NEUROPSYCHOLOGY/QUALITY OF LIFE

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 (PBTS). We conducted a case-control study to explore the relationship between inflammatory biomarkers and psychological sequela (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 (N=29) and UAB (N=4) between 2016-2019. A control group (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) inflammation in PBTS compared to controls (2) examine if higher CRP and SOX2 (from tumor tissue) were associated with psychological sequela. Independent samples T-Tests and spearman correlations evaluated aims. RESULTS: The final sample included 33 PBTS: median age=12.42 years; sex=51.5% female; race=63.6% Caucasian, 33.3% African American; 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, 83.8% African American. There were marginal elevations in CRP for PBTS (44%, n=13) compared to controls (13%, n=1) (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 illnesses, and other experiences with the medical environment. Paediatric cancer patients have the highest prevalence of PMTS as the illness involves a set of stressors that trigger many negative psychological reactions. 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 analysed 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], PTSD checklist for Children/Parent [PCL-C/PR], The PTSD Checklist for DSM-5 [PCL-5] and The Child PTSD Symptoms Scale for DSM-5 [CPSS-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 NEURO-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 function-sparing 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 swallow 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-oncoligst. 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 the this presentation, a photo/video-based, rapid-fire format (similar to Tik-Tok content) could be utilized.

QOL-04. HISTOLOGY, TREATMENT, AND EXTENT OF PRETREATMENT HYDROCEPHALUS ARE MAJOR DETERMENTS 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 tumors are generally attributed to tumor site, surgical intervention, complications as well as to nonsurgical treatment. We investigated impairments for patients with medulloblastoma (MB), ependymoma (EP) and low-grade glioma (LGG) of the cerebellum treated within the German pediatric brain tumor network to compare and rank major determents. 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 "Neuropsychological-Basic-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 differed slightly in median age at diagnosis (8.7/6.1 years) and location (cerebellar hemispheres: 8%MB+EP/49.5%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 (34.1/44.1cm3), ranges broadly overlapped. Median scores of age-appropriate tests were in the lower normal range