Stroke diagnosis using HINTS in patients presenting with acute vestibular syndrome: a systematic review

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BACKGROUND

- Patients with posterior circulation stroke presenting with acute vestibular syndrome (AVS-vertigo, nausea/vomiting and gait unsteadiness) represent a clinical dilemma with minimal clinical signs at the time of presentation.
- NIHSS is not reliable and CT scans cannot rule out acute posterior circulation ischaemic stroke.
- The Head Impulse- Nystagmus- Test of Skew (HINTS) test with any of three signs: normal horizontal head impulse, nystagmus that changes direction with gaze, and skew deviation of the eyes is suggestive of a central cause including acute stroke.
- This systematic review examined the effectiveness of abnormal HINTS in posterior circulation stroke in patients presenting with AVS.

METHODS

- We searched MEDLINE (1966 to 21 December 2017), EMBASE (1980 to December 2017), Web of Science and scanned bibliographies of relevant articles to identify studies on clinical features and diagnostic evaluation.
- Two review authors independently screened and identified articles and resolved discrepancies by discussion to reach consensus.
- We included studies in which HINTS was done primarily to identify posterior circulation stroke with diagnosis (infarct or haemorrhage) confirmed using magnetic resonance imaging (MRI).

RESULTS

- Six studies (644 patients) with acute vestibular syndrome were identified.
- Two studies had patients with ABCD2 score of 4 and one study examined the relationship between truncal ataxia and posterior circulation stroke.
- The majority of patients in one study had no symptoms at the time of examination.
- Acute stroke was confirmed in 218 patients (29.8%).

RESULTS

- There was a 11-fold increased risk in posterior circulation stroke in patients with a positive HINTS test compared to those with no abnormality (O.R. 11.50, 95% CI 3.50-38.32).
- For any stroke, the pooled sensitivity using HINTS was 93.6% (95%CI 90.3-97.0%) and specificity was 71.6% (95%CI 67.4-75.8%).
- The overall positive predictive value was 60.4% (95%CI 55.1-65.8%) and negative predictive value was 96.0% (95%CI 93.9-98.1%).
- In 2 studies, a positive HINTS identified stroke with greater accuracy than conventional MRI up to 48 hours after symptom onset.
- In one study, HINTS significantly outperformed the ABCD2 score in detecting stroke in AVS.

CONCLUSION

- The data suggest that the HINTS test seems to be able to differentiate posterior circulation stroke from peripheral causes in AVS.
- Since posterior circulation stroke has the same risk of poor outcome as those of anterior circulation, methods to use HINTS in emergency settings need further investigation.