sented during the training. With implementation of interdisciplinary spiritual care, outcomes that may be measured in the future include improved quality of life, patient satisfaction, and the resilience of both patients and team members.

QOL-49. THE IMPACT OF OTOTOXICITY AND VISUAL IMPAIRMENT ON EDUCATION IN CHILDREN TREATED FOR CNS TUMOURS

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INTRODUCTION: Children treated for CNS tumours experience a very high burden of adverse effects. Platinum-based chemotherapy and cranial radiotherapy can cause ototoxicity, which may be particularly problematic in patients who have impaired vision and cognition as a result of their tumour and associated treatment. This study assessed the prevalence of impaired hearing and vision and how this may impact upon education. METHODS: 53 patients diagnosed with solid tumours in Edinburgh, UK between August 2013–2018 were included in the study. Patients were split into three groups according to treatment received: Group 1 – cisplatin-based chemotherapy and cranial radiotherapy; Group 2 - platinum-based chemotherapy, no cranial radiotherapy; Group 3 – benign brain tumours treated with surgery only. Data was collected retrospectively from patient notes. RESULTS: Overall 69.5% of those treated with platinum-based chemotherapy experienced ototoxicity as assessed by Brock grading and 5.9% of patients had reduced visual acuity. Patients in Group 1 had the highest prevalence of both. 44.4% of patients in Group 1 needed increased educational support following treatment, either with extra support in the classroom or being unable to continue in mainstream school. 12.5% of Group 2 patients required such support and 31.3% in Group 3. CONCLUSIONS: Children with CNS tumours frequently require support for future education but those treated with both platinum-based chemotherapy and cranial radiotherapy are at particular risk, which may be compounded by co-existent ototoxicity and visual impairment. It is essential to provide appropriate support for this patient cohort in order to maximise their educational potential.

QOL-51. LISTENING BEFORE WE SPEAK: A PATIENT-CENTERED APPROACH TO DEVELOPING RESOURCES FOR PEDIATRIC BRAIN TUMOR SURVIVORS AND THEIR FAMILIES

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In the United States, more than 28,000 children and teenagers live with the diagnosis of a primary brain tumor (Porter, McCarthy, Freels, Kim, & Davis, 2010). In 2017, an estimated 4,820 new cases of childhood primary brain and other central nervous system tumors were expected to be diagnosed in children ages 0 – 19 in the United States (Central Brain Tumor Registry of the United States, 2017). Survivors suffer from lifelong side effects caused by their illness or by various treatments. Commonly identified late effects of treatment include a decline in intellectual functioning and processing speed, performance IQ deficits, memory deficits, psychological difficulties, deficits in adaptive functioning (daily life skills), and an overall decrease in health-related quality of life (Castellino, Ullrich, Whelen, & Lange, 2014). To address the ongoing challenges these survivors and their families face, the Pediatric Brain Tumor Foundation (PBTF) met extensively with working groups comprised of survivors and caregivers to develop the outline for a comprehensive Survivorship Resource Guidebook. In 2019, the PBTF published the guidebook which categorizes survivor and caregiver needs into three primary areas: physical and mental health, quality of life, and working the system. Expert authors included survivors and caregivers themselves in addition to medical and mental health professionals. Key outcomes discovered during the creation and production of this resource highlight how caregivers, survivors and professionals can collaborate to provide needed information and practical help to one segment of the pediatric cancer population who experience profound morbidities as a result of their diagnosis and treatment.

