presented with a primarily unresectable pleomorphic sarcoma of the abdomen starting chemotherapy in neoadjuvant intention. The second patient presented with a progressive multifocal myxoid liposarcoma of the pelvis after previous combination chemotherapy.
Results: Simultaneous PET/MRI shows a high contrast imaging without artefacts.in all patients. After 2 cycles of neoadjuvant chemotherapy the 1st patient showed no shrinkage in tumour volume while the FDG uptake (SUV) decreases up to 58%. Therefore treatment was continued. In staging prior to start chemotherapy in the 2nd patient, there were two lesions detectable in MRI with no or only minimal FDG-uptake. The complete and follow up data will reported at presentation.
Conclusion: To our knowledge we report the first two patients with sts examined with whole-body-PET/MRI. The combination of simultaneous PET and MRI is feasible also in sarcoma patients and can provide additional information in diagnosis and treatment of sts. For treatment monitoring with repeated PET/MRI the lower radition exposure is a major advantage. Focusing on regions of interest can result in shorter MR sequences and save imaging time. Further studies should evaluate PET/MRI as imaging method in staging and treatment evaluation in sts.

9432 POSTER

Age, Location and Histology in Soft Tissue Sarcomas − Single Institutional Review

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Background: Soft tissue sarcomas (STS) are rare tumours. The heterogeneity in location, histopathology and clinical behavior determine major difficulties in the medical management in terms of diagnosis and therapeutic approach. The aim of this study was to evaluate the demographic features of our population, considering age at presentation, anatomical location and histological subtypes.
Methods: From a prospective database of STS of 1435 patients (pts), we reviewed the medical records of pts treated at our institution from 1994 to 2010. Pts were divided by age (15−30 years (y), 31−50, 51−70 and ⩾71), location (upper limb, lower limb, head and neck, trunk, visceral, retroperitoneum, pelvis, others) and histological subtypes.
Results: 1016 pts were eligible for analysis. Median age was 51 years (15−95); 521 were women (51%). The most frequent histologies were, leiomyosarcoma (13%), GIST (13%), liposarcoma (LPS − 12%), malignant fibrous histiocytoma (MFH − 10%). 40% of the population was between 51−70 y. In the age group between 15−30 y, rhabdomyosarcoma was the most common histology (14%), between 31−50, leiomyosarcoma (15%) and GIST in the others. The most common primary locations were the lower limb 238 pts (23%), pelvis (uterus included) 17% and retroperitoneum 12%. Lower limbs and pelvic primary locations were more frequent in males and females, respectively. Frequency of histologic subtypes by location: leiomyosarcoma in pelvis (46%), MFH and LPS in lower limbs (44% and 38% respectively) and 60% of GIST were located in the stomach.
Conclusions: Data obtained in a large cohort of pts in a single institution across 16 years of experience introduced GIST as the second most frequent histologic subtype. Pelvic location was another remarkable feature due to the inclusion of uterus sarcoma. This data is consistent with recent series that analyzed histology and location of STS.

9433 POSTER

Metastatic Epithelioid Hemangioendothelioma Improved During Pregnancy − Hormonal Interaction?

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Epithelioid hemangioendothelioma (EH) is a rare malignant vascular neoplasm of endothelial origin and unpredictable clinical course and prognosis. It may present in several sites, most commonly liver and lungs. No standard therapeutic strategies are available, surgical resection is the treatment of choice whenever possible. Although it is a chemoresistant disease, in the presence of metastatic nonresectable disease, several antineoplastic agents have been proposed.
We describe a case of a young woman with hepatic EH (HEH) metastatic to the peritoneum and lungs. DCA presented with abdominal pain, large ascites, nausea and vomit, September 2005; stage IV, HEH diagnosis was established and chemotherapy was started.
Patient received 6 cycles of epirrubicin, ifosfamide and etoposide with no response, and treatment was modified to low dose interferon, which showed stable disease for 18 months. July 2008 patient was diagnosed pregnant, which she decided to keep. Interferon was immediately stopped − mid first trimester. She had a full term pregnancy and natural delivery. Ascites vanished during pregnancy and liver and lung lesions kept stable by recist criteria (slighted reduced), compatible with disease response. She showed no signs of disease progression during lactation period, which was prolonged until the baby reached 24 months (February 2010). At this point she started showing signs of asymptomatic, slow disease progression, she is currently under observation. Immunohistochemistry was performed: CD34 positive, factor VIII positive, AE1/AE3 negative, estrogen receptor negative, progesterone receptor negative.
Literature is scarce regarding metastatic EH systemic treatment. There are case reports and small series using interferon and thalidomide, most with no response or stable disease. We found no relation on hormonal modifications or pregnancy and EH on literature. To our knowledge there are no case reports of full term pregnancy in EH patients, and neither of disease response related to pregnancy and/or lactation.

