have an excellent Performance Status (ECOG score 0 or Lansky/Karnofsky ≥ 90), 5 (14.2%) scored ECOG 1–2 and only 4 (11.4%) scored ECOG 3–4. CONCLUSIONS: A multidisciplinary approach with a focus on Performance Status and the potential for neurological recovery is essential in the management of pediatric patients with CNS tumors. Efforts should be aimed at reducing post-surgical morbidity and early rehabilitation to reintegrate patients into society in the long term.

LINC-40. VERY YOUNG PATIENTS AND CENTRAL NERVOUS SYSTEM TUMORS: A SINGLE-CENTER EXPERIENCE IN AN UPPERMIDDLE-INCOME COUNTRY
Claudia Madrigal-Avela, Alfonso Perez-Bauteulos, Martin Perez-Garcia, Rafael Ruvalcaba-Sanchez, Lourdes Vega-Vega, and Gabriela Escamilla-Asiain; Teleton Pediatric Oncology Hospital, Queretaro, Queretaro, Mexico

Tumors of the central nervous system comprise nearly a quarter of all childhood cancers and are the most frequent solid tumor in the pediatric population. Primary central nervous system tumors (PCNST) are a rare and heterogeneous group of tumors associated with high mortality and morbidity. Around 10% of primary CNS tumors occur during the first year of life with almost half of them during the first six months. About 18% of these tumors appear before the age of two years. Very young children differ from older children and adolescents regarding the incidence and location of different histological entities of CNS tumors. We aimed at providing descriptive epidemiological data and report the outcome in a tertiary center from December 2013 to January 2020 for all histological subtypes of primary central nervous system tumors in very young patients defined as patients younger than three years. We collect data from 19 patients treated in an oncology exclusive tertiary center in Mexico between 2013 and 2020. This study aims to relate factors such as age, radiotherapy, surgery, chemotherapy with Lansky Performance Scale and determine the impact, not only in the overall survival, but also in the quality of life.

LINC-41. TREATMENT OF RECURRENT MEDULLOBLASTOMA IN CHILDREN IN LOW INCOME SETTINGS
Roman Khzym, Khrystyna Zapotoczna, Bogdan Romanyshyn, Zoryana Khzym, and Roman Sobko; Western Ukrainian Specialized Pediatric Medical Centre, Lviv, Ukraine

INTRODUCTION: Children with recurrent medulloblastoma after initial therapy have very poor prognosis due to limited second line treatment options and significant treatment-related morbidity. METHODS: A retrospective chart review of 18 children with recurrent or progressive medulloblastoma treated initially with risk-adapted therapy in Western Ukrainian Specialized Pediatric Medical Centre from 2012 to 2019, was performed. RESULTS: All patients received first line multimodal treatment: surgery, distant beam radiotherapy and chemotherapy. Recurrent disease in 11 patients presented with metastatic dissemination and in 7 patients as local relapse. The median time to recurrence was 10 months. The median follow-up after diagnosis of recurrent disease diagnosed was 2 years and 2 months. Second line therapy included re-surgery (11 cases), radiation therapy (10 cases) and various cytotoxic agents as monotherapy or combination - carboplatin, cisplatin, cyclophosphamide, etoposide, methotrexate, temozolomide, lomustine. Patients treated with radiotherapy for salvage had prolonged local control compared to those that received chemotherapy only. On follow-up 8 children are currently alive. CONCLUSION: Recurrent and progressive medulloblastoma had a poor prognosis with a 2-year overall survival (OS) of 28% on different salvage therapy. The variety in the treatment of all patients experiencing recurrence was observed due to low income country settings. The factors that influenced higher survival after recurrence of medulloblastoma were longer time to relapse, and local pattern of relapse/progression.

