


## Journal Article



## Tyrosine kinase expression in pediatric high grade astrocytoma

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**Abstract** The over-expression of several receptor tyrosine kinases in adult high grade astrocytomas (HGA) led to trials of tyrosine kinase inhibitors in these patients. Similar molecular genetic analysis of pediatric HGA is only beginning to be published. Thus it is unclear to what degree these pathways are also involved in the pediatric age group and whether they may also serve as useful therapeutic targets for children with HGAs. Here we investigated the protein expression profile of a series of pediatric HGAs. Following institutional ethical approval, clinical information and tumor samples were obtained for 42 HGA patients. Mean age at presentation was 10.1 years (range 0.13–19.3 years). OS was 12% and PFS was 3.7%. Extent of resection was associated with improved PFS ( $P = 0.0015$ ) with a trend towards improved OS ( $P = 0.08$ ). There was no significant effect of age or adjuvant therapy use on PFS or OS. Immunopositivity for each of the markers was as follows: p53 35%; PDGFR- $\alpha$  45%; PDGFR- $\beta$  31%; PTEN 67%; EGFR wild type 58%; EGFRvIII 2%. No significant effect on OS or PFS was found for any of the markers by log rank analysis. However, all long-term survivors expressed PTEN and were EGFRvIII negative. Further, there were distinct differences in protein expression between pediatric and adult HGAs suggesting that EGFR kinase inhibitors may not be beneficial for treatment of HGA in the pediatric age group and pointing to the need to study pediatric astrocytomas as distinct entities from adult astrocytomas.

**Keywords** Epidermal growth factor receptor - Platelet-derived growth factor receptor - Pediatric astrocytoma - Phosphatase - Tensin homolog

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