QOL-14. IMPACT OF RADIATION DOSE ON PHYSICAL AND EMOTIONAL OUTCOMES IN PEDIATRIC BRAIN TUMOR

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QOL-13. ESTABLISHMENT OF A REHABILITATION CLINICAL SPECIALIST IN ONCOLOGY SIGNIFICANTLY IMPROVED REHABILITATION ACCESS FOR PEDIATRIC NEUROONCOLOGY PATIENTS: A SINGLE INSTITUTION EXPERIENCE

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Pediatric survivors of central nervous system (CNS) tumors face decreased physical, cognitive, and social function, resulting in poorer quality of life. Impairments, including weakness, ataxia, visual-perception disturbances, learning, cognition, aphasia, dysphasia, and dysarthria, may be addressed by rehabilitation; however, services can be challenging to provide in the environment of surgery, radiation, and chemotherapy. Children’s Minnesota developed the rehabilitation clinical specialist in oncology (RCSO) role, which targeted improved rehabilitation through increasing interdisciplinary collaboration, defining a specialized rehabilitation team, providing outpatient (OP) services within the cancer clinic, improving OP scheduling, and designing inpatient (IP) clinical pathways and order sets. Methods: 2005-2015 nationwide study of pediatric OP and IP patients, pain, psychological therapy (OT), and speech language pathology (SLP) visits for all children with CNS tumors from diagnosis to 3 years post-diagnosis in a historical cohort (2001-2006) pre-RCSO and current cohort (2009-2014) post-RCSO. RESULTS: OP/IP patient counts included a 349% increase in historical and IP OP patients. Rehabilitation referral percentages grew in IP and OP settings (IP 28.04% and OP 154.70%). Average rehabilitation visits per patient grew in IP by 26.33%, and in OP by 131.82%. The largest areas of growth were OP (from 1.2 visits per patient per year to 21.81 visits per patient per year) and IP rehabilitation in the neurooncology population surpassed the overall growth of rehab in all populations at Children’s. CONCLUSION: Implementation of the RCSO role and access systems improved rehabilitation services for neurooncology patients. Further investigation is needed regarding the impact of improved rehabilitation access and service on function and quality of life.

QOL-14. IMPACT OF RADIATION DOSE ON PHYSICAL AND EMOTIONAL OUTCOMES IN PEDIATRIC BRAIN Tumor

John Bobo1, Kaitlin Oswald1, Betty Herrington1, Maru Barrera2, Andrea Pataune2, Mary Kupst1, Cynthia Gerhardt1, Kathryn Vamatta1, and Cynthia Karlsson1; 1Department of Pediatrics, University of Mississippi Medical Center, Jackson, MS, USA; 2Psychology, The Hospital for Sick Children, Toronto, ON, Canada. A recent review of the role of radiation in pediatric oncology has been reported. Pediatric brain tumor survivors often experience disease- and treatment-dependent physical and psychosocial concerns following treatment. The present study evaluated the effect of radiation dose on parent-reported symptoms of pain, physical functioning, and depression following treatment. METHODS: Mothers and fathers of pediatric brain tumor patients (n=182; M age = 11.33; SD = 2.25; 47.3% females) diagnosed with a primary brain tumor (M age at diagnosis = 7.39; SD=3.08) completed questionnaires at research visits. Caregivers completed the Child Health Questionnaire and Child Behavioral Checklist to assess children’s physical functioning, pain, and depression symptoms. Chart review was conducted to obtain brain tumor diagnosis, radiation type (whole vs. focal) and radiation dose. RESULTS: Controlling for brain tumor diagnosis, age, and gender linear regressions revealed moderate and high doses of whole brain radiation were significantly related to decreased parent-reported physical functioning (β = -0.354, p < .01). Increased dosage of focal radiation was significantly related to decreased physical functioning (β = -0.189, p < .05). DISCUSSION: Present results suggest increased radiation dosage is related to children’s mental and physical wellbeing three to four years following treatment. This study adds to extant literature documenting detrimental effects of radiation on neurocognitive outcomes in pediatric brain tumor survivors. Future research on treatment factors related to quality of life are warranted, along with continued research on interventions designed to decrease the negative impact of brain tumor treatment on children’s long-term quality of life.