9434 POSTER

Localized Colorectal (CLR) Gastrointestinal Stromal Tumour (GIST) − Clinical Characteristics, Patterns of Relapse and Clinical Outcomes of This Uncommon GIST Primary Site

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Background: Colon and rectum are uncommon primary sites for GIST. Risk stratification models in clinical use do not address colonic GIST and primary surgical management of rectal GIST is often complicated by anatomical factors precluding sphincter-preserving complete excision. We studied the clinical presentation and treatment outcomes of patients (pts) with CLR GIST and compared this with GIST of other primary sites.
Material and Methods: Single center retrospective study. Eighteen consecutive pts (9%) with CLR GIST from 2002–2010 with complete medical records were identified from our database.
Results: Median age of pts was 59 yrs, 11 were males, 5 and 13 had colon and rectal GIST respectively; 16 were non-metastatic at presentation. Thirteen pts underwent surgical excision, 5 had biopsy only (1 metastatic disease, 1 incidental finding, 2 declined surgery and 1 initially diagnosed as stromal tumour of uncertain malignant potential). Of 12 pts (3 colon, 9 rectal) with localized GIST who underwent surgical resection, local R0 and R1 resection margins were achieved in 67% and 33% respectively. Of 9 pts operated for localized rectal GIST, 3 had abdomino-perineal resection and 2 experienced inadvertent tumour spillage. 25% and 75% of pts had tumours >2−<5 cm and >5−<10 cm respectively; 17% and 83% had 0−5 mitoses and >10 mitoses per 50HPF respectively. Only 2 pts received adjuvant imatinib (IM). At a median follow-up of 50 months, 7 of these 12 pts (1 colon and 6 rectal) relapsed. All pts with relapsed rectal GIST failed locally and 50% had additional metastatic sites of involvement at time of 1st failure. Estimated median relapse free survival (RFS) of pts with resected localized CLR GIST was 55 mths. Although median tumour size of CLR GIST was significantly smaller than those of gastric and small bowel origin ($p = 0.021$), this did not translate to a difference in RFS ($p = 0.683$). Other clinical predictors of GIST relapses, including number of mitoses and adjuvant IM use, was not significantly different ($p = 0.083$ and $p = 0.393$ respectively) between CLR GIST and gastric/small bowel GIST.
Conclusions: This study highlights the unique challenges in the management of CLR GIST, in particular rectal GIST. Although smaller in size at presentation, it is associated with high surgical morbidity and local relapses. Strategies to enhance local control and reduce surgical morbidity including use of neoadjuvant/adjuvant IM should be further explored in this cohort of GIST pts.

9435 POSTER

A New Promising Strategy in Chondrosarcoma − Quaternary Ammonium as Vector of Radioisotopes and Cytotoxics Toward Cartilage Proteoglycans

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Background: Currently, cartilage tumours remain ongoing therapeutic challenges due to their chondrogenic extracellular matrix (ECM) that potentially hampers drug delivery. Neither chemotherapy nor radiotherapy is effective against chondrosarcoma (CHS). Ourstrategy consists in using the quaternary ammonium function, that exhibits a high affinity for

proteoglycans of ECM, as a selective carrier to CHS of (i) radioisotopes for a targeted *in vivo* imaging or (ii) cytotoxics for a targeted therapeutic approach.
Materials and Methods: (i) For diagnosis application, a radiotracer radiolabeled with ^{99m}Tc (^{99m}Tc-NTP 15-5) was designed and tested *in vivo* in an orthotopic swarm CHS model. (ii) For therapeutic application, a first conjugate, a quaternary ammonium derivative of melphalan (Mel-AQ), was synthesized and assessed *in vitro* (cytotoxic activity, cell cycle distribution) and *in vivo* in the orthotopic swarm CHS model (antitumour efficacy, toxicity). Since CHS is characterized by hypoxia, research was focused on the vectorization of hypoxia-activated prodrugs. Quaternary ammonium derivatives of phosphormidate mustards were synthesized and tested in vitro (^{31}P NMR studies of cleavage kinetics, *in vitro* cytotoxicity under normoxic and hypoxic culture conditions).
Results: For diagnosis, ^{99m}Tc-NTP 15-5 radiotracer highly accumulated in tumoral tissue at very early stage of pathology while no palpable nor measurable tumour could be assessed. Furthermore, tumoral uptake increased as pathology progressed over time. For therapy, CHS-bearing rats treated with Mel-AQ at 16 μmol/kg (q4d × 3 schedule from Day 8) showed a significant tumour growth inhibition (TGI of 69% at day 43) with associated side effects (in term of weight and heamatological parameters) being significantly reduced as compared to Melphalan. Considering phosphoramidate-AQ derivatives, an improvement of cytotoxic activity was observed in CHS cells under hypoxic culture conditions respectively to normoxic conditions.
Conclusions: These experimental results underlined the potential of the PG vectorization strategy developed in our lab, for a targeted management of CHS including: (i) the first and only radiopharmaceutical able to provide *in vivo* a specific diagnosis and staging of the tumoral pathology of cartilage and (ii) a promising targeted antineoplastic approach exploiting both the chondrogenic and hypoxic features of CHS.
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9436 POSTER

