

Study shows traumatic brain injury haunts children for years

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Traumatic Brain Injury (TBI) is the single most common cause of death and disability in children and adolescents, according to the Centers for Disease Control. Now, according to a new study by UCLA researchers, the effects of a blow to the head, whether it's mild or a concussion, can linger for years.

Reporting in the May issue of the journal *Neuropsychology*, Talin Babikian, lead author and a UCLA post-doctoral fellow, and senior author Robert Asarnow, a UCLA professor of psychiatry, analyzed 28 selected articles about TBI that were published between the years 1988 and 2007, quantifying for the first time a summary of all of the available literature on the effects of a traumatic brain injury on the developing brain of a child or adolescent.

The key and surprising finding, the authors say, was that over time, children and adolescents with a severe traumatic brain injury appear to fall even farther behind their peers than one would expect, making intervention and monitoring especially important in this group.

Various levels of TBI in children were included in the studies that were reviewed. The extent of a brain injury is typically based on the "Glasgow Coma Scale" or GCS, a standard clinical tool to measure severity of a brain injury. It includes a person's eye/pupil response, motor response, and verbal communication to determine injury severity--mild, moderate, or severe TBI. The children in the studies were sorted by TBI severity and the time since their injury. All three severity levels were examined,

and follow-up exams were done on average 0-5 months, 6-23 months, or 24+ months after injury, for 14 key aspects of neurocognition.

Other key points the authors found:

- Time didn't heal all the worse the injury, the worse the neurocognitive outcome over time, especially on measures of general intellectual functioning and brain processing speed. Indeed, the moderate and severe TBI groups were similarly impaired after examination at 24-plus months.

The authors found that while there was modest recovery in intellectual functioning and attention, weaknesses in many children with even moderate TBI persisted even two years after the injury, compared to children in control groups.

- For children diagnosed with severe TBI, more help was needed. They showed significant problems within months on IQ, executive functioning (processing speed, attention), and verbal memory (both immediate and delayed). After two or more years, all areas studied were impaired.

"The good news is that the studies showed that children with mild traumatic brain injuries and concussions may show some difficulties in cognition initially, but the effects are subtle and typically diminish over time," said Babikian. "The bad news, though, is the existence of a subgroup of patients who show persistent neurocognitive problems and need to be screened and followed.

"And because younger children have more development ahead of them, the same injury can affect a four-year-old and a 12-year-old very differently," she said. "Further, children who suffer a severe brain injury may show a slower rate of development as a group, highlighting the importance of targeted treatment developed specifically for children with severe TBI."

Equally important, said Babikian, is the take-home message of prevention. "Because younger children with a [traumatic brain injury](#) seem to generally do worse than their older counterparts," she said, "the public health implication of this research is a reminder of the importance of the use of protective measures to minimize the effects of a brain injury, when one does occur, as well as prevention through consistent use of helmets and seatbelts."

Source: University of California - Los Angeles

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