Reviewer’s report

Title: Multiple aneurysms in subarachnoid hemorrhage - Identification of the ruptured aneurysm, when the bleeding pattern is not self-explanatory. Development of a novel prediction score.

Version: 1 Date: 10 Dec 2019

Reviewer: James Burke

Reviewer's report:

The authors have reasonably responded to most of my critiques. I have two residual concerns:

1. My primary concern is the model's performance is overstated. It's been externally validated on 5 tricky cases — that's great — but, its hardly persuasive evidence that it should be widely applied and/or that it is likely to have robust predictiveness outside that setting.

So, for example, in the results of the abstract it's essential to not merely say, "predicted correctly in all cases, even in the most debatable and challenging cases", but to also point out how many such cases there are (n=5)

2. In terms of modeling complexity — I think the authors raise several very reasonable points. But, if the primary virtue of their algorithm (compared to logistic regression) is help in identifying which variables to include in the model — they need an argument about why that is a virtue in this case. My sense is that this is a situation where we have reasonably strong prior from earlier work that gives us a good idea of what variables should be included in the model. So, why is an algorithm that helps with variable selection helpful? The main concern here, in a small sample, is that the model will be overfit. And the more parameters that the model requires (and this approach effectively fits more parameters than LR) the more likely it is to be overfit. The fact that there is no evidence of overfitting, in a very small external validation dataset, is NOT strong evidence that overfitting doesn't exist. If there were an enormous external validation on a large, relevant sample, this problem would be mitigated. But, given that the external validation is on a tiny sample...it means there is no way to realistically test for overfitting. If so, isn't avoiding overfitting a greater priority than optimizing variable selection?

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

Yes

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

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

No

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I am able to assess the statistics

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