LINC-42. EPIDEMIOLOGICAL OVERVIEW OF CHILDHOOD CNS TUMORS IN THE NEUROSURGICAL UNIT IN YEREVAN, ARMENIA
Nune Karapetyan1, Samvel Danielyan Harutyunyan1, Saleh Al-Saeed2, Ayman Yousif-Alharbi3, Ata Mazy3; Nida Medicine, Doha, Qatar

INTRODUCTION: Children with primary CNS tumors in children in Qatar has been reported to be 28 days. However, a wide variation in diagnostic times is seen. This study was undertaken to analyze the factors leading to delay in diagnosis. METHODS: Data were retrospectively analyzed for children who had diagnostic delay (PSI > 28 days) from September 2006 to February 2020. Presenting symptoms, number and type of healthcare contacts and presenting symptom interval (PSI) were reviewed. Parental delay (PSI-1) was defined as the date of onset of first symptoms to the date of first healthcare contact. Healthcare delay (PSI-2) was defined as date of first healthcare contact to the date of diagnostic scan. RESULTS: Twenty-four patients were identified with diagnostic delay. Median age at diagnosis was 48.2 (range 5.4–171.6) months with an equal sex distribution. Fifteen (62.5%) patients were older than 3 years, 13 (50%) patients had low grade glioma, 16 (66.7%) had supratentorial tumors and 12 (50%) presented with raised intracranial pressure. Diagnosis was made after a median 3 (range 1–8) healthcare contacts. Nineteen (79%) patients presented to primary care. Median PSI was 132 (31–783) days. Parental delay (PSI-1) was 35 (0–496) days, while healthcare delay (PSI-2) was 41 (0–562) days. Endocrine (241 days) and oculo-visual (184 days) symptoms were associated with the longest PSI. CONCLUSIONS: There was no significant difference between parental and healthcare delay. Endocrine and oculo-visual symptoms: Recurred with longest PSI. Increased awareness is required for early recognition of signs suggestive of CNS tumors.

MEDULLOBLASTOMA (CLINICAL)
MBCL-01. METHYLATION PROFILING OF PEDIATRIC MEDULLOBLASTOMA IN SAUDI ARABIA IN A CLINICAL SETTING PERMITS SUB-CCLASSIFICATION AND REVEALS NEW OUTCOME PREDICTIONS
Musaa Aliashed1, Nahla Mobarak1, Ali Abdullah O. Balbaad1, Yara Baswahi1, Leen Abu Saeheb1, Albandary Alowayny1, Rasha Alaljelaify1, Mariam AlSaeed1, Alam Almutairi1, Fatma Alqabhashi1, Ebtelah Alisam1, Masood Ahmad1, Ayman Al-Banyan1, Fahad E. Alotabi1, Mattea Snuderl2, and Malak Abdelhagag1; Department of Paediatric Oncology, Comprehensive Cancer Centre, King Fahad Medical, Riyadh, Saudi Arabia, 1Radiation Oncology Department Comprehensive Cancer Centre, King Fahad Medical City, Riyadh, Saudi Arabia, 2Department of Biostatistics, Respiratory Medical City, Riyadh, Saudi Arabia

Genomics Research Department, Saudi Urban Genome Project, King Fahad Medical City and King Abdulaziz University for Science and Technology, Riyadh, Saudi Arabia, 3Department of Neuroscience, King Fahad Medical City, Riyadh, Saudi Arabia, 4Department of Pathology, NYU Langone Medical Center, New York, NY, USA

Medulloblastoma (MB) is the most common childhood malignant brain tumor. A methylation profiling study advanced low understandings of MB pathogenesis at the molecular level. MBs can be sub-grouped according to methylation patterns from FFPE samples into Wingless (WNT-MB), Sonic Hedgehog (SHH-MB), Group 3 (G3) and Group 4 (G4) tumors. WNT-MB and SHH-MB sub-groups are characterized by gain-of-function mutations that activate oncogenic cell signalling whilst G3/G4 tumors show recurrent chromosomal alterations. Each subgroup has distinct clin-
MBCL-02. ROLE OF PREOPERATIVE CHEMOTHERAPY IN METASTATIC MEDULLOBLASTOMA: A COMPARATIVE STUDY IN 92 CHILDREN

