restriction fragment size was identified by horizontal electrophoresis. The survival was determined using Kaplan–Meier method, and the log-rank test was used for evaluation of differences in survival. The association between genetic factors and cancer risk were analyzed by logistic regression, and the results were expressed as odds ratios (OR) and 95% confidence intervals (CI). Statistical analyses were performed using CRAN 2.4.0 statistical software, and the decision on significance was based on $p < 0.05$.
Results: Comparison of allele distribution between PC patients and controls demonstrated that Val/Val genotype carriers in codon 432 CYP1B1 had lower PC risk of pancreatic cancer development compared wild type carriers (OR 0.59; 95% CI 0.36–0.96; $p = 0.035$). Heterozygotes also had lower risk (OR 0.69; 95% CI 0.49–0.97; $p = 0.033$). There was an even more signficant increase of risk in patients who had histologically verified PC. Variant allele in GSTP1 codone 105 was associated with a trend of higher PC risk (OR 1.38; 95% CI 0.96–1.97, $p < 0.05$). Increased PC risk was also observed for GSTT1deletion (OR 1.56; 95% CI 0.93–2.61, $p < 0.05$). The combination of GSTT1 mutation and GSTP1 deletion was associted with significantly increased PC risk (OR 2.5; 95% CI 1.20–5.20; $p < 0.05$). No significant association was observed between the polymorphism of other biotransforming genes and PC risk, and none of the gene polymorphisms investigated was associated with differences in PC survival.
Conclusions: Gene polymorphism of biotransforming genes may be associated with the risk of PC.

6614 POSTER

Clinicopathologic Significance of Expression of Nuclear Factor Kappa B and Its Target Gene Products in Gastric Cancer Patients

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Background: Nuclear factor-κB (NF-κB) is involved in cell proliferation, invasion, angiogenesis and metastases by activating or repressing NF-kB target genes. The principal objective of this study was to assess the prognostic significance of NF-κB and its target genes in gastric cancer.
Methods: The tumour tissues of 115 patients with gastric cancer were immunohistochemically evaluated using monoclonal antibodies against NF-κB. Preoperative serum levels of vascular endothelial growth factor (VEGF), interleukin-6 (IL-6) were assessed via Enzyme-Linked Immuno-Sorbent Assay (ELISA). C-reactive protein (CRP) and serum amyloid A (SAA) were measured via immunotrubidimetry.
Results: Positive rate of NF-κB was 42.6%. NF-kB expression was related to tumour size, depth of invasion, lymph node metastasis, stage, and lymphovascular invasion. NF-κB expression in tumour tissues was also related to serum levels of IL-6 ($p = 0.044$) and CRP ($p = 0.010$). IL-6, SAA, CRP were related to depth of invasion, VEGF and SAA were correlated with lymph node metastasis. IL-6, VEGF, SAA and CRP were related to the TNM stage. Univariate analysis demonstrated that immunostaining of NF-κB, levels of CEA, CA19-9, IL-6, VEGF, SAA were significantly related with both disease free survival and overall survival. Multivariate analysis verified that NF-κB (Hazard ratio: 3.40, $p = 0.024$) and SAA (Hazard ratio: 3.39, $p = 0.045$) were independently associated with overall survival.
Conclusions: Immunohistochemical staining of NF-κB expression was related to serum levels of target gene products. Serum levels of IL-6, VEGF, SAA, and CRP might be markers TNM stage. Increased expression of NA-κB and high levels of SAA were associated with poor overall survival in gastric cancer patients.