QOL-15. VISUAL IMPAIRMENT AND AUDITORY COMPENSATION IN CHILDREN TREATED FOR OPTIC PATHWAY GLIOMA

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Survivors of paediatric Optic Pathway Glioma (OPG) experience varying degrees of visual impairment. Yet sparse research has examined the impact of brain damage and the resulting vision loss on cognitive development and function. To date, no studies have explored the mechanisms and strategies in auditory functioning, as is reported in visually impaired individuals. This study describes the motor, cognitive, and social abilities in a cohort of 12 children, aged 6-13 years, diagnosed with OPG and treated with observation and chemotherapy. Analogue tasks that rely on visual or auditory input were used to assess core skills, including fine motor coordination, attention, memory, spoken English comprehension, and mathematics. Results showed no significant difference between visual and auditory performance across abilities. Only visual and auditory performance of the two scholastic abilities were associated, suggesting that a common mechanism might underpin complex capabilities crucial for school performance irrespective of the sensory modality of the task, while different visual and auditory neural processes could sustain specific motor and cognitive skills. Visual acuity in the best eye did not correlate with performance in visually-based behavioural tasks, suggesting no direct association between low-level sensory experience and high-level cognition in the visual domain. Overall, these results demonstrate no evident compensation for the vision loss through the auditory channel and highlight the importance of including multiple sensory modalities in the neuropsychological follow-up assessment for these children. These results need to be corroborated with a larger sample of paediatric patients for generalisation at a population level.

QOL-16. ASSOCIATIONS BETWEEN SENSORY, PERCEPTUAL, AND COGNITIVE IMPAIRMENT IN THE VISUAL DOMAIN IN CHILDREN TREATED FOR OPTIC PATHWAY GLIOMA

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Paediatric optic pathway glioma (OPG) and its treatment often result in some degree of sight loss, ranging from mild deterioration to total blindness, in one or both eyes. Residual sight has been widely described through key ophthalmological measures (visual acuity, visual fields, and colour vision), but little is known about more complex processes that receive visual input. In this study, we used the three-level model of receptive processes by Hammill et al., (1993) to examine the associations between three levels of visual information processing: 1) sensation, measured through ophthalmological index of visual acuity (VA); 2) perception, assessed through the motor-reduced perception and visual integration index of the Developmental Test of Visual Perception (DTVP-2/DTVP-A) and 3) cognition, evaluated through the perceptual reasoning and processing speed IQ indices of the Wechsler scale (WISC-IV). Twelve OPG survivors (7 boys, 5 girls), aged between 6 and 13 years, were assessed on these measures. Results showed no significant correlations between VA in the best eye and the other behavioural measures, although all correlations were in the predicted direction. Strong associations were found between the two measures of perception and the two measures of cognition. Across perception and cognition, positive associations were found, but the only significant association was between visual-motor integration and processing speed. Overall, these results show moderate to strong associations between sensation, perception and cognition within the visual domain for paediatric OPG patients, highlighting the need for clinical assessment at multiple levels of information processing. Further investigation is warranted with a larger sample.

QOL-17. ERRORS ON BEDSIDE TESTING OF ANTI-SACCADES MAY PREDICT COGNITIVE DYSFUNCTION

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Anti-saccade is a voluntary contraversive rapid eye movement that is produced exactly opposite to a presented target. It involves inhibition of a reflexive saccade seeking saccade and produces a voluntary saccade of a conjugate direction. Abnormalities on anti-saccade tests associate with impaired attention and processing speed (PS), but testing anti-saccades requires cumbersome laboratory procedures. We have developed a bedside method to test anti-saccades that takes 3 minutes to complete. We aimed to test if errors on bedside testing of anti-saccades will associate with impaired attention, impulsivity and PS. Seventy-three consecutive participants (ages 5-17) on our craniopharyngioma protocol of proton therapy were evaluated over 3-3 time points. A total of 113 data points were available. Cournos’ Continuous Performance Test II