(small and large RNAs) isolated from AGO2-miRISC (microRNA-induced silencing complex) of GSCs and normal human neural stem cells (hNSCs). Additionally, we have also established this interactome after exposure of GSCs and normal hNSCs to hypoxia, a key tumor micro-environmental factor that is known to be pivotal in generating GBM heterogeneity. The rank order list of miRNA-mRNA interaction nodes generated from RNA sequence reads reveals that enrichment of specific RNAs in functional AGO2-miRISC is not a direct function of their relative abundance in cells, thus this biochemically generated interactome is distinct from that generated by bioinformatics tools. We demonstrate that scope and influence of GSC specific miRNA-mRNA network and specific nodes of this interactome varies with hypoxia and tumor region in GBMs.

SP9

doi:10.1017/cjn.2014.77

Nilotinib inhibits pediatric high-grade glioma cell growth by blocking PDGFR

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Solid tumours arising from malignant transformation of glial cells are one of the leading causes of central nervous system tumor related death in children. Tumor recurrence in spite of rigorous surgical and chemoradiation therapies remains a major hurdle in management of these tumors. Here, we have investigated the efficacy of second-generation receptor tyrosine kinase (RTK) inhibitor nilotinib as therapeutic option for management of pediatric gliomas. We have utilized two independent pediatric high glioma cell lines with either high platelet-derived growth factor alpha (PDGFRα) or high PDGFRα expression in our in vitro assays to investigate the specific downstream effects of Nilotinib treatment of these cells. Using in vitro cell based assays we show that nilotinib inhibits PDGF-BB dependent activation of PDGFR. We further show that nilotinib is able to block cell proliferation and anchorage dependent growth via blockade of AKT and ERK1/2 signaling pathways. Our results suggest that nilotinib may be effective for management of PDGFRα dependent group of pediatric gliomas.

SP10

doi:10.1017/cjn.2014.78

Neurodevelopmental implications of DLX2 homeobox gene expression in human gangliogliomas

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Introduction: Gangliogliomas are low-grade, well differentiated neuroepithelial tumours of the central nervous system (CNS) comprised of neoplastic glial and neuronal cells. From microarray data, gangliogliomas overexpress the homeobox gene DLX2 required for differentiation and migration of inhibitory interneurons in the embryonic forebrain. We are interested in the role DLX2 plays in specifying neural progenitor fate. We hypothesize that in CNS progenitors, DLX2 promotes neural cell fate while simultaneously repressing glial fate. Methods: DLX2 expression was examined in a cohort of ganglioglioma FFPE sections using immunohistochemistry and immunofluorescence labelling. To examine co-localization of DLX2 with a glial specific marker, double immunofluorescence staining of DLX2 with glial fibrillary acidic protein (GFAP) was carried out. Results: Out of 30 patient samples examined, 10 samples expressed DLX2. Double immunofluorescence studies with GFAP determined that DLX2 co-localizes with GFAP expressing cells. Conclusions: Although DLX2 was not expected to co-localize with GFAP, as we hypothesized that DLX2 represses glial cell fate, GFAP may also be expressed in CNS progenitors specified to become neurons. To verify GFAP expressing cells are indeed from a neuronal lineage, co-expression studies with DLX2 and established markers for neurons, including synaptophysin and NeuN, will be carried out. In addition, co-expression of DLX2 with nestin and OLIG2, a marker for oligodendroglia, will be examined.

SP11

doi:10.1017/cjn.2014.79

Glia maturation factor (GMFb) promotes glial and neuronal tumor cell differentiation

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Introduction: GMFb was identified as a factor promoting glial cell process outgrowth in vitro and is predicted to be a member of the actin depolymerization factor (ADF) family. GMFb is highly expressed in the nervous system, with cytoplasmic expression in neurons and glia. We sought to understand the role of GMFb in CNS development and in gliomas. Methods: Anti-peptide antibodies to GMFb were generated. Co-immunoprecipitations (co-IP) were performed with actin antibodies. Glioma cells were treated with cytochalasin D to depolymerize actin or with colchicine to disrupt microtubules. Cis-retinoic acid (RA) was used to promote neurite outgrowth. Phosphorylation status of GMFb was ascertained using Western blots. Results: Co-IP experiments

