Material and Methods: From July 2010 to April 2011 the NIBIT-M1 enrolled the 86 cutaneous MM pts, stage III (2) or IV (84) pts (60 males, 26 females), median age 54 (24−78) years, ECOG performance status 0−1, planned in the study. Twenty-one pts had evidence (19) or history (2) of brain metastases. Forty-three pts were treatment naive and the remaining had received one line of systemic treatment for metastatic disease. Ipilimumab was administered i.v. at 10 mg/kg q3 weeks (wk) for 4 doses in the induction phase (IP) and once q12 wk from wk 24 in the maintenance phase (MP); fotemustine was administered i.v. at 100 mg/m^2 weekly for 3 wk (IP), and q3 wk from wk 9 (MP). Tumour assessment (TA) *per* immune-related response criteria (irRC), was performed at screening and wk 12, then every 8 wk until W36, and every 12 wk from W36 onwards. A pre-spe-specified safety analysis was planned at wk 6 of treatment for the initial 18 pts. Adverse Events (AE) and immune related AE (irAE) were collected according to Common Terminology Criteria for Adverse Events version 4.0.
Results: On November 2010, the safety analysis was successfully met, and no additive toxicities were observed; thus, the Safety Committee allowed resuming the accrual. As of April 2011, 28 pts have terminated the IP and 13 of them have already entered the MP. Of the remaining pts, 43 are completing the IP and 15 have been withdrawn for AE severity (1) or disease progression (14). Of the 17 pts for which TA at wk 12 is available, 14 achieved a disease control (CR, PR or SD), including brain metastases in 5 out of 6 pts, while 3 had PD.
Conclusions: Though very initial, the available data suggest for the safety and efficacy of ipilimumab in combination with fotemustine in MM pts with or w/o brain metastases. The six months results from the study closure will be presented.

9306 ORAL

Safety and Efficacy of Ipilimumab-treated Patients With Melanoma and Brain Metastases

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Background: Ipilimumab (Yervoy™), an anti-CTLA-4 monoclonal antibody that augments T-cell-mediated antitumour responses, is indicated in the US for patients (pts) with unresectable or metastatic melanoma. At diagnosis of metastatic disease, 30% of pts have brain metastasis and an additional 30% will develop these within 1−2 years. Herein, we describe overall survival and safety of ipilimumab in pts with melanoma and brain metastases in clinical trials CA184–042 (NCT00623766) and CA184–045 (NCT00495066).
Patients and Methods: The prospective trial CA184–042 included pts with active, measurable brain metastasis ($\geqslant$1 lesion >0.5 cm and/or $\geqslant$2 lesions >0.3 cm with none >3 cm). At baseline, pts were either stable without steroid therapy (Arm A) or required steroids for central nervous system symptoms (Arm B). Ipilimumab 10 mg/kg was given Q3W for four doses with potential maintenance dosing Q12W. The expanded access program CA184–045, a multicenter, open-label study of ipilimumab 3 or 10 mg/kg Q3W for four doses, included pts with stable and asymptomatic brain metastases at baseline. Among pts who received 10 mg/kg, overall survival (OS) at 1 year was retrospectively collected via database; pts lost to follow up were assumed dead. Safety was monitored prospectively in both trials.
Results: In CA184–042, 51 pts in Arm A and 21 in Arm B were treated with ipilimumab 10 mg/kg. Patients in Arms A & B were all Caucasian with ECOG-PS of 0 or 1, 65% and 52% male, and of mean age 58 and 55, respectively. The 12- and 18-month OS in pts not requiring steroids was 30% at both time points (CIs 0.2−0.5; 0.2−0.4, respectively). The 12-month OS rate in pts with symptomatic brain metastases was 10% (CI 0.0−0.3). There were no unexpected toxicities − grade 3−4 central nervous system adverse events (AEs) occurred in 31% of patients in Arm A and 29% in Arm B. In CA184–045, of 874 pts treated with ipilimumab 10 mg/kg, 165 were identified with brain metastasis. The 1 year OS for these pts was 20%. Drug-related AEs of any grade and grade 3/4 occurred in 41% and 22% of all pts, respectively.
Conclusions: Safety and efficacy of ipilimumab in pts with melanoma and brain metastases are consistent between the prospective and open label trials and ipilimumab also shows similar antitumour activity in the brain as reported overall for extracranial metastases. Two-year survival results and safety observations from fully mature CA184–042 data will be presented.