Andrew Levashov1, Pascale Rose Dhermain1, Levashov Lev, and 5 Mentkevich1, Guérin-Rousseau Dufour1, Stéphanie Beccaria Sidelnikov1

BACKGROUND: Previous pilot studies have shown the feasibility of preoperative chemotherapy in patients with medulloblastoma, but benefits and risks of primary chemotherapy remain unknown. The aim of this study was to evaluate the use of high-dose thiotepa, carboplatin and etoposide (HDEC) in patients with metastatic disease. METHODS: 40 patients with metastatic disease were included in the study: 20 patients were treated with preoperative HDEC and 20 patients with primary surgery. RESULTS: The rate of complete tumor excision was significantly higher in group B than in group A (93.3% versus 57.4%, p=0.0011). Post-operative complications, chemotherapy-associated side effects and local progressions were not increased in group B. Preoperative chemotherapy led to a decrease in the primary tumor size in all patients, 4/38 patients experiencing a distant progression. The histological review of 19 matched tumor pairs (arm A) and 11 matched tumor pairs (arm B) showed that proliferation was significantly reduced and histological diagnosis feasible and accurate even after preoperative chemotherapy. The 5-year progression-free and overall survival rates were comparable between groups. Comparison of the longitudinal neuro-psychological data showed that intellectual outcome tended to be better in group B (the mean estimated mental quotient value was 6 points higher throughout the follow-up). CONCLUSION: Preoperative chemotherapy is a safe and efficient strategy for metastatic medulloblastoma. It increases the rate of complete tumor excision and may improve the neuropsychological outcome without jeopardizing survival.

MBCL-03. RESULTS OF HIGH-DOSE THIOTEPA, CARBOPLATIN AND ETOPOSIDE WITH AUTOLOGOUS HEMATOPOIETIC STEM-CELL TRANSPLANTATION FOR PATIENTS WITH RECURRENT MEDULLOBLASTOMA

Anna Khvostova1, Polina Tolikova1, Ilya Kazantsev1, Tatiana Iukhta1, Andrew Konoplev1, Darya Zvyagintseva1, Elena Mosurova1, Ludmila Zabarovskaya1, Boris Afanasiev1, Olga Zheludkova1, and Yury Punanov1

BACKGROUND: Previous pilot studies have shown the feasibility of preoperative chemotherapy in patients with medulloblastoma, but benefits and risks of primary chemotherapy remain unknown. The aim of this study was to evaluate the use of high-dose thiotepa, carboplatin and etoposide (HDEC) in patients with metastatic disease. METHODS: 40 patients with metastatic disease were included in the study: 20 patients were treated with preoperative HDEC and 20 patients with primary surgery. RESULTS: The rate of complete tumor excision was significantly higher in group B than in group A (93.3% versus 57.4%, p=0.0011). Post-operative complications, chemotherapy-associated side effects and local progressions were not increased in group B. Preoperative chemotherapy led to a decrease in the primary tumor size in all patients, 4/38 patients experiencing a distant progression. The histological review of 19 matched tumor pairs (arm A) and 11 matched tumor pairs (arm B) showed that proliferation was significantly reduced and histological diagnosis feasible and accurate even after preoperative chemotherapy. The 5-year progression-free and overall survival rates were comparable between groups. Comparison of the longitudinal neuro-psychological data showed that intellectual outcome tended to be better in group B (the mean estimated mental quotient value was 6 points higher throughout the follow-up). CONCLUSION: Preoperative chemotherapy is a safe and efficient strategy for metastatic medulloblastoma. It increases the rate of complete tumor excision and may improve the neuropsychological outcome without jeopardizing survival.

