Abstracts

AT-09. TREATMENT OF ATYPICAL TERATOID RHABDOID TUMORS (ATRT) OF THE CENTRAL NERVOUS SYSTEM WITH SURGERY, INTENSIVE CHEMOTHERAPY, AND 3-D CONFORMAL RADIATION (ACNS0333). A REPORT FROM THE CHILDREN'S ONCOLOGY GROUP

Alyssa Reddy¹, Doug Strother², Alexander Judkins³, Mark Krailo⁴, Yun Gao⁴, James Douglas¹⁰, Anita Mahajan⁵, Victor Lewis², Claire Mazewski⁶, Fred Laningham⁷, Ian Pollack⁸, Amar Gajjar⁹, and Jaclyn Biegel³; ¹University of Alabama Birmingham, Birmingham, AL, USA; ²Alberta Children's Hospital, Calgary, AB, Canada; ³Children's Hospital of Los Angeles, Los Angeles, CA, USA; ⁴Children's Oncology Group, Monrovia, CA, USA; ⁵MD Anderson Cancer Center, Houston, TX, USA; ⁶Children's Heath Care of Atlanta, Atlanta, GA, USA; ⁷Valley Children's Hospital, Madera, CA, USA; ⁸Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA, USA; ⁹Saint Jude Children's Research Hospital, Memphis, TN, USA; ¹⁰University of Washington, Seattle, WA, USA

BACKGROUND: ATRT is a deadly disease that occurs primarily in young children. Prior cooperative group infant studies (POG-9923/4 and CCG-9921) demonstrated 24-month event-free survival (EFS) of < 10%. The primary objective of ACNS0333 was to determine the 6, 12, and 24 month EFS and overall survival (OS) of children with ATRT treated with intensive multimodal therapy. Secondary objectives included determining feasibility, toxicity and creation of a biologic database. **METHODS:** Patients, age birth to 21 years, were enrolled from 2008 to 2014. Following surgery, they received two cycles of induction chemotherapy (methotrexate, vincristine, cyclophosphamide, etoposide, and cisplatin). Patients without tumor progression received three cycles of high-dose thiopeta and carboplatin with autologous stem cell rescue and involved field radiation therapy. The order of the consolidation and radiation was dependent on patient age as well as extent and location of disease. SMARCB1 alterations were confirmed in all tumors. **RESULTS:** For the entire 65 patient cohort, 24-month EFS and OS were 42% and 53%. For 54 patients < 3 years of age, the 24 month EFS and OS were 39% and 48%. These are significant improvements compared to historical control studies above ($p < 0.025$). Failures were unusual after 2 years. There were two treatment-related deaths during therapy. **CONCLUSIONS:** Intensive, multimodality therapy on ACNS0333 resulted in improved EFS and OS compared to prior cooperative group studies. Although the therapy was tolerable, further intensification is not feasible. Molecular subtyping of ATRT may help stratify patients and identify targeted therapies to improve treatment outcomes even more.