

CXCR4 receptor mRNA expression was previously found to correlate with resistance to PG-11047 [1]. Using Western blot we showed that CXCR4 was not expressed in LA-N-1 and IMR-32 cells, while it was expressed in SH-SY5Y cells.

Conclusions: Since PG-11047 is in clinical trials and shows low general toxicity it may be worth considering in the treatment of children with NMYC-amplified neuroblastoma lacking CXCR4 expression.

References

[1] Kuo et al., BMC Medicine, 7 (2009) DOI: 10.1186/1741-7015-7-77

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POSTER

Quantitative and Qualitative Investigations of Salivary Gland Function in Children Cancer Survivors

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Background: The aim of this prospective study is to investigate the long-term effects of chemotherapy on the oral health of children with a primary focus on quantitative and qualitative investigations of salivary gland function.

Materials and Methods: Thirty-eight children (age [mean]: 12.3±0.58 years) that underwent chemotherapy between 1 month and 7 years of age formed the study group. Forty, age- and gender-matched healthy children with similar socioeconomic background served as controls. Subjects' cariological status (DMF-T; number of decayed, missing and filled permanent teeth) was recorded according to the WHO criteria. Unstimulated and stimulated whole saliva flow rates were determined using method described by Shreebny. Palatal saliva flow rate was assessed with the Periotron method. Baseline values of Streptococci mutans, Lactobacillus, Staphylococcus aureus, Candida albicans counts were also studied.

Results: Stimulated whole saliva flow rate was significantly lower while palatal saliva flow rate was significantly higher in the study group compared to the controls ((0.849±0.47 vs. 1.132±0.48 ml min⁻¹ and 1.64±2.41 vs. 0.456±0.32 mikrol min⁻¹ cm⁻², respectively; p<0.05). 81.6% was high. No statistically significant differences were found between the genders. The salivary Streptococcus mutans and Lactobacilli counts in the study group were significantly lower than healthy subjects (P<0.001) and Staphylococcus aureus and Candida albicans counts were similar on both groups.

Conclusion: These findings indicate that salivary gland function in children is affected even after years of completed cancer therapy. The clinical relevance of this finding is unclear and further studies need to be performed to answer this question.

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POSTER

The Incidence of Medulloblastomas in Adults and Children – a Brief Report

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Background: Medulloblastomas are the most common types of brain tumours in children but can affect people of all ages.

Materials and Methods: Data from the Surveillance, Epidemiology and End-Results (SEER) database was used to describe the incidence of patients diagnosed with all medulloblastoma subtypes, and primitive neuroectodermal tumours (PNET). Incidence rates and ratios are evaluated, as well as incidence trends over time using piecewise robust linear regression.

Results: There was a total of 1902 people diagnosed with a medulloblastoma/PNET between 1973 and 2007 in the SEER 9 registries. The overall incidence of medulloblastoma/pnets is approximately 2.2 per million population in the USA. Children (1–9 years of age) years had an incidence rate of 7.6, compared to 0.9 in adults (>20years of age) and therefore the incidence rate ratio is approximately 8.1 in children compared to adults. A very small increase in the incidence was noted only between 1984 and 1995, in all age groups, however, the overall trend does not show a tumour that is increasing in incidence.

Conclusion: Children are 8-times more likely than adults to be diagnosed with this tumour. This tumour does not appear to be increasing in incidence.

	Incidence Rate per 1,000,000 (95% CI)	Incidence Rate Ratio
Overall (1973–2007)	2.2 (2.1, 2.3)	–
Age group		
Infants	7.3 (5.9, 8.9)	7.7
Children	7.6 (7.1, 8.2)	8.1
Adolescents	3.1 (2.8, 3.4)	3.3
Adults	0.9 (0.9, 1.0)	(base category)
Sex		
Male	2.64 (2.49, 2.80)	1.5
Female	1.74 (1.61, 1.87)	(base category)
Race		
Black	1.64 (1.40, 1.90)	0.7
Other	1.98 (1.68, 2.31)	0.9
White	2.31 (2.20, 2.43)	(base category)

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POSTER

Gonadal Function and Fertility 20 Years After Treatment of Childhood Lymphoma – a Cross-sectional Study of 136 Patients

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Background: Gonadal function studied in survivors after adult-onset malignant lymphoma may not be valid for adult childhood lymphoma survivors (CLSs). Our explorative cross-sectional study had two aims: 1) to describe the long-term gonadal function in CLSs. 2) to explore anti-müllerian hormone (AMH) as a measure of ovarian function in CLSs.

