Reviewer’s report

Title: Can the FAST and ROSIER adult stroke recognition tools be applied to confirmed childhood arterial ischemic stroke?

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Reviewer: rebecca ichord

Reviewer's report:

This study tackles a critically important problem in childhood stroke, namely the challenge of accurate and early diagnosis. They have taken advantage of a well-described prospectively identified cohort cared for in a systematic and comprehensive manner by an experienced and highly qualified team in a pediatric stroke center. The purpose was to determine whether existing adult stroke identifying instruments (FAST and ROSIER) will correctly identify children with stroke when applied to the pattern of presenting signs and symptoms of children with acute arterial ischemic stroke. The paper is well-written and clearly presented. The data supports the conclusion that children present with similar patterns of signs and symptoms as adults generally speaking, and as such stroke screening tools such as the FAST and ROSIER should theoretically perform with reasonable sensitivity (75-80%) in identifying children with acute stroke. They have appropriately acknowledged the limitations inherent in a retrospective analysis, and the need to extend this study in a prospective cohort so as to evaluate sensitivity in the hands of non-neurologists, and specificity by comparing stroke cases with non-stroke cases. A number of questions emerged in careful review of the data and the analysis, which if addressed may improve the clarity and impact of this paper, as follows:

DISCRETIONARY REVISIONS:

1) Methods: Primary source documentation of the neurologic history and exam: The authors point out in the Discussion section that the retrospective scoring was performed based on review of all available records, including the admitting neurologist’s notes. They have not reported which clinicians’ documentation accurately depicted the child’s deficit – neurologist vs non-neurologist. As the larger problem driving this type of study is to define methods that front-line (non-neurologist) providers can use to identify cases, it would be of great interest to know how the ROSIER scale performed in this cohort when applied to the signs and symptoms documented by ED providers. This may be difficult to do in a retrospective study, but it does get to the fundamental issue of how well front line providers can identify children with stroke. Nonetheless, as this study is a valuable first pass at evaluating the utility of a stroke screening instrument, it would be useful to know if there is a significant discrepancy between neurologist’s and non-neurologist’s capacity to detect and document the presence of these very basic signs and symptoms which are the basis for screening.
2) Results: What is the effect of assigning a negative score on the ROSIER to seizures? The ROSIER scale assigns a -1 for a history of seizure. Children with stroke are known to have a higher incidence of seizure at stroke onset compared to adults. One might expect therefore that incorporating this item in the ROSIER scale in children might actually decrease its sensitivity. It would be interesting to know how the analysis would be affected if this item were removed from the scoring.

3) Results: What is the effect of age? One might wonder how well the instrument performs in very young children, as compared to older children/teens. Signs and symptoms are often more difficult to assess in young infants compared to older children. Was there a difference in the presentation (and thus the performance of the FAST and ROSIER screens) in children < 2 years compared with > 2 years? The sample size might be too small for firm conclusions, but it would be interesting to know if there was an age effect.

MINOR ESSENTIAL REVISIONS:

4). Discussion: On page 6, the authors state that the FAST and ROSIER screens had good specificity in the diagnosis of stroke in this cohort. This would seem to be an erroneous statement. This study evaluated sensitivity only. They have not assessed this tool in non-stroke pts, and so can't make any statements about specificity in this study.

5). Results:

a. “Prior relevant medical history” – appears on pg 5, second paragraph. This is not defined. Please clarify – does this mean previously diagnosed conditions that have a known risk of stroke?

b. Table 1 lists several items under Complaints, which are of uncertain meaning. Please clarify/define: “sudden onset”, "woke from sleep", "worsening symptoms"

c. Table 2 lists “possible aetiology” as one of the classification subtypes. This does not appear as a subtype in the Wraige paper. Please clarify what this means.

d. Table 1 also shows a substantial occurrence of patients with “no lateralizing symptoms”, i.e. 38%. This is puzzling and begs an explanation. If that is the case, how is it that they were suspected to have a stroke? Was stroke suspected on the basis of some other symptom? Or did they get imaging for some other symptom and then found to have a stroke without any lateralizing or focal signs or symptoms? What was the clinical presentation in children with stroke who lacked a focal symptom or sign? Are these the same children who would have failed to be identified by the FAST and ROSIER screens?

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests.