Medical Xpress

New rule to help identify fractures in young children with head trauma

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A new decision rule will help emergency department physicians determine when to use radiography in young children with minor head injuries. The Canadian-developed rule is published in *CMAJ*.

Head injury is a common reason for children to visit emergency departments, resulting in more than 20 000 visits in Canada and 470 000 in the United States each year. Although termed "minor," these head injuries may have complications such as skull fractures and brain injury. Computed tomography (CT) scans, which are the most effective diagnostic tool, carry an increased risk of cancer, whereas skull radiography carries a very small risk of cancer, costs less and creates less discomfort for children.

There is no consensus on how to treat children with head injury who do not meet the criteria for CT imaging but may still be at risk of complications.

To fill this gap, researchers developed and tested a rule to help emergency department physicians identify children under age 2 who are at risk. This was a two-phase project. In the first phase, they included 811 patients, of whom 49 had skull fractures, to develop the decision tool. In the second phase, they confirmed the validity of the tool in a new group of 856 patients, of whom 44 had skull fractures. Using the decision tool, the researchers identified approximately 90% of skull fractures in children with minor head injuries.

"The 2 predictors identified through recursive partitioning for the development of the rule were parietal or occipital swelling or hematoma and age less than 2 months," writes Dr. Jocelyn Gravel, Department of Pediatrics, Centre hospitalier universitaire (CHU) Sainte-Justine, Université de Montréal, Montréal, Quebec, with coauthors.

"Use of the rule would have decreased the overall number of skull radiographs by about 60% in our study population," they write.

The authors contend that this clinical decision rule will have several outcomes, including better use of health care resources by avoiding unnecessary visits to emergency departments, improved care for children with head trauma, and improved ability of triage nurses to identify children at risk.

However, further research is needed in a variety of settings to ensure consistency and proper use of the rule.

"The authors provide front-line clinicians with objective decision-making criteria, more helpful than 'observation versus CT,' write Dr. Peter Gill, Department of Paediatrics, The Hospital for Sick Children (SickKids) and University of Toronto, Toronto, Ontario, and Dr. Terry Klassen, Department of Pediatrics and Child Health, University of Manitoba, Winnipeg, Manitoba, in a related commentary.

"But perhaps most important, the rule is simple: in children less than 2 years old with a minor head injury who do not meet the criteria for a CT scan, perform a skull radiograph if they are less than 2 months old or they have parietal or occipital swelling. If only all clinical decision rules could be this simple," they conclude.

More information: *CMAJ*, www.cmaj.ca/lookup/doi/10.1503/cmaj.150540

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