New study on pediatric brain stem tumors

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Children's National researcher, Javad Nazarian, PhD, authored a new study entitled, "Comparative Multidimensional Molecular Analyses of Pediatric Diffuse Intrinsic Pontine Glioma Reveals Distinct Molecular Subtypes." The study found, for the first time, two distinct subtypes in pediatric diffuse intrinsic pontine gliomas (DIPG). It was published online in *Acta Neuropathologica*, a leading journal on pathology and pathogenesis of neurological disease.

This project was the first time researchers conducted a detailed analysis of proteome, transcriptome, methylome, and Histone H3 mutation profiles of DIPG specimens. One of the major results of the study was the discovery of two distinct subtypes of DIPGs and the identification of potential molecular pathways that lead to poorer overall survival of patients with histone 3 mutations.

DIPG is an aggressive tumor of the brain stem that cannot be surgically removed and is typically not biopsied due to the invasiveness of the procedure. For these reasons, a lack of tissue samples have contributed to a limited understanding of the tumor biology and hindered the development of treatments to improve survival rates.

"Pediatric DIPGs are almost always lethal, and most children do not survive beyond 18 months with this type of tumor," said Dr. Nazarian. "Our results have shown that a multidimensional molecular analysis can contribute to our understanding of DIPGs and guide future research for developing therapeutics."

Further study and a larger cohort of DIPG specimens are needed to identify all possible subtypes of DIPGs. Children's Research Institute (CRI) at Children's National Health System has generated the only published data on protein profiling of DIPGs. This is the third study on DIPG published by CRI.

Provided by Children's National Medical Center