Material and Methods: Seventy-four male and 62 female CLSs participated in a survey consisting of a questionnaire, an out-patient consultation, blood sample and semen analysis. Treatment was categorized according to estimated overall gonadotoxicity. Male hypogonadism and fertility was determined by levels of LH, FSH and testosterone, semen analysis and pregnancies achieved. Female hypogonadism and fertility was determined according to menstruation status, pregnancies achieved and AMH levels in women ≤40 years.

Results: Median age of the patients was 33 years, median observation time 20 years. Endocrine hypogonadism was observed in 7 of 66 males (11%). Thirty-eight of 64 (61%) men were viewed as fertile, 7 of 64 (11%) were categorized as infertile and in 19 of 64 (29%) the fertility status remained uncertain. Twenty of 45 (44%) females ≤40 years showed low AMH levels indicating decreased fertility, whereof 15 of 45 (33%) had critically low AMH values, 4 of them with pregnancies within the preceding 2 years. Two of 50 (4%) of the women ≤40 years had reached menopause. Sixty-four % of the males and 93% of the females with a child wish had achieved post treatment parenthood (p = 0.01). Hypogonadism and low AMH-levels were related to treatment burden.

Conclusions: During early adulthood male hypogonadism is a problem in ca. 10% of the male CLSs. Male CLSs are at higher risk to meet infertility problems than female CLSs. The clinical significance of critically low AMH needs further research as critically low levels do not seem to exclude the possibility of motherhood.

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POSTER

Combination of Chemotherapy and Surgery in Treatment of Lung Metastases in Children With Osteosarcoma

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Background: Lungs are the most frequent place of osteosarcoma metastasis.

The aim of our study was to evaluate results of surgery and chemotherapy regimens in treatment of lung metastases in children with osteosarcoma.

Method: From 2000 to 2010, we treated 27 patients with osteosarcoma lung metastases using a combined approach – chemotherapy and surgery. The patients age range was between 3 to 18 years. Seven patients had solitary metastases, while others had multiple lung metastases. Several chemotherapy regimens were administered: Euramus, HD IFO-VP 16, HDMth/IFO-VP16, HDMth/Carbo-VP16, Temozolomid-irinotecan. Types of surgery resection were metastasectomy, atypical resection and lobectomy.

In the follow-up period, it was repeated in every 2–3 months the radiology investigation by Multi Slice Computed Tomography (MSCT) using RECIST criteria.

Results: Disease free interval (DF) was more than one year in 14 patients. There was no significant difference in overall survival (OS) in relation to the type of chemotherapy regimen applied. Prognostic factors that influenced OS were: presence of solitary metastasis, local relapse of disease, completeness of resection and DF interval longer than one year. Five-year OS was 33%.

Conclusion: The use of aggressive multimodal approach (surgery and chemotherapy) and evaluation of prognostic factors are necessary for successful treatment in patients with lung metastases of osteosarcoma. Chemotherapy regimen HD IFO-VP16 had better initial tumour response but, in longer follow up, the tumour response was similar to other chemotherapy regimens. Surgery must be radical and complete.

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POSTER

Exploring New Drugs Which Can Affect the Viability and Transformation of Childhood Medulloblastomas

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Background: Medulloblastoma is one of the most common malignant tumours of the central nervous system in newborn infants and children, accounting for about 15–20% of pediatric brain tumours. Despite current diagnostic and therapeutic advances, the morbidity and mortality rates still remain high. Furthermore, children who survive medulloblastoma are at risk of long-term sequelae related to the neurological effects of the tumour and treatments from surgery, radiotherapy and chemotherapy. Therefore, it is of great importance to identify new anticancer drugs, which can significantly assist in improving the survival of children and with minimal or no side-effects. In this study, our primary objective was to identify and study the efficacy of new structural classes of drugs belonging to a family of steroid biogenesis inhibitors and in the peroxovanadium superfamily.

Methods: We chose to first undertake our pre-clinical testing on malignant pediatric medulloblastoma cell lines. After determining the IC50 values of our experimental drugs, we subjected our pre-clinical cell line models to a wide variety of cancer assays, including viability/proliferation, cell death, cell cycle regulation and transformation assays.

Results and Conclusions: Our data so far demonstrated that the panel of new structural classes of drugs examined can significantly affect the viability and transformation of malignant medulloblastoma pre-clinical cell line models. Most importantly, the toxicity of our drugs is almost devoid on our non-transformed control cell lines. Current work continues to explore the efficacy of these drugs on additional malignant medulloblastoma pre-clinical models. This body of work is novel and highly significant in our effort to discover improved treatments for childhood brain tumours.