6615 POSTER

Derangement HNF4a Expression as a Candidate Marker of Hepatocellular Carcinoma Progression

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Hepatocyte nuclear factor 4 (HNF4)α is a nuclear receptor playing a key role in hepatic differentiation. This gene is transcribed from two distinct promoters, whose activity results in expression of two groups of isoforms and reflects the level of hepatocytes differentiation. HNF4αP2 isoforms are prevalent in embryonic liver, while HNF4αP1 become predominant in mature hepatocytes. According to our previous surveys, hepatocellular carcinoma (HCC) progression is associated with the deregulation of HNF4α. Investigations on the collection of chemically induced mouse HCCs of independent origin revealed strict correlation of HNF4α expression with tumour differentiation state. To examine whether alterations of HNF4α gene expression are representative for human primary liver tumours we have analyzed the synthesis of HNF4α isoforms in 37 cases of human HCC on the paraffin sections by immunohistochemical staining.
Intracellular localization and protein expression level of HNF4α isoforms were investigated immunohistochemically using specific antibodies for HNF4αP1 or HNF4αP2 groups of isoforms. HNF4α isoforms immunoreactivity was detectable in all studied tumours except few severely dedifferentiated cases. Nuclear staining of tumour cells with HNF4αP1 specific antibodies was less intensive than in normal hepatocytes. Activation of HNF4αP2 isoform, uncharacterisic for adult hepatocytes, was found in tumours (92% of cases) and surrounding liver tissue (56% of cases). We suppose that HCC progression is accompanied with activation of HNF4αP2 isoforms, decreased HNF4αP1 synthesis while in severely dedifferentiated tumours the expression of both groups of HNF4α isoforms is repressed. In order to investigate the possibility of using alterations in HNF4α isoforms expression as a prognostic factor for the HCC treatment, the pilot multifactor analysis of long-term survival after surgical HCC treatment were carried out. Maintenance of HNF4αP1 isoforms synthesis was found to be statistically reliable factor associated with overall survival. We expect that further analysis of correlation between tumour differentiation and patients postoperative survival rate with the pattern of HNF4α isoforms expression on the expanded collections of human HCCs archival samples would allow to estimate the possible impact of HNF4α expression analysis for HCC diagnostics and prognosis.
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6616 POSTER

Impact of Progression on Resource Utilization in the Treatment of NET

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Background: Neuroendocrine tumours (NET) are associated with high morbidity and mortality; however, literature on resource utilization with progression is scarce. The aim of this study was to compare resource use in advanced NET patients at diagnosis versus post-progression.
Materials and Methods: An online survey was administered to physicians in the US, UK, Germany, France, Brazil and Italy. The survey collected resource utilization during the baseline period (time post-diagnosis but pre-progression; 12.8 months), 1st (8.7 months), and 2nd progression (12 months). Progression was defined as measurable/ radiographic evidence of tumour progression.
Results: Of 4,100 surveys administered, 197 physicians participated (4.8%), providing data on 394 patients. NET subtypes included GI (45%), lung (24%), and pancreas (31%). Resource utilization consistently increased from baseline through progression (Table 1).

Table 1. Resource utilization at baseline vs. post progression

	Baseline			Any Progression*		
	All NET % (N = 377)	GI/Lung % (N = 264)	Pancreas % (N = 113)	All NET % (N = 640)	GI/Lung % (N = 442)	Pancreas % (N = 198)
Chemotherapy	21.8 (82)	23.9(63)	16.8 (19)	29.2 (187)	30.3 (134)	26.8 (53)
PRRT	1.9 (7)	1.9 (5)	1.8 (2)	6.1 (39)	6.3 (28)	5.6 (11)
Somatostatin analogs	61.0 (230)	61.7 (163)	59.3 (67)	48.0 (307)	48.4 (214)	47.0 (93)
Routine Monitoring						
Ultrasound	52.5 (198)	50.0 (132)	58.4 (66)	40.2 (257)	39.1 (173)	42.4 (84)
CT scans (conventional or helical)	84.9 (320)	86.4 (228)	81.4 (92)	81.6 (522)	82.8 (366)	78.8(156)
Other imaging†	49.6 (187)	48.1 (127)	53.1 (60)	34.4 (220)	33.5 (148)	36.4 (72)
Biomarkers	69.0 (260)	68.2(180)	70.8 (80)	55.2 (353)	54.1(239)	57.6 (114)
Lab tests	56.2 (212)	52.6(139)	64.6 (73)	46.9 (300)	43.4(192)	54.6 (108)
Visits (surveyed physicians)	97.1 (366)	96.6 (255)	98.2 (111)	96.3 (616)	95.7 (423)	97.5 (193)
Hospitalizations	37.1 (140)	36.0 (95)	39.8 (45)	43.9 (281)	43.0 (190)	46.0 (91)
Surgery	28.7 (108)	26.5 (70)	33.6 (38)	23.9 (153)	23.1 (102)	25.8 (51)
Targeted therapies Dagger;	1.3 (5)	1.1 (3)	1.8 (2)	3.9(25)	2.9 (13)	6.1(12)

