

Letters to the editor

OVERVIEW

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Subarachnoid haemorrhage rules

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Editor – The authors of the article 'Subarachnoid haemorrhage rules in the decision for acute CT of the head: external validation in a UK cohort' have not provided the correct data to support their conclusions and, hence, this article may be quite misleading.¹

The Ottawa subarachnoid rule has been designed to determine which patients presenting to the emergency department with a nontraumatic headache that had reached maximal intensity within 1 hour of onset with normal neurological examination require exclusion of a subarachnoid haemorrhage (SAH) as the cause of the headache.² In order to validate this rule, it is essential that the same entry criteria are used (ie a nontraumatic headache that had reached maximal intensity within 1 hour of onset). The data that this article presented suggest that the inclusion criteria was all patients undergoing a computed tomography (CT) of the head for the investigation of SAH, and they excluded CT requests which included subdural, hypertensive or intracranial haemorrhage as the working diagnosis, and have not listed any other criteria for inclusion. The cardinal feature in the Ottawa study is therefore a headache within 1 hour and, for 63%, this was an instant thunderclap headache. Whereas, for the article, a thunderclap headache only represented 10% of their sample and only 18% had a headache of maximal severity within 1 hour. The indications for the CT for the remaining 82% is therefore key to understanding the article, and any attempts thereafter to calculate a sensitivity and specificity are misleading, as the rules relate to different populations.

If, as the article suggests, the CT were all performed to investigate a SAH, the current European Stroke Organisation Guideline state that lumbar puncture must be performed in a case of clinically suspected SAH if CT or magnetic resonance imaging does not confirm the diagnosis.³ So, for the purposes of the article, all 354 patients who had a negative CT should have had a lumbar puncture. The reality is only 32% of their cohort went onto have a lumbar puncture and, therefore, many of their patients presumably never had a headache for which SAH was being considered.

The National Institute for Health and Care Excellence guidelines (*Subarachnoid haemorrhage due to ruptured aneurysms*) are due in July 2021 and will hopefully review this issue in more detail, including the key issue of whether a negative CT of the head

within 6 hours of the headache onset can safely exclude SAH and remove the need to perform a lumbar puncture.⁴ ■

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References

- 1 Foley RW, Ramachandran S, Akintimehin A *et al*. Subarachnoid haemorrhage rules in the decision for acute CT of the head: external validation in a UK cohort. *Clin Med* 2021;21:96–100.
- 2 Perry JJ, Sivilotti MLA, Sutherland J *et al*. Validation of the Ottawa Subarachnoid Hemorrhage Rule in patients with acute headache. *CMAJ* 2017;189:E1379–85.
- 3 Steiner T, Juvela S, Unterberg A *et al*. European Stroke Organization guidelines for the management of intracranial aneurysms and subarachnoid haemorrhage. *Cerebrovasc Dis* 2013;35:93–112.
- 4 National Institute for Health and Care Excellence. *Subarachnoid haemorrhage due to ruptured aneurysms: In development [GID-NG10097]*. NICE, Expected publication date 21 July 2021.

Response

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Editor – We thank Dr Thompson for the interest in our paper and he raises some valid points.¹ Indeed, we have not strictly adhered to the inclusion criteria of the original Ottawa rule study from Perry *et al*.² Using the clinical information provided on the computed tomography (CT) request we attempted to ascertain, in so far as possible, those patients undergoing a CT of the head for the investigation of subarachnoid haemorrhage (SAH). We included patients whose requests included a working diagnosis of SAH or clinical information such as sudden onset headache, thunderclap headache or 'worst headache of life'. As a retrospective study this represented our best estimation of the patient cohort undergoing CT of the head for the investigation of SAH, although as the author rightly states these patients may not truly have been suspected of this diagnosis. This is evident in the subsequently low proportion of patients in whom a lumbar puncture was performed (32%). We are, as radiologists and as researchers, limited by the clinical information that has been provided in the request. However, a subgroup analysis of patients (n=65; 18%), who do meet the strict inclusion criteria has been performed and detailed in our article. In short, the Ottawa rule was 100% sensitive in this cohort and missed no cases of SAH.

Rather than being misleading, the results of our article may in fact be hypothesis generating. In the larger cohort of patients, using the less stringent inclusion criteria, the Ottawa rule was still 100% sensitive. Although not described in our paper, the