growth in vitro and in vivo with no toxicity to normal cells providing an ideal therapeutic window.

P3 – Session3 – 1635-1645

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The impact of initial radiation in infants and the re-irradiation of recurrent disease on the survival of ependymoma patients at The Hospital for Sick Children, Toronto

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Background: Two significant changes in ependymoma management have recently been made at Sickkids Hospital, Toronto; the up-front irradiation of infants and re-irradiation of recurrent disease. The impact of these on survival was retrospectively evaluated. Methods: A retrospective case note analysis of ependymoma patients between 1990 and 2014 was undertaken. Survival was determined using the Kaplan Meier method. Results: 76 ependymoma patients were identified (median age 4.58 years (0.42-17.6)), including 31 infants < 3 years (median age 1.51 years (0.42-2.97)). The median progression-free survival (PFS) and overall survival (OS) was 41 months (95% CI 20.4-61.7) and 116 months (95% CI 63.5-169.4) respectively. 5 year PFS and OS were 43.3% and 59.3% respectively. 21 infants received up-front radiation and 10 chemotherapy only. 5 year PFS and OS were significantly higher in irradiated compared to non-irradiated infants (PFS: 52.9% versus 0% (p=0.000002), OS: 74.6% versus 30.0% (p=0.004)). 38 patients recurred of which 26 were previously irradiated.19 patients received re-irradiation on recurrence, 7 did not. 5 year OS was significantly higher in re-irradiated patients (71.8%) compared to non re-irradiated patients (0%) (p=0.00007). Both management strategies were consistently implemented from 2004. Patients treated pre (n=34) and post (n=42) 2004 showed significant improvement in 5 year PFS from 33.4% to 53.3% (p=0.037) and OS from 51.2% to 79.2% (p=0.02). Conclusions: Both radiation of infants as the initial management of ependymoma and re-irradiation of recurrent ependymoma significantly improves survival. Implementing these treatment strategies has resulted in significant improvement in progression free and overall survival for ependymoma patients.

P4 – Session3 1645-1655

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Outcomes of children with central nervous system (CNS) germinoma treated with carboplatin-based chemotherapy followed by reduced radiation

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Background: Central nervous system (CNS) germinomas have an excellent prognosis with radiation therapy alone. However, in children, volume and dose of CNS radiation impact long-term morbidity. Cooperative groups have modified therapy by giving chemotherapy followed by reduced CNS radiation to minimize morbidity. Methods: This retrospective cohort study analyzed the outcome of intracranial germinoma patients treated at SickKids in Toronto, Canada, from January 2000- December 2013. Results: 25 children (14 male, 11 female; median age 12.92 years; range 6-17 years) were identified. Median follow up was 61 months (range 1-144 months). Median duration of symptoms pre-diagnosis was 5 months (range 1-36 months). Tumor location was suprasellar (n=9), bifocal (8), pineal (6), and basal ganglia (2). Three children had ventricular and one child had craniospinal dissemination. 2/25 had only elevated serum human chorionic gonadotropin (HCG, mean 13.5 IU/L), 4/25 only elevated lumbar CSF HCG (mean 21.3 IU/L), and 2/25 had both elevated serum and lumbar CSF HCG (mean 23 and 41.5 IU/L respectively). 24/25 children completed treatment and received carboplatin-based chemotherapy followed by either ventricular irradiation (23.4-24 Gy) ± boost (16 Gy) (n=15), whole brain (23.4 Gy) (n=3), focal (40 Gy) (n=4) or craniospinal irradiation (23.4 Gy) (n=2). Five-year progression free and overall survival were 96% and 100% respectively. Education status was available for 11/16 survivors now >18 years of age. Of those, 1 completed grade school, 3 completed high school and 7 are attending college/university. Conclusions: Our data suggests excellent survival with combined treatment modality and great potential for academic success.

