MPTH-09. MOLECULAR MARKERS AND THEIR PROGNOSTIC IMPACT IN PEDIATRIC EPENDYMOMAS
Asuka Araki1, József Virág2, Johannes Gojo3, Monika Chocholous3, Andras Kiss4, Gábor Lotz4, Zsuzsa Schaff4, Miklos Garami2, Manila Antonelli6, Irène Slave3, Thomas Czech7, Balazs Hegedus4,5, and Christine Haberler1; 1Institute of Neurology, Medical University of Vienna, Vienna, Austria; 2Department of Pediatrics, Semmelweis University, Budapest, Hungary; 3Department of Pediatrics, Medical University of Vienna, Vienna, Austria; 42nd Department of Pathology, Semmelweis University, Budapest, Hungary; 5Department of Thoracic Surgery, Medical University of Vienna, Vienna, Austria; 6Department of Radiological, Oncological and Anatomo-Pathological Sciences, Sapienza University, Rome, Italy; 7Department of Neurosurgery, Medical University of Vienna, Vienna, Austria

BACKGROUND: Ependymomas are the third most common CNS tumors in children. To date, extent of resection and patient age are the most important prognostic factors. To refine treatment strategies and improve patient outcome, molecular markers are needed. Recently, the prognostic impact of tenascin-C (TNC) expression and gain of chromosome 1q have been described. Additionally, different molecular subgroups in supra-, infratentorial and spinal ependymomas have been identified including two subgroups characterized by RELA and YAP1 fusion genes in supratentorial cases. METHODS: We have analyzed a series of 75 pediatric ependymomas including 52 infratentorial and 23 supratentorial tumors. Patient age ranged between 0.9 and 21 years. FFPE sections were analyzed using 1q25/1p36 FISH probes and antibodies against TNC, LAMA2, NF-κB, L1CAM and claudin-5. Immunohistochemical expression of LAMA2, NF-κB, L1CAM and claudin-5 was analyzed in addition to 12 supratentorial ependymomas. RESULTS: 1q gain was found in 16%, TNC and Lama2 expression in 67% and 34%, respectively. Gain of 1q and TNC expression were predominantly detectable in infratentorial, whereas claudin-5 was almost exclusively expressed in supratentorial tumors. Claudin5, NF-κB and L1CAM expression was present in 68.6%, 48.6%, and 68.6% of all 35 supratentorial tumors, and a significant correlation between these markers was found. In two tumors with claudin5 and L1CAM expression RT-PCR verified the presence of a RELA fusion, thus confirming claudin5 and L1CAM as markers for tumors with RELA fusion. Patients with 1q gain and TNC expression had a significantly shorter overall survival, whereas no prognostic impact for LAMA2 and claudin5/L1CAM/NF-κB was found. CONCLUSIONS: We confirm the prognostic impact of 1q gain and TNC expression in pediatric ependymomas and show that supratentorial ependymomas with RELA fusion can be recognized by L1CAM/claudin-5 expression. Nevertheless, there was no significant difference in outcome between supratentorial tumors with and without RELA fusion.

Published by Oxford University Press on behalf of the Society for Neuro-Oncology 2015.