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BACKGROUND/OBJECTIVE: The introduction of German regimens, supplementing "standard" chemotherapy with both intravenous high-dose (HD-MTX) and intraventricular (IVENT-MTX) methotrexate, and North American regimens incorporating marrow-ablative chemotherapy with autologous hematopoietic cell rescue (HDCx+AuHCR), report encouraging outcomes for young children with medulloblastoma. We performed a comparative outcomes analysis of treatment strategies for young children with ClMB or A/LCMB. DESIGN/METHODS: Data from 12 prospective multi-center trials published between 2005 and 2019 for children <six-years-old with ClMB or A/LCMB were reviewed; survivals were compared. RESULTS: COG-9921, UKCCSG-CNS9204, COG-P9934 and SJYCO7 employing standard chemotherapy with either no or risk-based irradiation, reported 3-5-year event-free survival (EFS) of 17+/-5%, 33+/-28% (ClMB), 14+/-7% and 13.8+/-9% (ClMB) respectively, with reported EFS of 0% for A/LCMB in UKCCSG-CNS9204 and SJYCO7. HIT-SKK'87, HIT-SKK'92 and HIT-SKK'00 incorporating HD-MTX and IVENT-MTX reported 2-10-year EFS of 30–34+/-10–11% for ClMB and 33+/-27% (HIT-SSK'00) for A/LCMB. Head Start HS-I-II combined, CCG-99703 and HS-III employing induction chemotherapy, with or without HD-MTX, followed by single or tandem HDCx+AuHCR reported 3-5-year EFS of 42+/-14%, 50+/-11% and 27+/-6% for ClMB, with EFS for A/LCMB of 38+/-13% (HS-III). Finally, 5-year overall survivals for ACNS0334, without or with induction HD-MTX, are 39% and 69% respectively for ClMB and A/LCMB combined. CONCLUSIONS: A trend towards better outcomes for young children with ClMB and A/LCMB is observed in trials including *either* HD-MTX and IVENT-MTX *or* including HD-MTX-containing induction chemotherapy and HDCx+AuHCR. Trials excluding HD-MTX, IVENT-MTX and HDCx+AuHCR have poorer outcomes.

MBCL-38. UNUSUAL EXTRANEURAL METASTASIS OF PEDIATRIC EMBRYONAL TUMORS: TWO CASE REPORTS

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We report two cases of unusual extraneural metastasis in patients with embryonal tumors without central nervous system disease progression and prolonged survival. The first patient presented at 16 years of age with atypical teratoid rhabdoid tumor of the cervical spine. The tumor was confirmed to have loss of INI1, SMARCB1 deletion of exons 1–3, and heterozygous deletion of 22q11.2. The patient received treatment initially per ACNS0333 with high dose chemotherapy and tandem autologous transplants. The patient developed a biopsy-confirmed liver metastasis six months from diagnosis and, subsequently, had disease progression including liver metastases, bony lesions, muscle involvement, and lung nodules. Two and a half years from diagnosis the patient has still not had a relapse in the CNS. The second patient presented with medulloblastoma isolated to the posterior fossa at 11 years of age and was treated on SJMB03 protocol with craniospinal irradiation and high dose chemotherapy. He had his first recurrence in the temporal lobe three years post treatment. He had multiple recurrences in the brain over the next five years treated with re-resections, adjuvant chemotherapy, and gamma knife radiotherapy. He then developed cervical lymphadenopathy, bony lesions, liver lesions, and lung nodules. Cervical lymph node biopsy confirmed medulloblastoma. Next generation sequencing from recurrent tumor showed somatic mutations in *p53*, *KDM6A*, and *PPP2R1A*. Fourteen years from treatment, he has now developed a temporal lobe lesion. These cases are notable for prolonged survival despite widely metastatic disease and genomics predicting poor prognosis as well as metastatic disease disproportionate to CNS disease.

