QOL-15. NEURAL NETWORK INTEGRITY FOR FACIAL AFFECT RECOGNITION IN SURVIVORS OF MEDULLOBLASTOMA
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BACKGROUND: Medulloblastoma survivors are at risk for social deficits, yet underlying mechanisms are poorly understood. METHODS: Facial affect recognition was assessed in 50 medulloblastoma survivors treated with craniospinal radiation [median(range) 21.4(12.5–30.9) years old, 11.0(5.7–22.6) years since diagnosis] and 56 non-cancer age-, sex-, and race-matched controls. Brain activation and connectivity in core regions/nodes of the face perception network ( fusiform gyrus, occipital gyrus, superior temporal sulcus) were examined using structural and functional neuroimaging. Structural networks were constructed from diffusion tensor imaging (DTI) data and individual node strength and efficiency were assessed. Functional MRI (fMRI) was conducted using a 1-back facial affect recognition task with assessment of regional differences in task-related cerebral blood flow (BOLD). Standardized neurocognitive testing was completed with 24 hours of brain imaging. RESULTS: Medulloblastoma survivors performed worse on a behavioral measure of facial affect recognition (P<0.003) compared to matched controls. During the facial affect recognition task, controls demonstrated greater BOLD activation of the left right fusiform gyrus and the left and right middle occipital gyrus compared to survivors (P<0.05, corrected for multiple comparisons). DTI indicated weaker core node strength in survivors in the right lateral occipital gyrus (P=0.02) and efficiency was lower in the left (P=0.01) and right occipital gyrus compared to controls. CONCLUSIONS: Medulloblastoma survivors have deficits in facial affect recognition and reduced activation and efficiency in brain regions comprising the face perception network compared to matched controls. Interventions targeting this specific skill and neural network may improve social functioning in survivors.

QOL-17. BIOLOGICAL CORRELATES OF QUALITY OF SURVIVAL AND NEUROCOGNITIVE OUTCOMES IN MEDULLOBLASTOMA: A META-ANALYSIS OF THE SIOP-UKCCSG-PNET3 AND HIT-SIOP-PNET4 TRIALS
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Relationships between biological factors (genetic, tumour molecular subgroup) and neurocognitive/Quality of Survival (QoS) outcomes in medulloblastoma survivors are emerging. However, studies of limited sample size or restricted ability to compare results from different studies. In this meta-analysis, studies with similar endpoints (genetic, tumour molecular subgroup, genotype and survivorship outcomes. These findings will provide a basis for the design of translational studies to explore these relationships in smaller datasets.

QOL-18. A LONGITUDINAL STUDY OF NEUROCognition IN CHILDREN TREATED FOR A BRAIN Tumor
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It is well known that neurocognition in children treated for a brain tumor can be affected. However, studies on whether these cognitive problems are stable over time are limited. The aims of this study were to investigate the trajectories of neurocognition and to identify factors that contribute to neurocognitive outcome in children treated for medulloblastoma. Based on the project PedsPCF (Pediatric Perceived Cognitive Function), a short test battery was developed specially for children treated for a brain tumor. The PedsPCF is a short parent-reported questionnaire assessing different aspects of cognitive function (cognition, memory, language, motor integration). The PedsPCF score can be used to replace direct cognitive assessments or vice versa. It is well known that neurocognition in children treated for a brain tumor can be affected. However, studies on whether these cognitive problems are stable over time are limited. The aims of this study were to investigate the trajectories of neurocognition and to identify factors that contribute to neurocognitive outcome in children treated for medulloblastoma. Based on the project PedsPCF (Pediatric Perceived Cognitive Function), a short test battery was developed specially for children treated for a brain tumor. The PedsPCF score can be used to replace direct cognitive assessments or vice versa.
QOL-21. DEVELOPMENT AND UTILISATION OF A NEURO-Oncology REHABILITATION TEAM: 2018–2019 UPDATE Helen Pansley, Helen Hartley, Alex Keenan, Alex Hagan, Joanne Owen, Brian Moore, James Goodall, and Ram Kumar; Alder Hey Children’s NHS Foundation Trust, Liverpool, United Kingdom