Oral Presentations (Sun, 25 Sep, 09:00–11:00)

Nursing Oncology – Service Delivery and Care Initiatives

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ORAL

Crossing Boundaries: the Role of the Advanced Nurse Practitioner in an Integrated Specialist Palliative Care Service in Scotland

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Background: Nationally Advanced Nurse Practitioners (ANPs) have been adopted in different areas of the United Kingdom (UK), following patterns internationally. Similar economic drivers facing healthcare in these contexts are increasingly elderly population demographics and greater complexities in long-term conditions. Equitable and accessible palliative and end of life care is part of national government agendas. In the UK, the regulation and reduction of junior doctor working hours, has also meant a greater scope for advanced nursing roles. There is limited research in the UK exploring the adoption of such roles. The aim of this presentation is to report the evaluation of the role of the ANP within an integrated specialist palliative care service in Scotland.

Methods: Qualitative methods were employed to evaluate the role of the ANPs. The evaluation design consisted of three phases of data collection

spanning ten months, from June 2010 to March 2011. Phase one consisted of interviews and audio-diaries with the post holders (n = 2) and interviews and focus group discussions with the clinical team members (n = 9) and senior stakeholders (n = 3). Phase two consisted of observations of the post holders (n = 2 days x2) and interviews using emotional touch points with service users (n = 5). Phase three consisted of repeat interviews (n = 4) and focus group discussions the clinical team (n = 6) and stakeholders (n = 2). Thematic analysis and appreciative enquiry informed the analysis of data.

Findings: The ANP roles were deemed invaluable within the current service model by participants and providers of care. There was evidence of advanced practice skills such as: physical examination; admission/discharge planning; prescribing; initiating and ordering investigations and a holistic approach to care and communication/ counselling skills. The ANP roles sat alongside medical roles and enhanced rather than replaced these. The ANP acted as a role model for other nurses but there were concerns that they were not deskilled. Sustainability and vulnerability of the current service model; role clarity and the boundaries of these roles were evolving and need to be reviewed alongside developing capacity in other staff. Components of the ANP role such as formal education, leadership and research/audit may mitigate against such vulnerability in the service and so that the full potential of the role can be realised and valued.

Conclusion: Findings from this evaluation of the role of the ANP have implications for the development of the current service but also for increasing research about the potential utilization of such roles in practice and expanding the literature and evidence base. Issues around the evolving role of the ANP and the importance of the establishment of boundaries were apparent for improved role clarity.

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ORAL

A Randomised Crossover Trial to Determine Safety, Quality of Life and Economic Consequences of Home – Based Chemotherapy

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Background: The purpose of this study was to compare chemotherapy given at home with outpatient treatment in terms of quality of life and side effects to treatment; also to analyse the practical feasibility, patient preference, and costs of home-based chemotherapy.

Methods and Materials: A randomised cross-over design was applied. First infusion was given in the outpatient clinic to ensure patient safety in case of side effects grade ≥ 3 –4 NCI CTCAE, after which the patient was randomised to receive either four treatments at home followed by three in the outpatient clinic or three treatments in the outpatient clinic followed by four treatments at home, to a total of eight treatments.

Patients with colon cancer, who were eligible to receive adjuvant treatment with oxaliplatin and capecitabine every three weeks, were included. EORTC quality of life questionnaire QLQ-C30 was used at baseline and before each treatment. Preference cards were used at baseline, at change of treatment setting and at end of treatment.

Results: A total of 51 patients were enrolled from November 2007 until November 2010 (27 female and 24 male), median age was 64 years. Thirty seven patients completed treatment. Furthermore, no significant difference in treatment related toxicity between the two groups (p-value 0.096) was demonstrated. There was no significant difference between the two groups in terms of quality of life (QOL) scores during the treatment. 14.8% of patients treated at home had to be seen at the outpatient clinic for toxicity evaluation and prescription of chemotherapy, especially due to difficulties in precise evaluation of hand-foot skin reactions by telephone interviews.

The treatment setup was feasible, both practically and in regards to patient well being and safety. Cost-benefit analyses favoured home-based treatment.

The patients reduced the time they spend on receiving chemotherapy with approximately 66%, from mean 147 minutes for treatment at the outpatient clinic, to mean 57 minutes at home.

Patient preference and more in-depth analyses of QOL data will be presented at the conference.

Conclusion: This concept is feasible and safe and can be applied to other diagnoses including palliative treatments. We suggest that home-based chemotherapy could be used to design an individual treatment set up for the patients taken into account their physical and social situation.