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Q3 Subarachnoid Haemorrhage

The use of non-contrast multislice CT alone is unable to rule out aneurysmal subarachnoid haemorrhage at 24 hours after headache onset.

- ❍ 1. True
- ❍ 2. False

Educational Point: Headache is a common reason for presentation to EDs causing approximately 1%–2% of attendances. While most headache presentations are due to benign pathologies such as tension headaches, subarachnoid haemorrhage (SAH) represents an important potentially life-threatening differential diagnosis. SAH has an incidence of 6–8/100 000 persons/year, and around 30% of survivors will have severe disabilities affecting their daily lives.

Historically, studies suggested that CT detects as many as 93%–95% of SAH if the scan is performed within the first 24 hours after headache onset. Given the life-threatening potential of the diagnosis, most patients therefore received a follow-up LP to bring the miss rate to within a margin that is more comfortable for most clinicians. Unfortunately, LP is unpleasant for the patient, time-consuming, procedurally difficult in some cases, requires technical skill and has potential complications such as ongoing headache and local bleeding. The historical sensitivities listed previously were based on earlier generations of CT scanners than now available, but scanner technology has continually improved to make better detection of SAH possible. In a practice-changing study by Perry *et al* in 2011 showed 100% sensitivity for the detection of SAH provided the scan was performed within 6 hours of headache onset. In this study, patients were only included in the analysis if they had a GCS of 15 and had no focal neurological deficits. This has essentially negated the need for routine LP after a negative CT, if performed within 6 hours of headache onset. Perry *et al* used a wide range of third-generation multislice CT (MSCT), implying a range of image qualities. Since the Perry *et al* study, there have been further improvements for modern MSCT in image noise reduction, resolution and motion artefact that have continued to improve image quality.

A 2021 retrospective analysis aimed to establish if modern MSCT could improve the sensitivity of SAH detection at sequential timepoints from symptom onset, as this could potentially expand the time window within which CT alone can be used to exclude aneurysmal SAH. Patients were imaged with MSCT. The primary outcome was the proportion of patients with spontaneous aneurysmal SAH (identified via coding and confirmed by clinical and radiological records) that had a positive MSCT. The secondary outcome was the proportion of patients with any type of spontaneous SAH that had a positive MSCT.

There were 347 patients with an SAH of whom 260 were aneurysmal SAH. MSCT identified 253 (97.3%) of all aneurysmal SAH and 332 (95.7%) of all SAH. The sensitivity of MSCT was 99.6% (95% CI 97.6 to 100) for aneurysmal SAH and 99.0% (95% CI 97.1 to 99.8) for all SAH at 48 hours after headache onset. **At 24 hours after headache onset, the sensitivity for aneurysmal SAH was 100% (95% CI 98.3 to 100). These data suggest that it may be possible to extend the timeframe from headache onset within which modern multislice can be used to rule out aneurysmal SAH.**

The correct answer is 2.