INTRODUCTION: A multidisciplinary Neuro-Oncology Rehabilitation Team (NORT) was established at Alder Hey Children’s Hospital in 2014. We reviewed NORT inputs, processes and outputs in 2018 to 2019 compared to our previously presented data from 2015, soon after service inception. METHODS: Retrospective analysis of patients who received NORT input from 2015 to 2018 compared to 2015 data. Descriptive analysis of changes to NORT operational processes and structure. Complexity of rehabilitation needs was measured using the Rehabilitation Complexity Scale-Extended V13 (RCS). RESULTS: 54 children received NORT input in 2015 (32%), 74% had a delay (50%>1 month). In 2018–2019 (50% of 104 children), 56% had a delay (40%>1 month) at T3. In addition, 58.6% of children randomized to SDCSI exhibited impairment in verbal learning after a delay compared to 34.8% of children randomized to LDCSI, and 35.0% of those aged ≥8 at diagnosis receiving SDCSI. CONCLUSIONS: Younger children receiving SDCSI have particularly high rates of memory impairment five years after diagnosis of medulloblastoma. Limiting CSI dose and/or volume in young children treated for this diagnosis may improve outcomes for memory functioning.

QOL-22. MACHINE-LEARNING INFERENCE MAY PREDICT QUALITY OF LIFE SUBGROUPS OF ADAMANTINOMATOUS CRANIOPHARYNGIOMA Amy C. Hagan1,4,3, Eric Prince1,4, Susan Staulcup2, Trinka Vrijm1,4,3, Mark Souweidane2,4, Eric M. Jackson1,4,5, James M. Johnston6, Richard C. E. Anderson2, Robert P. Naftel7, Gerald Grant2, Toba N. Nauzet1,4, Roy Dudley2, David D. Limbrick1,2, Kevin Gm1,4, Amy Smith1,2, Lindsay Kilburn1,4, George Jallo1,4,3, and Todd Hankenson1,2; Children’s Hospital Colorado, Division of Pediatric Neurosurgery, Aurora, CO, USA; University of Colorado School of Medicine, Department of Neurosurgery, Aurora, CO, USA; Memorial Sloan Kettering Cancer Center, Department of Neurosurgery, New York, NY, USA; Weill Cornell Medical College, Department of Neurological Surgery, New York, NY, USA; Johns Hopkins University School of Medicine, Department of Neurosurgery, Baltimore, MD, USA; University of North Carolina, Department of Pediatric Neurosurgery, Birmingham, AL, USA; Columbia University, Morgan Stanley Children’s Hospital of New York-Presbyterian, Department of Neurosurgery, New York, NY, USA; Vanderbilt University Medical Center, Monroe Carell Jr. Children’s Hospital at Vanderbilt, Department of Neurological Surgery, Nashville, TN, USA; and Lucile Packard Children’s Hospital at Stanford University, Department of Pediatric Neurosurgery, Palo Alto, CA, USA.

OBJECTIVE: One of the most disabling side effects of treatment in survivors of brain tumours is the resultant reduction in level of processing speed and attention. This study aimed to evaluate intellectual and psychological benefit of short-acting methylphenidate to survivors of brain tumour. METHODS: Paediatric BT patients attending a UK specialist treatment centre received assessment of cognitive performance. All patients identified with attentional difficulties were screened for contraindications to methylphenidate. Participants (N=23), mean age 11.09 years, completed a 6-month trial of methylphenidate. Measures of attention (Test of Everyday Attention for Children 2; SNAP-Iv), side-effects (Stimulant Side-Effects Rating Scale, Health-Related Quality of Life (Peds-QOL), and experience of methylphenidate via machine learning analyses of baseline survey responses. The ability to predict an ACP patient’s QoL trajectory affects caregivers valuable information that can be leveraged to maximize that patient’s psychosocial state and thereby improve overall therapy.

