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Use of Alisertib in an adult patient with recurrent atypical teratoid/thaboid tumor: A case report and literature review of AT/RT in adults

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Atypical Teratoid Rhabdoid Tumors (AT/RTs) often affect children under the age of 3 and are the most common malignant CNS tumors in children younger than 6 months. It is very rare to see these tumors in patients older than 6 years of age. We discuss the case of a 14 year old male with AT/RT of the right insula. He had a prior diagnosis of Dysembryoplastic Neuroectodermal Tumor (DNET) at the age of 10, after two years of intermittent headaches, nausea, and seizures, which was treated with conformal radiation and chemotherapy for a year. Following the diagnosis of AT/RT, he underwent radiotherapy, multiple lines of chemotherapy, and two additional debulking surgeries of the left temporal lobe due to continuing progression. He was then treated with Alisertib (an Aurora-A kinase inhibitor) with good response on sequential MRIs after the first three cycles. He progressed after nine cycles of Alisertib and required further debulking surgery. Six years after his AT/RT diagnosis (and 10 years after his DNET diagnosis), the patient expired at the age of 20 due to ongoing progression. To our knowledge, this is only the second reported case of Alisertib use in a non-pediatric AT/RT case. We also performed a literature review of all reported cases of AT/RT in adults between the years 2000 – 2017 and discuss treatment options, patient demographics, and survival.

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Success of stem cell collection and neutrophil recovery in pediatric patients with brain tumours

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BACKGROUND: The use of high-dose chemotherapy (HDC) and autologous hematopoietic stem cell transplant (HSCT) has been used in certain pediatric patients with brain tumours to delay/spare radiotherapy. We aimed to study factors predicting a successful stem cell collection (SCC) and correlate stem cell dose infused with HSCT outcomes. METHODS: A retrospective chart review was undertaken for pediatric patients with brain tumours treated at our centre with HDC/HSCT between 2004-2016. RESULTS: Fifty-five patients were identified (32 male) with median age of 6.3 years at time of SCC (range 0.4-18.7). Patients' diagnoses were medulloblastoma (62%), ATRT (20%), and PNET (18%). Most patients (82%) underwent a single/1-day SCC, while the remaining required 2 SCC procedures. Peripheral blood stem cells were the source in most collections (95%). Successful SCC (CD34 collected greater-than-or-equal-to 2×10^6 /kg/transplant) and ideal SCC (greater-than-or-equal-to 5×10^6 /kg/transplant) was achieved in 85% and 45% of patients, respectively. Use of mobilizing chemotherapy with G-CSF was the only factor associated with achieving an ideal collection, while gender, age, stem cell source, and pre-apheresis peripheral blood CD34 count were not

significant. Higher CD34/kg infused was associated with faster neutrophil engraftment in the first 3 courses of HDC/HSCT and platelet engraftment in the first course. CONCLUSIONS: The majority of SCC for autologous HSCT can be successfully completed with a single apheresis session. Mobilization with both chemotherapy and G-CSF yields higher CD34 compared to G-CSF alone. Higher dose of CD34/kg infused was associated with faster neutrophil and to a more limited scale platelet recovery post-HSCT.

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Cognitive rehabilitation in neuro-oncology: Program development and evaluation

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Background: Brain tumors present unique challenges to patient and family quality of life (QOL). Cognitive dysfunction is common and functionally limiting, with no established treatments. These studies evaluate feasibility and preliminary efficacy of behavioral interventions developed for neuro-oncology patients. Study 1: A randomized controlled trial (N=25 primary brain tumor patients) compared an adapted version of Goal Management Training (GMT, a neuroscience-based integration of mindfulness and strategy training) and a newly-designed supportive psychoeducational intervention (Brain Health Program, BHP) to standard of care. Each intervention comprised 8 individual sessions and at-home practice between sessions. GMT patients' executive functions improved immediately (p=.077, d=1.13), with maintenance at 4-month follow-up (p=.046, d=1.09). Both intervention groups reported improvements in everyday cognitive functioning immediately (p=.049; d's GMT=0.43, BHP=0.79) and at follow-up (p=.001; d's GMT=0.22, BHP=1.01). BHP patients also reported improved mood (p's=.026 & .012, d's=0.61 & 0.62). Study 2: Following a needs assessment about cognitive concerns and QOL in brain metastases patients (N=109) and caregivers (N=31), we developed a novel, brief (3 sessions + homework) Cognitive Support Program to provide education and strategy-training in key areas of concern: executive functions, memory, and communication. Options include caregiver co-training, and in-person or web-based delivery. Preliminary data from a pilot trial in progress demonstrate objective and subjective improvements. Conclusions: Cognitive rehabilitation may be a feasible and effective option for primary or metastatic brain tumor patients, addressing a need that is largely unmet in standard cancer care. Further development and larger trials appear warranted, with capacity for remote delivery recommended.

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Preclinical studies of dianhydrogalactitol (VAL-083) in DIPG, as single agent or as a combination with AZD1775 or radiation

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