QOL-01. INFLAMMATORY BIOMARKERS AND PSYCHOLOGICAL SEQUELA IN PEDIATRIC BRAIN TUMOR SURVIVORS
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BACKGROUND AND AIMS: Pediatric brain tumors are the second most common type of pediatric cancer, and these patients face the worst health related quality of life (HRQOL) outcomes. Adult studies show increased inflammation association with lower HRQOL in adult brain tumor survivors. This relationship has not been explored in pediatric brain tumor survivors involving a set of stressors that trigger many inflammatory pathways. The purpose of this study is to explore the relationship between inflammatory biomarkers and psychological sequelae (i.e., sleep disturbance, fatigue, pain, negative affect) in PBTs. METHODS: Survivors aged 7-14 years with a primary brain tumor diagnosis were recruited from UMMC and the University of Arkansas for Medical Sciences (UALR) (N=41, median age=11.52 years). Twelve control (N=12) was recruited from UMMC well-child appointments. Parents and children completed self-reported surveys of pain, sleep, fatigue, and mood. The primary aims were to: (1) examine levels of C-reactive protein (CRP) in relation to poor HRQOL in PBTS; (2) compare children with tumor pathology of astrocytoma gliomas, medulloblastoma, ependymoma, other. Twelve controls had a median age=11.98 years; sex=53.1% female; race=63.6% Caucasian, 33.3% African American. The pathologic diagnoses=67% astrocytoma glioma, 11% medulloblastoma, 6% ependymoma, 12% other. Twelve controls had a median age=11.98 years; sex=41.7% female; race=16.7% Caucasian, 83.3% African American. There were no significant elevations in CRP for PBTS (44%, n=13) compared to controls (13%, n=11) (p=0.06). In PBTS, higher CRP levels were associated with greater parent-reported fatigue (p=0.035), sleep-wake disorders (p=0.017), excessive somnolence (p=0.042) and longer pain duration (p=0.037). From 13 tumor samples, positive SOX2 (69% of samples) was associated with increased parent-reported sleep-wake disorders (p=0.016), excessive somnolence (p=0.036), and both child and parent-reported sleep disturbance (child: p=0.014; parent: p=0.034). CONCLUSIONS: Elevated inflammation in PBTS, up to 9 years post-treatment, is consistently associated with increased sleep disturbance and fatigue. These relationships warrant further investigation in PBTS.

QOL-02. PAEDIATRIC MEDICAL TRAUMATIC STRESS IN CHILDREN WITH CANCER AND THEIR PARENTS: DIFFERENCES IN LEVELS OF POSTTRAUMATIC STRESS SYMPTOMS
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Paediatric medical traumatic stress (PMTS) is a set of children’s and their parents’ psychological and physiological responses to pain, injury, serious illness, and other experiences with the medical environment. Paediatric cancer patients have the highest prevalence of PMTS as the illness involves many stressors that trigger many inflammatory pathways. Posttraumatic stress symptoms (PTSS) are one of the most common psychopathologies among cancer patients. We examined the incidence of PMTS in children with cancer and their parents due to coping with a serious illness and treatment complications. We analyzed the following risk factors for PTSS: selected groups of individuals, medical interventions, complications, and treatment modalities. The study involved 183 parents of 133 children and 63 children and adolescents who were treated between 2009 and 2019 at Clinical Department of Paediatric Haematology and Oncology of Paediatric Clinic in Ljubljana. We collected the data using The Intensity of treatment rating scale 2.0 (IRT-2), PTSS checklist for Children/Parent (PCL-C/P), The PTSD Checklist for DSM-5 (PCL-5) and The Child PTSD Symptom Inventory - DSM-5 (CPSI-5). PMTS is frequently present in both children and their parents, regardless of the cancer type, treatment duration, treatment outcome, and child’s age. Mothers, patients with relapse, patients who were diagnosed after age 5, patients with more intensive treatment, and parents of the latter are at higher risk for PMTS occurrence. Additionally, we found a decreasing trend of traumatic responses after five or more years post cancer diagnosis and that parents are more traumatized than children. Our findings will contribute to the systematic prevention of PMTS and medical trauma and to endeavour to use trauma-informed care.

QOL-03. BEYOND SURVIVAL: CLINICAL REHABILITATION AND FUNCTIONAL OPTIMIZATION PEARLS FOR THE NEO-ONCOLOGIST
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Over the past decades, major advances in treatment for pediatric brain tumors have led to higher survival rates. Management including surgical resection, chemotherapy and radiation have led to prolonged survival though each comes with potential deleterious impact upon a child’s level of function. While treatment sparring treatments continue to be developed and utilized each year, the standard of care for many conditions leaves our patients with the potential for worsening function. The areas of mobility, activities of daily living, cognition, communication and swallowing are all potentially impacted. Rehabilitation medicine specialists focus on detecting impairments, addressing them with practical interventions and improving the function our shared patients. Unfortunately, there is a worldwide scarcity of rehabilitation medicine physicians and the role of improving function often falls into the hands of the neuro-oncologist. A number of practical clinical assessments and interventions utilized by rehabilitation medicine specialists can be translated to the toolbox of the neuro-oncologist. The aim of this presentation is to provide the neuro-oncologist with further abilities to enhance function with interventions that typically require low time investment. Topics covered will include the following: 1. What is spasticity, when is it necessary to treat and how is it treated? 2. Leg braces – who needs them, who doesn’t and what are the goals? 3. What physical exam signs can be utilized to detect peripheral neuropathy early and inform further treatment decisions with agents such as Vincristine. 4. What aspects of a gait assessment are high yield in detecting concern for clinical progression? The goal of this talk is high yield and low time investment. It is unfortunately not applicable for a poster presentation. A minimum amount of time would be 15 minutes. If less time is available for this presentation, a photo/video-based, rapid-fire format (similar to TikTok content) could be utilized.