MBCL-05. TREATMENT OF CHILDREN WITH MEDULLOBLASTOMA WITHOUT METASTATIC INVOLVEMENT IN THE AGE GROUP OLDER THAN 3 YEARS: RESULTS OF INTERCENTER TRIAL

Andrew Levashov1, Anna Stroganov1, vodka Sergey, Sergey Gorelyshev2, Shavkat Kadirov3, Svetlana Zigalidina1, Stepan Babelyn1, Natalya Subbotina1, Georgy Mentkevich1, Dmitry Sidelnikov1, Vidmante Daylidite1, and Vasily Grigorenko1

BACKGROUND: Previous pilot studies have shown the feasibility of preoperative chemotherapy in patients with medulloblastoma, but benefits and risks of primary chemotherapy remain unknown. The aim of this study was to evaluate the use of high-dose thiotepa, carboplatin and etoposide (HDEC) in patients with metastatic disease. METHODS: 40 patients with metastatic disease were included in the study: 20 patients were treated with preoperative HDEC and 20 patients with primary surgery. RESULTS: The rate of complete tumor excision was significantly higher in group B than in group A (93.3% versus 57.4%, p=0.0011). Post-operative complications, chemotherapy-associated side effects and local progressions were not increased in group B. Preoperative chemotherapy led to a decrease in the primary tumor size in all patients, 4/38 patients experiencing a distant progression. The histological review of 19 matched tumor pairs (arm A) and 11 matched tumor pairs (arm B) showed that proliferation was significantly reduced and histological diagnosis feasible and accurate even after preoperative chemotherapy. The 5-year progression-free and overall survival rates were comparable between groups. Comparison of the longitudinal neuro-psychological data showed that intellectual outcome tended to be better in group B (the mean estimated mental quotient value was 6 points higher throughout the follow-up). CONCLUSION: Preoperative chemotherapy is a safe and efficient strategy for metastatic medulloblastoma. It increases the rate of complete tumor excision and may improve the neuropsychological outcome without jeopardizing survival.

THE AIM OF THIS STUDY WAS TO ESTIMATE TREATMENT TOXICITY AND EVENT-FREE SURVIVAL (EFS) ACCORDING TO THERAPEUTIC PROGRAM, MYC/MYC-N GENE AMPLIFICATION AND MGMT/DNMT (1, 3a, 3b) PROTEINS EXPRESSION IN TUMOR CELLS. From 2016 to 2018 twenty four patients were included in trial. Children underwent adjuvant therapy (craniospinal radiation (CSI) or local radiation therapy (RT) to the relapsed site up to 23.4Gy with 5-azacytidine, 2 cycles methotrexate/5-azacytidine/cisplatin etoposide, 3 cycles 5-azacytidine/ temozolomide - for relapsed group (arm A, n = 5); for patients with de novo medulloblastoma additionally vincristine/carboplatin/etoposide (OPEC) - based induction, CSI 36Gy + local RT to the tumor bed up to 54Gy with 2 cycles OPEC and 2 cycles thiotepa/cisplatin/carboplatin with auto stem cell transplantation (auto-SCT); arm C, n = 8 – for patients with de novo medulloblastoma additionally vincristine/carboplatin/etoposide (OPEC) - based induction, CSI 2 cycles 5-azacytidine/thiophosphamide/carboplatin with auto-SCT, local RT with 5-azacytidine. The combination of 5-azacytidine with local RT or temozolomide was safety and tolerability, Arm C was discontinued due to severe gastrointestinal grade 3/4 toxicity, hemorrhagic syndrome after induction therapy (RT with 5-azacytidine). The combination of 5-azacytidine with thiophosphamide/carboplatin, EFS was 0% in arm A, 50.0 ± 15.5%, 50.0 ± 17.7% in arms B and C, a median follow-up 8.8 ± 1.1 months (arm A), 18.8 ± 2.5 months (arm B), 25.0 ± 4.4 months (arm C). Addition of 5-azacytidine to RT or chemotherapy did not improve EFS and gene MGMT/DNMT amplification positive tumor. There was not determined any prognostic significance of MGMT/DNMT (1, 3a, 3b) proteins expression in this cohort.