Study examines symptom spikes in kids after concussion

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Symptom exacerbations after concussion appeared to be common in a secondary analysis of a clinical trial that included 63 children studied for 10 days after injury, according to an article published online by *JAMA Pediatrics*.

Little is known about the incidence, natural history and clinical significance of activity-related symptom exacerbations after pediatric concussion.

Danny G. Thomas, M.D., M.P.H., of the Children's Hospital of Wisconsin, Milwaukee, and coauthors characterized symptom exacerbations, also called spikes.

The analysis of clinical trial data included 63 children who were asked to complete a postconcussion symptom scale and to record their activities in diaries for 10 days. The children - most were boys - were an average age of almost 14. They sustained a concussion but did not have an abnormal computed tomography scan or require hospitalization.

The authors measured the occurrence of symptom spikes, which were defined as an increase of 10 or more points on the postconcussion symptom scale over consecutive days.

About one-third of the children (20 or 31.7 percent) had symptom spikes, which tended to partially resolve within 24 hours. Of the 20 children who had symptom spikes, four had a second spike but no

children had more than two spikes.

Increased risk for a symptom spike was associated with an abrupt increase in mental activity, such as returning to school and extracurricular activities, from one day to the next, according to the results. However, most spikes were not preceded by mental or physical exertion.

Those patients who experienced symptom spikes tended to have been more symptomatic in the emergency department initially and throughout the observation period, according to the results. Children and who had symptom spikes and those that didn't did not differ on balance and cognition at 10 days after concussion.

Study limitations included using diaries to measure physical activity and the study's small sample size.

"We tentatively conclude that symptom exacerbations from one day to the next are common, largely transient, and not specific to a particular symptom domain. Returning to full days of school raises the risk of a symptom spike on the following day. However, symptom spikes may not be clinically significant events. Further research is needed to determine the causes and consequences of symptom spikes. In the interim, our findings support continuing to advise children to return to activities gradually and in a manner that does not significantly exacerbate symptoms, because even a transient worsening might provoke anxiety and interfere with school reintegration," the study concludes.

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