CLINICAL ORAL PRESENTATIONS

14 June 2014

C1 – Session5 1030-1045

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Behavioral syndromes in patients with brain tumors using the Frontal System Behavior Scale (FrSBe)
(Young Investigator Award Winner - Clinical Research)

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Introduction: Cognitive impairment and personality changes following brain tumors may be due to frontal network disruption. The effects of different tumor components such as residual tumor size, gliosis, edema and encephalomalacia on frontal behavior syndromes is unknown. The aim of our study was to determine the relation between tumor components and apathy, disinihibition and executive dysfunction, using the FrSBe, a standardized rating scale. Methods: 31 brain tumor patients who completed the FrSBe were included. Questionnaires were scored and raw scores converted to T-scores (mean 50, SD 10) according to published norms. Using OsiRIX, brain lesions were manually segmented on the Fluid attenuated inversion recovery (FLAIR) sequence into residual tumor, gliosis, edema and encephalomalacia. Spearman correlations were used to determine the relationship between tumor components and frontal behaviors as measured by FrSBe scores. Results: Clinically significant levels of Apathy were endorsed on the patient self-report and family-rating scales of the FrSBe (mean T-score□ SD: 65.19□ 17.28 and 68.75□ 17.57, respectively). Self-reported Executive Dysfunction was also clinically significant (68.16□ 14.63). Encephalomalacia was positively correlated with family ratings of Apathy ($r=0.491$; $p<0.045$), Disinhibition ($r=0.532$; $p<0.034$), and Executive Dysfunction ($r=0.583$; $p<0.018$). None of the other features of the brain lesions showed correlations with the FrSBe. Conclusion: Family ratings of three frontal behaviors are correlated with encephalomalacia in brain tumor patients. Our results suggest that tumor components have differential effects on frontal circuits. Systematic assessment of these behaviors in brain tumor patients may provide better understanding of these differential effects, and have implications for treatment.

C2 – Session5 1045-1100

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RTOG 0424: Preliminary results of a phase II study of a temozolomide (TMZ) and radiotherapy (RT) in high risk low grade gliomas (LGGs)

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Purpose: To compare the 3-year (yr) survival (OS/PFS)of TMZ and RT in a high-risk LGG population to historical controls1 and to collect toxicity, neurocognitive(NCF) and quality of life(QOL)data. Methods: 129 LGG patients(pts)with >=3 risk factors(age>=40, astrocytoma, tumor across midline,tumor >=6 cm or preop neurofunction >1) received RT(54 Gy/30 fractions) with concurrent TMZ plus up to 12 cycles of post-RT TMZ. A battery of QOL /NCF tests were performed at baseline,6 and 12 mo. Results: 129 pts(75 males/54 females, median age 49,91% Zubrod score 0-1 with 69%, 25% and 6% with 3,4 and 5 risk factors) were evaluable. MST is not reached at a median follow-up of 4.1 yrs. 3 year OS of 73.1% was significantly improved from historical controls1. Grade 3 adverse events (AE) occurred in 43% of pts,grade 4 AE in 10%. One pt died of herpes encephalitis. 93 pts (72%)underwent QOL/NCF testing. Median FACT-BR/NCF scores remained stable or improved in the majority of pts at 12 mo. Conclusions: The 3 year OS rate of 73.1% for these high risk LGG pts is significantly higher than historical controls1 ($p<0.001$)with NCF/QOL scores remaining stable amongst those completing questionnaires.

C3 – Session5 1100-1115

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Volumetric tumor control and predictors of adverse events following gammaknife stereotactic radiosurgery for intracranial meningiomas

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Objective: To identify clinical, radiological, and dosimetric predictors of meningioma response to stereotactic radiosurgery (SRS), and post-SRS adverse radiation events (ARE). Methodology: A retrospective review of the database of meningioma patients treated with SRS between December 2005 and June 2013 at the University Health Network was performed. Seventy-five patients had at least 24 months of clinical and radiological follow-up, and were therefore included in this study. Tumor control was defined as any volumetric/diametric change less than +10%. Volumetric measurements were made using T1-Gadolinium enhanced 3T MRI scans with ITK-SNAP2.2 software. Univariate statistics were used to identify predictors of post SRS AREs. All statistical analyses were performed using IBM SPSS v20.0. Results: Females comprised 69.3% of patients, mean treatment age was 58.6 years, and median follow up was 36.2 months. Twenty-one patients had undergone prior surgical resection. One patient required salvage surgical intervention following SRS. Volumetric tumor control (52%) was inferior to diametric control (92%). Twenty-six patients (34.6%) experienced some form of new-onset complication after SRS: Headache (17.3%), cranial neuropathy (10.6%), speech impairment (2.7%), tremor (2.7%), and ataxia (1.3%). Fourteen patients (18.7%) experienced new onset T2 signal change signifying of edema; eight of these patients were symptomatic. Lower Conformity index (1.24 vs. 1.4), and higher treatment-