

# Researchers clarify vasospasm incidence in children with moderate to severe TBI

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Vasospasm, or severe narrowing of blood vessels, is a dangerous complication observed in children with moderate to severe traumatic brain injury. In a paper recently published in *Critical Care Medicine*, investigators at Nationwide Children's Hospital have further defined the prevalence, associated factors and time course for vasospasm in children with these brain injuries.

"Through our study, we found that associated factors in children who developed vasospasm included involvement in a motor vehicle accident, higher Injury Severity Scores, fever at admission and lower Glasgow Coma scores," explains Nicole O'Brien, MD, a [critical care](#) specialist at Nationwide Children's and lead author of the study. "Based on these findings, we recommend aggressive screening for vasospasm in these injured children. A clearer understanding of the potential onset and related factors of vasospasm may offer the opportunity for earlier intervention or even prevention of this debilitating complication."

The prevalence of vasospasm in children with moderate [brain injury](#) was 3 to 8.5 percent, depending on the arterial location of the vasospasm. For children with severe brain injury, the prevalence ranged from 21 to 33.5 percent. The onset of vasospasm ranged from four to five days following the initial injury.

Good neurologic outcomes at one month following injury were seen in 76 percent of children with moderate traumatic brain injury without vasospasm and in 40 percent of children with vasospasm. In children

with severe brain injury, good neurologic outcomes were seen in 29 percent of children without vasospasm and in 15 percent with vasospasm.

The study included 69 children, ages 1 day to 17 years, admitted to the hospital for moderate to severe head trauma. The Glasgow Coma Score, a common indicator for estimating and categorizing the outcomes of brain injury, also was a factor for inclusion in the study. Children with a score of 9-12 were considered to have suffered moderate brain injury, while children with a score of 8 or less were considered to have severe brain injury. Transcranial Doppler ultrasound was used to identify and follow the course of vasospasm in these children.

"To our knowledge, our study is the largest to date and clearly identifies the prevalence, time course and subset of pediatric patients who are at increased risk of developing vasospasm following moderate to severe brain trauma," says Dr. O'Brien, who is also an assistant professor of Clinical Medicine at The Ohio State University. "Unfortunately, vasospasm has been an under-recognized complication in pediatric head trauma patients and there are no current guidelines for the screening or management of [vasospasm](#) in these children. Information gained from this study can serve as an important foundation for the development of practice guidelines to produce better outcomes for children affected by [traumatic brain injury](#)."

**More information:** *Critical Care Medicine*. 2014 Dec 4. [Epub ahead of print]

Provided by Nationwide Children's Hospital

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