Poster Presentations (Sun, 25 Sep, 14:00−16:30)
Melanoma and Skin Cancer

9307 POSTER

Oncogenic Mutation Dependent Response to Growth Factors in Melanoma Cells

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Background: Malignant melanoma has one of the worst prognosis among solid tumours. The high mortality of melanoma is due to the metastatic potential of tumour cells that requires increased cell motility. Epidermal and basic fibroblast growth factors (EGF and FGF2) are major autocrin and paracrin signaling molecules in human melanoma. Since two of the most common oncogenic mutations, namely BRAF and NRAS are critical components of this signaling network, in this study we compared the oncogenic mutation dependent effect of growth factors on the proliferation and migration of melanoma cells.
Materials and Methods: Growth factor receptor expression had been measured by Western blot and NRAS and BRAF mutations had been determined by direct sequencing and restriction fragment length polymorphism, respectively. Cell motility and proliferation were determined by the analysis of three-days-long time-lapse videomicroscopic recordings. Both the baseline and induced activation of the growth factor receptor pathway had been quantified by the immunoblot analysis of the phosphorylation of two major downstream effectors, including Erk1/2 and S6.
Results: Both BRAF and NRAS mutations resulted in a higher baseline activation of Erk1/2 and S6 when compared to double wild-type cells under control conditions. Both mutations attenuated the activation of the two downstream targets in response to EGF and FGF2 treatment. Interestingly we found a more profound response in cell motility as compared to cell proliferation. Of note, double wild-type cells responded to both EGF and FGF2 treatment. In contrast BRAF and NRAS mutated melanoma cells displayed varying degree of sensitivity to these growth factors.
Conclusions: In summary our findings demonstrate that the different oncogenic mutations in melanoma cells have an impact on the motogenic effect of the activation of growth factor receptor signaling networks. Since a large number of the emerging molecularly targeted therapies aim at the growth factor receptor signaling, the appropriate mutational analysis of melanoma cases are essential in both preclinical studies and in the clinical trials and practice.

9308 POSTER

The XPC A2920C, the XPF T30028C and the P53 Arg72Pro Polymorphisms, Involved in DNA Repair, Alter the Risk for the Malignant Melanoma

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Background: The *XPC*, the *XPF* and the *P53* genes act on the nucleotide excision repair of the UV induced DNA damage and seem to be involved in origin of malignant melanoma (MM). The variant C allele of the *XPC* A2920C and the wild Arg allele of the *P53* Arg72Pro polymorphisms encode proteins with lower activities in DNA repair than those coded by others alleles. To the best of our knowledge, there are no functional studies of the proteins encoded by the wild and variant alleles of the *XPF* gene. The roles of these polymorphisms for the risk of MM are unclear and therefore this was the aim of the present study.
Material and Methods: Genomic DNA from peripheral blood of 137 consecutive MM patients and 137 age and race-matched controls were analyzed by the PCR-RFLP.
Results: The frequency of the *XPC* CC variant genotype (13.9% vs 6.6%, $P = 0.03$) and the *P53* Arg/Arg wild-type genotype (60.6% vs 47.5%, $P = 0.02$) were higher in patients than in controls. Carriers of the genotypes had a 2.47 (95% CI: 1.05–5.84) and a 1.73 (95% CI: 1.05–2.84) fold increased risks for disease than others, respectively. The frequency of the *XPC* CC and *P53* Arg/Arg combined genotype was higher in patients than

in controls (8.0% vs 2.9%, $P = 0.02$). Individuals with the referred genotype were under a 4.30-fold (95% CI: 1.22–15.14) increased risk for MM than others. In addition, we observed an excess of the *P53* Arg/Arg wild-type genotype in patients who were highly exposed to sunlight compared to those who were protected against UV radiation (70.0% vs 45.2%, $P= 0.02$) and also compared to controls (70.0% vs 47.4%, $P = 0.006$). Individuals with this genotype and highly exposed to sunlight had a 2.58-fold (95% CI: 1.61–38.42) increased risk for MM. Moreover, the frequency of the combined *XPF* genotype TC+CC and *P53* Arg/Arg+Arg/Pro was higher in patients with light skin than in patients non-light skin (94.0% vs 50.0%, $P = 0.03$).

Conclusions: The data suggests that the *XPC* A2920C, the *XPF* T30028C and the *P53* Arg72Pro polymorphisms, alone or in combination, alter the risk for MM and its clinical manifestation in our region. We believe that carriers of specific genotypes of the referred genes should receive additional recommendation to avoid exposition to sunlight and should be frequently evaluated by a dermatologist with the purpose of to perform an early diagnosis of the disease.

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9309 POSTER

Signalling of the Major Histocompatibility Complex (MHC) Class II Molecules in Melanoma Cells

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Background: Melanoma is the cancer with the higher incidence in western populations and is notoriously resistant to all current cancer therapy. Indeed, the reason of the limited success of immunotherapeutic approaches could be the ability of melanoma cells to escape immune response and alter the function and survival of immune cells. Interestingly, almost 50% of metastatic melanoma, in contrast to skin melanocytes, expresses constitutively the major histocompatibility complex (MHC) class II which is associated to disease progression and is linked to a poor prognosis. The MHC class II molecules during T cell/ professional antigen-presenting cells (APCs) interactions are localised, as signalling receptors, to membrane lipid rafts which are thought to be sites where transmembrane signalling complexes assemble. In the aim to understand the molecular mechanisms used by melanomas to frustrate an effective anti-tumour response, we studied in MHC class II constitutive expressing melanoma cell lines, the membrane localization of the class II molecules as well as the MHC class II signalling.