QOL-53. GENOME ASSOCIATIONS WITH NEUROCOGNITIVE OUTCOMES, CEREBRAL MICROBLEEDS (CMBS), AND BRAIN VOLUME AND WHITE MATTER (WM) CHANGES IN PEDIATRIC BRAIN TUMOR SURVIVORS

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OBJECTIVE: To identify genetic predictors of neurocognition, CMBs, brain volume, and WM changes in pediatric brain tumor survivors. METHODS: Patients were selected from an existing cohort (RadART) if they had: 1) at least one neurocognitive evaluation using computer-based CogState; 2) available DNA; 3) standard imaging. Candidate gene or genome-wide genotyping was performed on all patients. CMBs were identified using a semi-automated algorithm developed in MATLAB. Volume of T2/FLAIR WM signal abnormality was measured using a semi-automated method based on a convolutional neural network. Brain volume and cortical thickness were measured using FreeSurfer volumetric analysis. Logistic and linear regression were done to compare phenotypes with candidate genotypes. Genome-wide efficient mixed-model analysis was done to compare neurocognition and CMBs. Gene set analysis was done using https://fuma.ctglab.nl/. RESULTS: APOE4 was a candidate variant associated with non-lobar, larger volume CMBs ($p<0.05$). At the GWAS-level (n=225), specific genes trended with visual memory, psychomotor function, and CMB count ($p<5x10^{-8}$). Using gene set analyses, there were gene set trends seen with CMB count and psychomotor function. Small sample size and low mutant allele frequency limited reliability of these findings. Preliminary volumetric analysis show reduced volume within the right parietal, medial occipital and inferior temporal lobes with increased cortical thickness in the left occipital and medial parietal lobe in patients carrying the ApoE4 allele. WM signal assessments are ongoing. CONCLUSION: Genetic markers may be associated with neurocognition, CMBs, brain volume and WM changes in pediatric brain tumor survivors; however, larger cohorts are needed to confirm specific gene relevance.

QOL-54. HEIGHT, WEIGHT AND CARDIOVASCULAR EFFECTS OF STIMULANTS ON CHILDREN WITH BRAIN TUMOR

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INTRODUCTION: Children with brain tumors may develop inattention, slow processing, and hypersomnia. Stimulant medications improve these problems but their effect on growth, heart rate, and blood pressure are inadequately explored. METHODS: We retrospectively studied children with brain tumors treated at our institution that had data available for one-year pre and two year post stimulant treatment. Tumor location, gender, radiation treatment (RT), age at RT, drug type, and hormone therapy were variables of interest. RESULTS: We identified 65 children (35 males) that fulfilled eligibility criteria. Focal RT was utilized in 58; 11 additionally received whole brain RT. Thirty were treated for hypersomnia and inattention, 8 for hypersomnia alone, and rest for inattention. Modafinil was the first drug in 18 (27.7%) and methylphenidate in the others. Forty-seven (72.3%), 40 (61.5%) and 49 (75.4%) were on thyroxine, cortisone and growth hormone respectively. There was no difference in pre and post stimulant BMI, heart rate, and blood pressure. There was also no difference between modafinil and methylphenidate groups. Rate of increase in height slowed on stimulants ($p=0.0096$). Thyroxine treatment correlated with increase in BMI after stimulants ($p=0.0434$). Younger age ($p=0.0003$) and higher BMI ($p=0.0063$) pre stimulants correlated with increased heart rate on stimulants, while higher age at RT (0.0159) correlated with elevated systolic BP on stimulants. No association of studied variables was found with height and diastolic BP. CONCLUSION: Stimulants are well tolerated by children with brain tumors that are appropriately managed for endocrine deficiencies but may reduce the trajectory of height attainment.

QOL-55. INTEGRATED MULTI-SCALE MODEL FOR PEDIATRIC BRAIN TUMOR SURVIVAL PREDICTION

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Brain tumors are the most common solid tumors affecting children, and its prognosis has been a great challenge for physicians and researchers. With the advances in high-throughput sequencing technology and digital pathology, more quantitative data is now becoming available and more information may potentially be discovered in whole slide images (WSIs) and molecular tumor characteristics to determine survival and treatment. Imaging and genomic data, though very different in nature, both may contain different aspects of disease characteristics that are important for survival prediction. Hence our work aims to build a framework to integrate two data modules, whole-slide histopathology image data, and RNA sequencing data, for a unified model to improve pediatric brain tumor survival outcome prediction. The imaging data and genomic data are both of high dimensions and on different scales. We use two independent