Comment: Phenotypic diversity and stroke classification in pediatric moyamoya

Al-Yassin et al. describe clinical and radiologic features of children with arterial ischemic stroke (AIS) and moyamoya vasculopathy (MMV), enrolled prospectively over 13 years in 2 large institutional stroke registries. They focused on children < age 5 years, based on clinical observations that younger children have more severe disease. They applied the recently published Childhood Arterial Ischemic Stroke Standardized Classification and Diagnostic Evaluation (CASCADE) classification system to evaluate its utility in capturing the phenotypic spectrum of these children. Strengths of their approach include the use of large long-standing institutional stroke registries populated with data obtained from standardized clinical protocols.

Progress in understanding disease mechanisms and designing treatment for children with AIS is hampered by the limitations of stroke subtype classification systems. This article is one of the first to apply the CASCADE system in a well-described population of children. This study clearly illustrates a number of important limitations of the CASCADE system, and paves the way for improvement. These include its inability to fully capture phenotypic features important in understanding cause of disease (e.g., certain genetically determined syndromes), as well as ambiguity of classification arising from imaging modality (e.g., catheter-based vs noninvasive imaging).

The pathophysiology of MMV is poorly understood, and treatment options are limited. By describing this specific subset and age group, this article provides novel observations and new insights into possible pathomechanisms. Specifically, their study suggests that young children with MMV have a high prevalence of comorbid cardiac and renovascular disease, reflecting underlying genetic disorders with systemic cardiovascular involvement. Clinical implications are immediately obvious, namely that comprehensive cardiac and renovascular investigations should be considered for all young children with MMV. These observations suggest future research studies of this group of children should include strategies to evaluate genotype-phenotype relationships, thereby identifying new treatment targets and improving outcomes.


Rebecca Ichord, MD

From the Departments of Neurology and Pediatrics, Perelman School of Medicine of the University of Pennsylvania, Philadelphia.

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