were elevated in serum of 17% of BBT pts. Serum levels of cytokines are low in healthy control (to <28 pg/ml for IL-6 and <15 pg/ml for TNF). Number of NK cells and NK cell activity were significantly diminished in pts with MBT (see Table).

BT Pts	NK cell activity (%) E:CS** 50:1			CD16+ cells $\times 10^9$/L		IL-6 pg/ml		TNF pg/ml	
	N	x	(range)	x	(range)	x	(range)	x	(range)
Malignant	12	14	(1–39)*	0.06	(0.01–0.18)*	203	(0–500)*	209	(0–880)*
Benign	9	28	(6–53)	0.15	(0.05–0.25)	6	(0–24)	29	(0–190)

**the ratio of effector and target cells

Conclusion: The difference in serum IL-6 and TNF content in malignant and benign BT pts was shown. Number of NK cells and NK cell activity were significantly decreased in pts with malignant brain tumor.

Central nervous system tumours

1265 POSTER

Neurologic function correlates with outcome in patients with non-ependymoma spinal cord gliomas

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Purpose: To identify prognostic factors in patients with non-ependymoma spinal cord gliomas.

Methods: Twenty-five patients were retrospectively studied from 1970 to 1999 at The University of Texas M. D. Anderson Cancer Center. The median age was 40 years (range, 1 - 58 years). The median follow-up was 54 months (range, 10 - 313 months). Nineteen patients had a biopsy, 5 had a subtotal resection, and 1 had a gross total resection. Twenty-two patients received postoperative radiotherapy (RT) (median dose, 45 Gy; range, 22 - 60 Gy), and 13 patients received adjuvant chemotherapy (median, 6 cycles). A neuropathologic review confirmed the World Health Organization tumor grade. Neurologic Function (NF) was graded as 1 to 4 at diagnosis, postoperatively pre-RT, post-RT, and at follow-up.

Results: Post-RT (within 3 months) NF (1 - 4) predicted for OS (5-yr. rates: 100%, 86%, 14%, and 0%; $p = 0.003$). The change in NF at follow-up from diagnosis ranged from -1 (improvement) to +3 (deterioration), with improvement in NF resulting in superior OS (5-yr. rates: 100%, 42%, 57%, 57%, and 0%; $p = 0.01$) and DMFS (5-yr. rates: 100%, 100%, 51%, 75%, and 0%; $p = 0.02$). NF (1 - 4) at diagnosis predicted for LC (5-yr. rates: 60%, 40%, 27%, and 0%; $p = 0.0001$). The number of grade > 2 tumors did not have a confounding effect on NF at diagnosis (Chi-square test; $p = 0.13$). There was a significant difference in local control (LC) (5-yr. rates: 48% vs. 0%; $p = 0.0005$), progression-free survival (PFS) (5-yr. rates: 43% vs. 0%; $p < 0.0001$), distant metastasis-free survival (DMFS) (5-yr. rates: 67% vs. 50%; $p = 0.006$), and overall survival (OS) (5-yr. rates: 78% vs. 30%; $p = 0.02$) in patients with histologic grade < or = 2 vs. > 2 gliomas. Increase in age adversely affected LC (hazard ratio, 1.07; $p = 0.02$), PFS (hazard ratio, 1.06; $p < 0.01$), and OS (hazard ratio, 1.04; $p < 0.01$). None of the patients developed radiation myelopathy. In a multivariate analysis, tumor grade was the most important predictor of PFS, DMFS, and OS. Gender, duration of symptoms, tumor location, number of involved vertebral segments, degree of resection, and duration of RT delay were not significant in a univariate analysis.

Conclusion: Incremental improvement in neurologic function and younger age may be important favorable prognostic factors for OS. This study confirms tumor grade to be the most important prognostic factor for LC, PFS, DMFS, and OS.

1266 POSTER

Probability and estimation of malignancy in women with pelvic masses, using a logistic model which combines: age, morphological ultrasound pattern and resistance index determination

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Objective: The purpose of this study is to evaluate the potential of a predictive model in characterizing the benign or malignant nature of ovarian tumors, analyzing these variables: age, tumor size, morphological ultrasound pattern, position of the vessels and resistance index (RI) value (last two obtained by *Power* Doppler).