*1st and assumed 2nd progression, potentially resulting in multiple events per patient.
† PET, SRS, mIBG, MRI, Chest X-Ray.
Dagger; Everolimus, sunitinib, imatinib, bevacizumab.

Conclusions: Recent recommendations propose that progression free survival should be the primary endpoint in clinical trials in NET. It is therefore important to characterize the impact that progression has in the

clinic. This study suggests that progression results in increased use of chemotherapy, PRRT and targeted therapies and in increased rates of hospitalization.

6617 POSTER

Impact of Asian Ethnicity in Gastric Cancer Survival − a Literature Review

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Background: Differences between Asian and Western gastric cancer (GC) patients in overall survival (OS) are well-documented. This review addresses the controversy as to whether this can be attributed to ethnicity/biology, treatments, or other factors.
Materials & Methods: A systematic search in PubMed (2000−11 English-language), using combinations of Medical Subject Heading search terms such as "gastric cancer," "Asian," "outcomes," and "survival" resulted in 378 citations. Following title and abstract review, 12 publications were fully reviewed.
Results: All 12 studies compared Asians and non-Asians in the same countries (10 in the US, 1 in the UK, 1 in Canada). Nine US studies found Asian ethnicity to be an independent predictor of favorable OS in multivariate analyses (relative to Whites, weighted average HR = 0.83, 95% CI 0.82–0.85), including 1 reporting favorable outcomes for foreign-born Asians, but not US-born Asians. Most of the 9 studies used large population-based multi-center cancer registries (mean Asian n = 2478, range 52–6454) and controlled for confounding factors of survival including treatment modality, age, gender, stage, grade, histology, and tumour location. Three studies failed to confirm Asian ethnicity as an independent predictor. These were small single-center studies (mean Asian n = 63, range 13–159) and controlled for fewer or none of the confounding factors. Additionally, 1 small study included only 18 patients of S Asian origin (India, Pakistan, Bangladesh). Other studies examined patients of predominantly E Asian origin (Japan, Korea, China).
Conclusions: The majority of the evidence reviewed supports Asian ethnicity as a predictor of favorable OS in GC, independent of other prognostic factors. The Asians included in these studies all live in Western countries and may have been homogenized to other ethnicities. This may have biased the results towards the null, underestimating the effect of Asian ethnicity. Recent literature lacks GC survival studies comparing ethnicities across multiple countries. Current comparisons within countries eliminate disparities in health care systems as a confounding factor. However, the effect of health-seeking behaviors cannot be ruled out. Further investigation in such behaviors could help improve outcomes of other ethnicities. Understanding differences in the underlying biology of GC in Asians would permit development of tailored treatment strategies to meet unmet needs of different ethnicities.