The Role of Ki-67 as a Prognostic Factor in Gastrointestinal Stromal Tumours

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Background: The aim of the study was to determine useful prognostic factors of gastrointestinal stromal tumours (GISTs), for recurrence in local disease but also for overall survival.
Materials and Methods: We analysed 100 GIST patients by retreiving all mesenchymal tumours of the GI-tract from the files of the University Hospital Center Zagreb, retrospectively in the period from 1997–2007., with various primary localization and different stages of disease. All pathological samples were stained for c-KIT (developed on the routine basis in 2001, retrospectively stained specimens from 1997–2001), PDGFRα, further specimens were analysed by immunohistochemistry for expression of CD34, SMA, S100, Ki-67, as well as for parameters like tumour size, mitotic count, morphology, haemorrhage, necrosis and mucosal ulceration. Proliferating index counted by Ki-67 antibody was calculated as a number of positive nuclear reaction over 100 cells. The Cox's proportional hazard model was used in univariate and multivariate analyses, chi-squared test or Student's t-test was used for statistical comparisons of baseline characteristics. Survival rates were calculated by the Kaplan–Meier method, and statistical significance was determined by the log-rank test.
Results: There were 36 patients with localized disease, 29 had localized disease with recurrence and 35 had initially metastatic disease. In univariate analysis for recurrence of disease tumour size, mitotic rate, pattern of c-KIT staining, SMA positivity and Ki-67 showed to be significant prognostic factor, especially Ki-67 ($p < 0.0001$). In multivariate analysis only Ki-67 and SMA seems to be prognostically important ($p < 0.01$ and $p < 0.05$, respectively). It was found that cut-off level of Ki-67 on the level of 6% was significant for recurrence of initially localized disease. It was also found, in Cox regression analysis, statistically significant difference in overall survival (Cox F-test, $p = 0.04$) on the level of Ki-67 above vs below 6%. All other analysed parameters have not been found significant considering overall survival.
Conclusions: Beyond classic pathohistologic parameters, the level of Ki-67 seems to be important and taken into consideration when assesing recurrence risk in localized disease, maybe even more for adjuvant treatment. It is notable that the level of Ki-67 was consistent no matter of primary tumour localization, what was not the case with mitotic count.

9437 POSTER

Prognostic Factors in Patients With Cancer of Unknown Primary (CUP)

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Introduction: CUP represents a heterogeneous population of patients with systemic malignancy and variable outcomes. Identification of clinical, pathologic and laboratory parameters with prognostic utility would contribute to better prognostication and individualised therapy.
Patients and Methods: We collected clinical, pathologic and laboratory data of 211 patients with CUP treated from 1995 until 2010 and analysed them for prognostic significance. The log-rank test was used for univariate analysis, and a Wald backwards Cox Regression model was applied for multivariate analysis.
Results: 211 patients (113 males, 98 females) of a median age of 69 (range 27−87) and performance status 0−1 in 54% harboured adenocarcinoma (112), squamous carcimona (16), neuroendocrine tumours (15) and undifferentiated/poorly differentiated carcinomas (80) of unknown primary. The clinicopathologic subgroup of the patients was Visceral CUP (122), Head Neck CUP (12), Axillary Nodal CUP (9), Neuroendocrine (10), Serous Peritoneal CUP (23) and Mucinous Peritoneal (12). 34% of patients had 2 or more comorbid conditions, while at diagnosis, anemia was seen in 22%, leukocytosis (>10000/mm^3) in 33%, lymphocytopenia (<1500 mm^3) in 47%, hypoalbuminemia in 16%, abnormal serum alkaline phosphatase in 32% and hyponatremia in 15% of patients. Platinum-based therapy was administered in 106, the rest receiving taxanes, fluoropyrimidines or vinca alkaloids without platinum. The objective response rate was 36.6%; patients achieved a median Progression-Free Survival of 4 months (95% CI 3.2−5.3) and a median Overall Survival of 9 months (95% CI 5−12). In univariate analysis, the following parameters exhibited significant prognostic utility.

Table 1. Univariate prognostic analysis

Parameter	Median Overall Survival	Logrank 2-sided P
PS 0−1 vs 2 or more	10 vs 7 months	0.01
Platinum-based therapy vs non-platinum	11 vs 7 months	0.009
Lymphopenia	7 vs 12 months	0.021

In multivariate analysis, administration of platinum-based therapy had a favourable impact on outcome (Relative Risk of death, RR 0.62, 95% CI 0.39−0.9, $p = 0.049$), while lymphopenia at diagnosis carried an unfavourable prognostic significance (RR 1.6, 95% CI 0.98−2.6, $p = 0.058$).
Conclusion: Host-related factors such as performance status and lymphopenia and therapy-related factors such as platinum treatment impact on the outcome of patients with CUP. A prognostic algorithm will be devised and validated upon expansion of the patient cohort.