modules, each of which consists of a deep neural network, to extract lower dimensional features from imaging and genomic data respectively. We concatenate the extracted features and use a third neural network to train a Cox regression model using the merged feature as input. Each module is first pre-trained with TCGA adult brain tumor data, and subsequently fine-tuned with pediatric brain tumor data. The entire pipeline is tested on the holdout pediatric brain tumor dataset. Preliminary results suggest that the integrated framework achieves improved prediction performance than using each single data module alone. The concordance index (C-index) of integrated model is 0.68, compared to 0.62 with imaging data only, and 0.66 with genomic data only.

QOL-56. THE RELAPSED AND OR PROGRESSED BRAIN TUMOURS IN CHILDREN: RHC, GLASGOW EXPERIENCE

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INTRODUCTION: The outcome for children with relapsed or progressed brain tumours is poor. The aim of this project was to identify total number of children who have relapsed or progressed with Brain tumour and to determine the types of tumours, treatment offered and assess outcome. METHODS: This is a retrospective study of all patients treated for relapsed or progressed brain tumours between 2007 and 2017 at the Royal Hospital for children. Patients were identified using the unit database. Clinical data included demographics, histologic diagnosis, treatment characteristics and outcome which was obtained from electronic records. RESULTS: 46 children were included (22M:24F). The median age of diagnosis was 5 years. There were 16 histological subtypes of brain tumours: pilocytic astrocytoma (n=12, 26%), optic pathway glioma (n=4,7%), medulloblastoma (n=8, 17%), ependymoma (n=4, 9%), high grade glioma (n=3, 7%, DIPG (n=2, 4%) and others 13(32.2%). 28(61%) had relapsed at a median time of 18 months. Tumour progression occurred in 18(31%) at a median time of 21.5 months. Post-relapse or progression therapy included surgery (14, 30%), chemotherapy (17, 40%) and radiotherapy (5, 10.9%). 50% of the patients remain alive with 17(37%) being stable and 6(13%) with progression of disease. 50% had died of disease progression. CONCLUSIONS: The relapse and or progression was seen 61% of patients. The commonest tumours in this cohort were pilocytic astrocytoma and medulloblastoma. Chemotherapy was the most used regimen followed by surgery and radiotherapy. Primary dissemination at the time of diagnosis was associated with poor prognosis.

QOL-57. SOUTHERN CALIFORNIA KAISER PERMANENTE PEDIATRIC NEURO-ONCOLOGY PROGRAM DEVELOPMENT

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KEY MESSAGE: Standardization of care for subspecialty patients require centralization and support across multi-disciplinary groups within the Kaiser Permanente medical group, which is a large health maintenance organization (HMO) in the United States. BACKGROUND: Prior to the development of a Pediatric Neuro-Oncology program, Southern California Kaiser Permanente pediatric neuro-oncology patients were routinely referred to respective regional academic centers for consultation. The process was not standard across the region, resulting in additional costs and differences in treatment recommendations, potentially affecting outcomes. METHODS: A Pediatric Neuro-Oncology program was established, July 2017, based at the Kaiser Permanente Los Angeles Medical Center (LAMC), consisting of pediatric neuro-oncology, pediatric neurosurgery, pediatric neuro-radiology, pediatric radiation oncology, and pediatric neuro-oncology case management. RESULTS: A Pediatric Neuro-Oncology tumor board was established to meet on a bi-monthly basis. Pediatric neuro-oncology patients across the Southern California now have their magnetic resonance imaging (MRI) reviewed by the same pediatric neuro radiologists. Neuropathology is standardized and sent to Children's Hospital Los Angeles and reviewed at the molecular neuropathology tumor board attended by the pediatric neuro-oncologist. Cases discussions regarding the patients include the regional pediatric neurosurgeons, the pediatric radiation oncologists, and the pediatric neuro-oncologist, and treatment plans are recommended and recorded by the case manager. CONCLUSIONS: Centralization of care has allowed for more consistent and standard care across the Southern California Region, but requires support from multi-disciplinary groups.

QOL-58. ASSESSING FATIGUE EXPERIENCED BY PEDIATRIC PATIENTS WITH INTRACRANIAL NEOPLASMS

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BACKGROUND: Indiana University possessed one of the earliest clinical proton facilities in the United States. The purpose of this study was to assess fatigue and nausea/vomiting in children with central nervous system (CNS) tumors undergoing radiation therapy as part of their treatment regimen, and to understand what factors influence fatigue. DESIGN: The study was approved by the institutional review board at Indiana University and consent and/or assent from eligible participants was obtained prior to enrollment. The validated Fatigue Scale is scored on a 5-point Likert scale. Surveys were completed 1) prior to radiation therapy, 2) week three of radiation therapy, and 3) week six of radiation therapy. A score of 41 or higher for the Fatigue Scale-Parent (< 7 years), 12 or higher for the Fatigue Scale-Child (8–12 years), and 17 or higher for the Fatigue Scale-Adolescent (13–18 years), indicates significant cancer-related fatigue. RESULTS: The study aimed to recruit a total of 50 patients during the eligible period; however, data on 31 individual participants were available for analysis. 25 patients underwent proton radiation therapy, while 6 patients underwent conventional photon therapy. The mean age of children was 8.8 years. Of the 31 patients, 22 recorded scores indicating significant cancer-related fatigue at some point during radiation therapy. CONCLUSIONS: Cancer related fatigue continues to be a challenge, with limited understanding of factors that might predict clinically relevant fatigue This work demonstrates the feasibility of conducting symptom research for children undergoing radiation therapy; further research is needed to characterize predictors of fatigue.

QOL-59. CEREBELLAR MUTISM SYNDROME AND THE SURGICAL RISK FACTORS: A PROSPECTIVE MULTICENTRE STUDY OF 500 PATIENTS UNDERGOING TUMOUR SURGERY IN THE POSTERIOR FOSSA

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OBJECTIVE: Cerebellar mutism syndrome (CMS) is a severe neurological complication of tumour surgery in the posterior fossa in childhood. The incidence is reported between 8 and 39%, where CMS sets in within days of surgery and resolves within months, yet long-term sequelae are seen in most patients. This prospective cohort study investigates the course of CMS and the surgical cause of the syndrome. POPULATION AND METHODS: We included 500 children with a tumour in the posterior fossa with planned surgery or open biopsy. Enrolment was conducted between 2014 and 2020 in 26 centres in ten European countries. Speech, neurological symptoms and surgical procedure were registered in predefined standardized forms pre-operatively and at three post-operative follow-ups within one year. PRELIMINARY RESULTS: A total of 426 children underwent primary surgery and were eligible for analyses. CMS occurred in 56 patients (13.1%) one day (median; IQR: 0–2 days) after surgery and resolved within 38 days (median; IQR: 4–52 days). Another 58 patients (13.6%) had less severe speech impairment. Mutism was associated with lower age (OR: 0.91 [95%CI: 0.85;0.98, p=0.014]), medulloblastoma (OR: 2.5 [95%CI: 1.4;4.7, p=0.0036]) and ATRT (OR: 12.9 [95%CI: 3.4;51.9, p=0.00018]) and tumour location in the fourth ventricle (OR: 4.0 [95%CI: 2.3;7.2, p<0.0001]). Preliminary multivariate analyses revealed no significant association between mutism and surgical access. CONCLUSION: CMS is a common complication predominantly seen in younger children after tumour surgery for a medulloblastoma or ATRT in the fourth ventricle. The incidence is not related to the surgical access in this study population.