MBCL-41. LYMPHOHEMATOPOIETIC TOXICITY IDENTIFIED IN PATIENTS WITH MEDULLOBLASTOMA RECEIVING CRANIOSPINAL IRRADIATION

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BACKGROUND: Medulloblastoma (MB) is the most common malignant brain tumor of childhood. MB easily disseminates through the spinal fluid. Surgery followed by radiotherapy, applied to the entire craniospinal axis (CSI), and adjuvant chemotherapy, represent the treatment of choice for patients aged ≥3 years. Since the bone marrow of the skull and vertebral column are the major hematopoietic organs, we investigated the myelosuppressive effect of irradiation treatment in patients with MB retrospectively. METHODS: Medical records of newly diagnosed MB patients treated at our hospital from 2007–2019 were analyzed. Children <3 years old were excluded because they did not receive CSI to avoid potential neurotoxicity. RESULTS: Medical records of 18 patients (11 males and 7 females, aged 6–26, median 11 years) were reviewed. Eight patients were stratified as high-risk disease and 10 patients with standard risk. All patients received CSI (dosage range 23.4–39.6 Gy based on disease risk) and posterior fossa boost. All patients developed lymphocytopenia (<0.5×109/L) during irradiation, and for 11 of 18 patients, lymphocytopenia (<0.2×109/L) was severe. Although 13 patients recovered from the lymphocytopenia before the initiation of chemotherapy, five patients underwent chemotherapy without recovery. Conversely, only six patients developed neutropenia (<1.0×109/L), and five of the six patients were <10 years old. CONCLUSION: Although infectious episode associated with lymphocytopenia was not observed in this study, CSI treatment in children and adolescents may induce immunodeficient condition particularly in the lymphocytic system. Pediatric oncologists should pay attention to the impaired immunity of patients with MB who receive CSI.

MBCL-43. RECURRENT MEDULLOBLASTOMA – LONG-TERM SURVIVAL WITH A "MEMMAT" BASED ANTIANGIOGENIC APPROACH

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INTRODUCTION: Patients with recurrent medulloblastoma have a poor prognosis with only around 8% of patients surviving at 5 years irrespective of salvage therapy used. We report on 29 patients from four institutions treated with a "MEMMAT" based antiangiogenic combination therapy. PATIENTS AND METHODS: From 11/2006 to 06/2016, 29 patients were diagnosed with a recurrent medulloblastoma (19 first, 10 multiple recurrences). Median age at start of antiangiogenic therapy was 10 years (range 1–27). Subgroup of medulloblastoma was available in 18 patients and was group 3 or 4 in all except two (one WNT, one SHH-infant). For their current relapse patients received an antiangiogenic combination therapy consisting of bevacizumab, thalidomide, celecoxib, fenofibrate, and etoposide, alternating with cyclophosphamide and augmented with intraventricular therapy (etoposide and liposomal cytarabine). RESULTS: As of 01/2020, 8/29 patients are alive at a median of 44 months after recurrence. 6/8 surviving patients are currently in CCR between 66 and 134 months after recurrence that prompted MEMMAT therapy. Two patients are again in remission after intercurrent relapses 105 and 102 months after first starting MEMMAT therapy. Five patients died of another cause (accident, leukemia, septicemia). OS (median 44 months) was 44±10% at 5 years and 39±10% at 10 years, PFS was 33±10% at 5 years and 28 ±9% at 10 years. Therapy was well tolerated and toxicities were manageable. CONCLUSION: Our results suggest that antiangiogenic metronomic chemotherapy has clinical activity in recurrent medulloblastoma. Further investigation with an international phase II study is ongoing (MEMMAT; ClinicalTrials.gov Identifier: NCT01356290).

MBCL-46. TREATMENT OF RECURRENT WINGLESS-ACTIVATED MEDULLOBLASTOMA (WNT-MB) INCORPORATING MARROW-ABLATIVE THIOTEPA AND CARBOPLATIN CHEMOTHERAPY (HDCX) AND AUTOLOGOUS HEMATOPOIETIC PROGENITOR CELL RESCUE (AUHPCR): A DUAL REPORT

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BACKGROUND: Wnt-MB infers an excellent prognosis, and metastatic disease is rare. However, specific treatment strategies and patterns of failure for patients with recurrent Wnt-MB are unknown. We report two cases of