Reviewer’s report

Title: SYSTOLIC BLOOD PRESSURE AS A PREDICTOR OF TRANSIENT ISCHEMIC ATTACK/MINOR STROKE IN EMERGENCY DEPARTMENT PATIENTS UNDER AGE 80: A PROSPECTIVE COHORT STUDY

Version: 0 Date: 19 Oct 2018

Reviewer: Linxin Li

Reviewer's report:

The authors performed a prospective cohort study looking at the age-specific predictive value of systolic blood pressure in differentiating TIA/minor stroke vs. mimics in the ED setting.

They found that SBP was associated with TIA/minor stroke at younger but not at older ages.

The study is well performed and the manuscript is well written. The results are somewhat expected as acute BP increase was reported in the initial development of the ABCD2 score for example. The interaction of age and SBP appears to be interesting, but the clinical implication in reality can be limited.

I have the following major comments:

1. All the results are presented combing TIA and minor ischaemic stroke. Are the results different for TIA vs. minor ischaemic stroke? For ED clinicians, TIA is perhaps more difficult than MS to tackle with as most of the time there is no clinical signs anymore.

2. One of the most important aspect of the study is what exactly the mimics are - this also has implications for the generalizability of the data. Can the authors provide more information of the diagnosis of the mimics?

3. Following point 2, I might have missed it but one of the exclusion criteria is "not having MRI within 7 days". However, from table 1, not all patients had MRI, especially the mimics? Could this result in any selection bias of the mimics as some of the very obvious mimics were included - so obvious that no neuroimaging was required? Please clarity.

4. The inference tree approach is certainly interesting but the cut-offs are therefore going to be data-driven, which might affect the generalizability of the study results. A formal statistical review might be helpful. From a clinician point of view, it is perhaps more interesting to use arbitrary age cut-offs that are commonly used. For example, given the ABCD2 score used age 60 as a cut-off, it would be interesting to see if SBP predicts over the age of 60 (or <60 vs. 60-75 vs. >75).
5. Following point 4, given the ABCD2 score is a well-recognised score, I don't think we necessarily need another clinical tool - as proposed by the authors (i.e. figure 3) for the same triage purpose. On one hand, as shown in figure 3, age is the most powerful predictor - the authors nicely showed that for those aged >76.4y, SBP does not add much information at all - the probability of the event being TIA/MS is >80% anyway. On the other hand, for younger patients, when SBP is less than 140mmHg, the maximum probability would be slightly over 50%. In other words, I can see that the ABCD2 score would also predict very well in the current cohort. What would be more useful would be to see if the predictive value of ABCD2 score can be improved by adding additional points according to SBP at younger ages for example. The components of ABCD2 score are all available in the ED setting and it is very easy to use so it would be important to see how the current study can add to our understanding to an existing score.

6. SBP and DBP are also associated strongly with each other, perhaps also slightly age-dependent. What would the model (table 2) look like if both SBP and DBP were entered?

Minor comments:

Abstract: please be consistent in using TIA or TIA/MS.

Methods: please clarify how BP was taken at ED - i.e. immediately after arrival? blinded by the imaging results? by the study nurse or the ED physician/nurse? sitting/lying? any standard protocol in place?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.
Quality of written English
Please indicate the quality of language in the manuscript:

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.