QOL-04. HISTOLOGY, TREATMENT, AND EXTENT OF PRETREATMENT HYPOXICITY ARE MAJOR DETERMINANTS OF NEUROCOGNITIVE OUTCOME FOR SURVIVORS OF PEDIATRIC POSTERIOR FOSSA TUMORS - REPORT FROM THE GERMAN HIT-STUDIES
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BACKGROUND: Cognitive impairments following pediatric brain tumor treatment are generally attributed to tumor site, surgical intervention, complications as well as to nonsurgical treatment. We investigated impairments for patients with medulloblastoma, ependymoma, low-grade glioma of the cerebellum treated within the German pediatric brain tumor network to compare and rank major determinants. PATIENTS’ METHODS: Following protocol treatment, 245 patients with MB (n=106), EP (n=32), and cerebellar LGG (n=107, surgery only) were examined 2–5 years after diagnosis using the German “Neuropsychologische-Basisc-Diagnostic” (NBD) tool based on the Cattell-Horn-Carroll model for intelligence. Within this retrospective study, multiple linear regression models were applied. RESULTS: The MB+EP vs. LGG-cohort difference in median age at diagnosis (8.7 vs. 6.1 years) and location (cerebellar hemispheres: 8.8% MB vs. EP=9.9% LGG), while sex ratio, grade of resection, extent of pre-operative hydrocephalus were comparable. With smaller median tumor-volume in the MB+EP vs. LGG-cohort (34.144±43.3), ranges broadly overlapped. Median scores of age-appropriate tests were in the lower normal range.
for all patients for fluid and crystallized intelligence, selective attention, visual-spatial processing (VSP) and verbal short-term memory (median=93-103), but distinctly below for processing speed (PS), and psychomotor speed abilities (PMS) (median=85-95). Higher doses of cranio-spinal irradiation (>23.4Gy/23.4Gy) resulted in lower scores for most domains for MB-patients compared to LGG-patients (e.g., PS:estimate=+2.43Gy;7.77, p=0.026;23.4Gy;9.91, p=0.286). EP-patients (surgery+4Gy local radiation) scored better than LGG-patients except for PS in the three groups. However, all patients were actually different compared to 7/22 patients in PFT+RT group and 4/17 in PFT group who did not have specific learning. MAT performance analysis showed an effect of interaction between Orientation (forward or backward) and Group for speed (F(2)=15.58, p<0.001), linear-time and age interaction (F(2)=15.57, p<0.001) reducing an impairment both in PFT-RT and PFT groups, more marked in the PFT+RT group. CONCLUSION: We showed impairment, predominantly on motor adaptation but also, at individual level, in motor sequence learning whose origin requires additional work. This study brings new insights on the long-term impact of a PFT in childhood on a rarely investigated part of memory that is PM.

QOL-07. THE IMPORTANCE OF AN ONCO-FERTILITY PROGRAM FOR PEDIATRIC NEURO-ONCOLOGY PATIENTS

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INTRODUCTION: Due to recent advancements in surgical techniques, imaging and adjuvant therapies, survival rates for children with central nervous system (CNS) tumours have improved. Research priorities have now shifted to focus on late-effects and quality of survivorship amongst childhood CNS tumour survivors. Our study aimed to assess levels of cardiorespiratory fitness and health-related quality of life (HRQoL) amongst survivors of childhood CNS tumours. A secondary aim was to investigate potential relationships between cardiorespiratory fitness and HRQoL. METHODS: Participants were recruited from a single Children’s Cancer Service of Hôpital Cruzim. Inclusion criteria included: diagnosis of a primary CNS tumour, aged between 6-17 years, between 3 months and 5 years post completion of oncology treatment, independent mobility, deemed clinically appropriate to participate by treating oncologist. Cardiorespiratory fitness was assessed using the six-minute walk test. HRQoL was assessed with the PedsQL Generic Core Scales, Version 4.0, both self-report and parent-report proxy report forms were used. RESULTS: 20 participants (n=9 male) were recruited with a mean age of 12.34 (SD = 3.46) years. Mean time since completion of oncology treatment was 2.31 (SD = 1.38) years. Mean 6-minute walk distance (6MWD) was 482.73 (SD = 50.04) metres, equating to the 55.5th (SD = 6.83th) percentile overall. 6MWD was significantly reduced compared to predicted 6MWD (t = -12.52, p < 0.001, 95% CI = [-13.52, -116.68]). Parent-proxy reported HRQoL was significantly reduced compared to healthy population norms (t = -4.67, p < 0.001, 95% CI = [-3.83, -12.17]). A strong positive correlation exists between 6MWD and both parent-proxy (Pearson’s r = 0.533, p = 0.015) and child-reported HRQoL (r = 0.580, p = 0.007). CONCLUSION: Survivors of childhood CNS tumours present with impaired levels of cardiorespiratory fitness and HRQoL compared to healthy population norms. Higher levels of cardiorespiratory fitness are associated with higher levels of HRQoL.