Material and Methods: The class II constitutive expressing melanoma cells (A375 and HT144 cell lines) were stimulated with a specific anti-HLA-DR mAb (L243) that mimics the TCR interaction with the class II molecules or left unstimulated. The lipid rafts of stimulated and unstimulated melanoma cells were isolated by discontinuous sucrose gradient and analysed by western blot. Exosomes secreted by stimulated and unstimulated melanoma cells were purified and analysed by western blot.

Results: Within the hypothesis that MHC class II constitutive expressing melanoma cells might mimic an APC, we stimulated the HT144 melanoma cells with L243 monoclonal antibody and we isolated the lipid rafts. In these membrane domains of stimulated HT144 cells we observed an increased localisation of HLA-DR molecules as reported for A375 cells. Therefore, we compared the expression level of some adhesion receptors as well as the exosomes secreted by stimulated and unstimulated A375 and HT144 melanoma cells.

Conclusions: Therefore, our results underline the role played in melanoma cells by the MHC class II dependent signalling on motility and exosomes functionality. The study of the signalling activated by class II molecules could help to elucidate how affect the metastatic dissemination ability of melanoma cells as well as the role of exosomes on the microenvironment of tumour sites.

9310 POSTER

Benzo[c]phenanthridine Alkaloids – Compounds With High Anti-proliferative Activity Against Malignant Melanoma

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Background: Malignant melanoma (MM) ranks amongst the most aggressive and therapy resistant human cancers and its incidence has been steadily increasing. Therefore, identification of new drugs with therapeutic potential towards melanoma could be of great significance. We have studied the biological activities of benzo[c]phenanthridine alkaloids (BAs), a group of natural products with significant anti-proliferative activities.

Material and Methods: The mechanisms of anti-proliferative effects of BAs were investigated using MTT assay, flow cytometry, Western blot analysis, fluorescence and electron microscopy.

Results: We have analyzed the cellular responses to sanguinarine (SA), chelerythrine (CHE), chelidonine (CHLD), sanguilutine (SL) and chelilutine (CHL) on a model melanoma cell line A375 and two A375-derived cell lines with defect in the p53 pathway. In our assays, all tested alkaloids exerted strong anti-proliferative effect on all three cell lines, suggesting that their anti-proliferative activity does not require functional p53 despite of the fact that all alkaloids caused DNA damage, which was demonstrated by induction of H2AX phosphorylation. While CHE and CHL was assessed as the most potent apoptosis inductors, SA, in spite of having a greater anti-proliferative activity, induced apoptosis to a much lesser extent. CHLD was the least effective inductor of apoptosis. The activation of apoptosis by these BAs was accompanied by a cleavage of caspase-3 and PARP, changes in mitochondrial membrane potential (MMP) and a decrease in the cellular levels of anti-apoptotic proteins Bcl-xL, Mcl-1 and XIAP. In contrast, SL treatment of melanoma cells resulted only in a change of MMP and decrease in the levels of the above listed anti-apoptotic proteins. Furthermore we have observed vacuolization of cytoplasm indicating autophagy and as type of cell death induced by SL, we have assessed necroptosis, a caspase independent cell death.

Conclusions: Our results suggest that individual BAs are able to activate various types of cell death in malignant melanoma cells, regardless of their p53 status, indicating that these compounds might also have therapeutic potential for the treatment of the various types of cancer in which the function of the p53 pathway is commonly impaired and the ability to induce caspase independent cell death could be advantageous especially for the treatment of apoptosis resistant tumour cells.

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9311 POSTER

Topical Application of Lantadene A and its Methyl Ester (LAM) Inhibit Carcinogenesis and Induce Apoptosis in UVB Induced Skin Tumours in Mice

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Background: Lantadene A (LA) is a pentacyclic triterpenoid isolated from weed *Lantana camara* L. and its semi-synthetic analogue LAM has shown squamous cell carcinogenesis inhibition in various models. The purpose of this study is to evaluate topical effect of LA and LAM on tumorigenesis in UVB-pretreated high-risk mice.

Material and Methods: SKH-1 hairless mice were irradiated with ultraviolet B (UVB) twice weekly for 20 weeks. These tumour-free mice, which had a high risk of developing skin tumours during the next several months, were then treated topically with Lantadene A (LA; 85 nmol) and Lantadene A methyl ester (LAM; 85 nmol) once a day 5 days a week for 18 weeks in the absence of further treatment with UVB.

Results: Topical applications of LA to these mice decreased the number of nonmalignant and malignant skin tumours per mouse by 38% and 42%, respectively. Topical applications of LAM decreased the number of nonmalignant and malignant tumours per mouse by 35% and 46%, respectively. Immunohistochemical analysis showed that topical applications of LA and LAM increased apoptosis as measured by the number of caspase 3-positive cells in nonmalignant skin tumours by 76% and 62%, respectively, and in squamous cell carcinomas by 72% and 56%, respectively, but there was no effect on apoptosis in non tumour areas of the epidermis. Topical applications of LA and LAM had a small inhibitory effect on proliferation in non malignant tumours as measured by BrdUrd labeling (26−32%), and there was also a similar, but non significant, inhibitory effect on proliferation in malignant tumours.

Conclusion: The results suggest a need for further studies to determine whether topical applications of LA and LAM can inhibit sunlight-induced skin cancer in humans.