QOL-23. ASSESSING THE IMPACT OF METHYLPHENIDATE ON LIFE COGNITIVE EFFECTS OF PAEDIATRIC BRAIN TUMOUR SURVIVORS: A SERVICE-BASED EVALUATION Sarah Vertiz1,2, Rebecca Hill1,2, Gail Halliday1,2, Jade Ryles3, and Simon Bailey3;1; Newcross Upon Tyne Hospitals NHS Foundation Trust, Newcross Upon Tyne, United Kingdom; 2Northern Institute of Cancer Research, Newcastle University, Newcastle Upon Tyne, United Kingdom

OBJECTIVE: One of the most disabling side effects of treatment in survivors of brain tumours is the resultant reduction in level of processing speed and attention. This study aimed to evaluate intellectual and psychological benefit of short-acting methylphenidate to survivors of brain tumour. METHODS: Paediatric BT patients attending a UK specialist treatment centre received assessment of cognitive performance. All patients identified with attentional difficulties were screened for contraindications to methylphenidate. Participants (N=23), mean age 11.09 years, completed a 6-month trial of methylphenidate. Measures of attention (Test of Everyday Attention for Children 2; SNAP-Iv), side-effects (Stimulant Side-Effects Rating Scale, Health-Related Quality of Life (Peds-QOL), and experience of methylphenidate via machine learning analyses of baseline survey responses. The ability to predict an ACP patient’s QoL trajectory affects caregivers valuable information that can be leveraged to maximize that patient’s psychosocial state and thereby improve overall therapy.

QOL-24. DIFFERENTIAL IMPACT OF TUMOR LOCALIZATION, LOCAL AND CRANIOSPINAL IRRADIATION ON NEOpsychological LONG-TERM OUTCOME IN CHILDREN WITH MEDULLOBLASTOMA, EBMT 2019, AND SATURPENTAL PNET: A LONGITUDINAL MULTICENTER OUTCOME ASSESSMENT OF CHILDREN FROM THE HIT-2000 AND HIT-REZ TRIALS Holger Ottensmeier1, Paul G Schiegel2, Matthias Eyrich3, Bernhard Zimolong4, Martin Synakre3, Kurt Debus4, and Margrit Reiter5; University Hospital of Children’s Hospital, University of Freiburg, Freiburg, Germany;1 Children’s Cancer and Blood Diseases Institute, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, USA; 2Children’s National Health System, Center for Cancer and Blood Disorders, Washington DC, USA; 3Children’s National Health System, Brain Tumor Institute, Washington DC, USA; 4Johns Hopkins All Children’s Hospital, Institute of Brain Protection Sciences, St. Petersburg, FL, USA; 5Children’s Hospital Colorado, Department of Pediatric Neuropsychology, Aurora, CO, USA; 6University of Alabama at Birmingham, Department of Neurosurgery, Division of Pediatric Neurosurgery, Birmingham, AL, USA; 7Children’s Hospital of Philadelphia, Department of Pediatrics, Division of Pediatric Neurosurgery, Philadelphia, PA, USA; and 8Southern California University of Medicine, Department of Pediatrics, Kansas City, MO, USA.

BACKGROUND: Due to disease and/or treatment-related injury, such as hypothalamic, visual, and endocrine damage, quality of life (QoL) scores after childhood-onset Adenomatous Craniopharyngioma (ACP) are among the lowest of all pediatric brain tumors. Decision-making regarding management would be aided by more complete understanding of a patients likely Qol trajectory following intervention. METHODS WE retrospectively analyzed a 10-year cohort of patients from the first 50 patients (ages 1-17 years at diagnosis) enrolled in the international Advancing Treatment for Pediatric Craniopharyngioma (ATP) consortium. Surveys included 215 pediatric-relevant questions and were completed at diagnosis, and 1- and 12-months following diagnosis. Using Multiple Correspondence Analysis (MCA), these categorical Qol surveys were interrogated to identify time-dependent patient subgroups. Additionally, custom deep learning classifiers were developed using Google’s TensorFlow framework. RESULTS By representing QoL outcomes in the resulting MCA-space, we identified Qol subgroups that either improved or declined over time. We assessed differential trends in Qol responses to identify variables that were subgroup specific (kologorov-Smirnov p-value ≥ 0.05). Fused deep learning classifier was trained on 10-fold cross-validation using a mean 5-fold cross-validation area under precision-recall curve score > 0.99 when classifying Qol subgroups at 12 month follow-up, using only baseline data. CONCLUSIONS: This work demonstrates the existence of time-dependent patient subgroups that can be inferred at time-of-diagnosis via machine learning analyses of baseline survey responses. The ability to predict an ACP patient’s QoL trajectory affects caregivers valuable information that can be leveraged to maximize that patient’s psychosocial state and therefore improve overall therapy.