confirmed GMFb:actin complexes. Subcellular localization of GMFb only changed with cytochalasin D. In primary embryonic forebrain cultures and RA treated cells, GMFb localized to axons and growth cones. Transfection of wild-type GMFb but not a C-terminal deletion mutant promoted process outgrowth. Phosphorylated GMFb (pGMFb) expression was found in adult brain and low grade gliomas, but not in embryonic brain or glioblastoma. Conclusions: GMFb binds directly to the actin cytoskeleton and is an ADF. GMFb"s phosphorylated form is highly expressed in the differentiated nervous system and low grade gliomas. Future studies will determine whether GMFb or pGMFb expression correlates with patient survival. Using the GMFb knockout mouse, the role of GMFb in glioma tumor invasion and signaling will be addressed in vivo.

CLINICAL POSTER VIEWING

14 June 2014

CP1

doi:10.1017/cjn.2014.80

Living with a primary malignant brain tumour: Identifying the elephant in the room

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From the time of diagnosis of a primary malignant brain tumor (PMBT) and throughout the illness trajectory, the patient and intimate partner face many psychosocial challenges ranging from fear and uncertainty to hope and loss. While many patients diagnosed with cancer may go on to live with cancer as a chronic illness, this may not be said of individuals diagnosed with a PMBT, in particular those diagnosed with a glioma, the most common form of brain tumor. Gliomas are associated with a short disease trajectory and multiple deficits (functional, cognitive and psychiatric). What makes the PMBT experience unique from other cancers is that the intimate partner must not only deal with the diagnosis of cancer in their spouse but the accompanying personality, functional and behavioral changes wrought by the disease. It is also not uncommon for the spouse to grieve the loss of the person they once knew often before physical death occurs. This presentation will provide an overview of: 1) key stressors faced by patients and families; 2) and, strategies to more effectively support psychosocial health and wellbeing for patients and families living with and affected by PMBTs. Highlights will be drawn from an ongoing couples study exploring quality of life within the context of PBMT as well as the authors psychotherapy practice.

CP2

doi:10.1017/cjn.2014.81

Primary spinal cord glioblastoma: A systematic review

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Background: Primary spinal cord glioblastoma (PSCG) accounts for only 1.5% of all spinal cord tumors. The objective of this study was to gain a more in depth understanding of the clinical presentation of PSCG and factors that may affect patient survival. Methods: A systematic literature search was conducted in PubMed, covering the years from 1936 to 2013. Inclusion criteria included primary tumor originating in the spinal cord, with location specified and patient demographics. Results: From 522 citations, 49 met the inclusion criteria and most were in the form of case reports or case series. There were 64 women and 55 men (n=119). Their median age was 20 (range 0.7 to 88) years. The median overall survival (OS) was 10.0 (95%CI 0.6 to 72.0) months for those with age d59 years compared to 1.9 (95%CI 1.0 to 20.0) months for those with age >59 years (P=0.0176). The most commonly affected region was the thoracic spinal cord (n=54) compared to cervical (n=47) and lumbar (n=33). Radiotherapy prolonged patient survival, with median survival of 12.0 (95%CI 1.0-72.0) months versus 5.0 (95%CI 0.6 to 16.6) months, respectively (P<0.0001). Patients with PSCG located in the cervical spinal cord had significantly shorter median overall survival than those with PSCG at other sections of the spinal cord, 8.0 (range 1.0 to 34.0) months versus 11.5 (range 0.6 to 72.0) months, respectively (P=0.0383). Conclusions: Older age and cervical spinal cord location are unfavorable prognostic factors in PSCG. Treatment with radiation therapy is associated with prolonged patient survival.

CP3

doi:10.1017/cjn.2014.82

T-Cell primary central nervous system lymphoma: A systematic literature analysis

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Background: T-cell PCNSLs comprise less than 4% of all primary central nervous system lymphomas (PCNSLs) and appear to have a worse prognosis than B cell PCNSLs. Objective of this study was to gain a more in depth un1derstanding of clinical presentation of the disease and treatment outcomes that may affect patient survival. Methods: Systematic review of the literature was performed using PubMed database from 1983 to 2013. Inclusion criteria consisted of articles having detailed