6618 POSTER

Cross-Sectional Analysis of Resource Utilization Among Patients With Neuroendocrine Tumours

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Background: Although there is high morbidity and mortality associated with neuroendocrine tumours (NET), there are limited data in the literature to quantify the economic impact in this patient population. The aim of this study was to understand resource use among advanced NET patients.
Materials and Methods: An online survey was administered to physicians in the US, UK, Germany, France, Brazil, and Italy to collect data on patients with advanced NET. The survey gathered data on the incidence and frequency of resource use (e.g. chemotherapy, somatostatin analogs [SSA], PRRT).
Results: Of the 4,100 surveys administered, 197 physicians participated (4.8%), providing data for 394 NET patients. Among all patients, non-pancreatic GI tract was the most common primary site (45.4%), followed by pancreas (30.7%). Resource utilization was high across tumour types as shown in Table 1. The most common types of chemotherapy used were: 5-fluorouracil (16.2%), etoposide (15.5%), and cisplatin (14.8%).

Table 1. Overall resource utilization at any time

	All NET, % (N) (n = 394)	pNET, % (N) (n = 121)	GI/Lung NET, % (N) (n = 273)
Surgery	46.5 (183)	48.8 (59)	45.4 (124)
Chemotherapy	48.7 (192)	43.0 (52)	51.3 (140)
PRRT	10.2 (40)	10.7 (13)	9.9 (27)
SSA	76.7 (302)	74.4 (90)	77.7 (212)
Targeted therapies*	6.1 (24)	9.9 (12)	4.4 (12)
Visits	99.8 (393)	100.0 (121)	99.6 (272)
Hospitalizations	64.5 (254)	65.3 (79)	64.1 (175)
Ultrasounds	55.1 (217)	59.5 (72)	53.1 (145)
Scans (conventional or helical)	92.1 (363)	89.3 (108)	93.4(255)
Other imaging tests†	59.6 (235)	62.0 (75)	58.6 (160)
Biomarker	73.1 (288)	76.0 (92)	71.8 (196)
Other lab Tests	61.9 (244)	70.2 (85)	58.2 (159)

*Everolimus, sunitinib, imatinib, and bevacizumab.
†PET, SRS, MRI, mIBG, and Chest X-Ray.

Conclusions: Results confirm that advanced NET is associated with significant resource use, regardless of tumour site. In addition to SSAs, patients are treated with chemotherapy and radiation-based approaches and twice as many patients are treated with targeted therapies in the pNET group as compared to the GI/Lung NET population.

6619 POSTER

Patient Experiences of Having a Rare Cancer: a Qualitative Study

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Background: Limited qualitative studies exist regarding the patient experience of having a rare cancer. We sought to understand, in terms of diagnosis, access to treatment and support services available, the patient experience of having a rare malignancy.
Materials and Methods: Semi-structured qualitative interviews were used to examine the experience of patients diagnosed with a neuroendocrine tumour (NET) with regards to the diagnostic process and the impact of diagnosis, information availability, support availability, and experience of a specialized multidisciplinary clinic. Patients were identified from a prospectively kept database. An interview guide was generated and piloted. Interviews were completed by a single interviewer (YF) by telephone. Patient interviews were transcribed verbatim and analyzed using standard qualitative research methodology. Grounded theory guided the generation of the interview guide and analysis.
Results: Eighteen patients were interviewed. Eight interviewees were female, median age was 62 (age range 45−77) and diagnoses included 11 small bowel NET, 4 pancreas NET, 1 gastric NET, 1 bronchial NET and 1 NET of unknown origin. Median interview time was 31 minutes (range 9 min to 2 hrs 8 min). Seven themes were identified including: incidental or delayed diagnosis; difficulty accessing meaningful information prior to attendance at specialized clinic, difficulty accessing specialized medical care, informal networks were used to access the specialized clinic, value of specialized clinic, the need for support including support specific to the patient's own cancer, and long term negative physical and psychological effects of cancer.
Conclusions: Our qualitative analysis found that patients with rare cancers often have a delayed diagnosis, and had difficulty accessing disease-specific information and specialized medical care. Informal networks were used to access the specialized clinic and this clinic generally met patients' care and information needs.

6620 POSTER

Cross-Country Comparison in Practice Patterns for Patients With Neuroendocrine Tumours

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Background: Neuroendocrine tumours are a rare and progressive form of cancer with limited treatment options. The purpose of this study was