Systematic review of the diagnostic accuracy of a graded gait and truncal instability rating in acutely dizzy and ataxic patients

Carlos Martinez¹, Zheyu Wang¹, Sergio Carmona³, Jorge Kattah³, Alexander A Tarnutzer⁴,⁵
¹ Hospital Jose Maria Cullen, Santa Fe, Argentina; ² Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University School of Medicine, Baltimore, USA; ³ Johns Hopkins Bloomberg School of Public Health, Baltimore, USA; ⁴ Fundacion San Lucas para la Neurociencia, Rosario, Argentina; ⁵ University of Illinois College of Medicine, Peoria, IL; ⁶ Neurology, Cantonal Hospital of Baden, Baden, Switzerland; ⁷ University of Zurich, Zurich, Switzerland;

BACKGROUND and AIM

• In patients with acute prolonged vertigo/dizziness and/or gait imbalance, distinguishing peripheral from central causes is essential.
• Whereas subtle ocularmotor bedside examinations (e.g., HINTS [Head-Impulse Nystagmus Test-of-Skew]) have excellent diagnostic accuracy, their application may be limited by lack of training of frontline providers and absence of vertigo/dizziness and nystagmus.
• Alternatively, a graded gait/truncal instability (GTI, grade 0-3) rating may provide useful.

METHODS

• We searched MEDLINE/Embase for studies reporting on diagnostic accuracy of bedside examinations in acute vertigo/dizziness.
• We identified 6521 unique citations, examined 104 full manuscripts, and analyzed 21 studies.
• Results were stratified by GTI-ratings used and stroke location.

RESULTS

• We included 17 articles (n=904 patients), with ischemic strokes (n=613) and acute-unilateral vestibulopathy (n=237) being most frequent.
• Grade 2/3 GTI had moderate sensitivity (66.6% [95% confidence-interval=62.4-70.8%]) and specificity (79.2% [73.8-84.6%]) for predicting a central cause, whereas grade 3 GTI had a lower sensitivity (45.9% [42.1-49.7%]) and higher specificity (97.6% [95.7-99.5%]).
• In comparison, diagnostic accuracy of HINTS (sensitivity=96.8% [94.7-98.9%]; specificity=95.3% [92.2-98.5%]) was higher.
• When combining central-nystagmus patterns and grade 2/3 GTI, sensitivity was increased to 74.4% [68.8-79.9%] and specificity to 98.5% [95.5-100.0%].
• Sensitivity for detecting stroke (GTI 2/3) was not significantly different for AICA and PICA strokes (74.1% [62.9-85.4%] vs. 80.5% [75.2-85.7%]).
• Sensitivity was higher in studies using the GTI-rating (grade 2/3) by Lee compared to Moon (71.7% [66.7-76.6%] vs. 57.4% [49.6-65.2%]).

CONCLUSIONS

• Compared to HINTS, the diagnostic accuracy of the GTI-rating was inferior.
• When combined with central nystagmus-patterns, GTI-diagnostic accuracy could be improved.
• Furthermore, the GTI-rating can be readily applied in the ED-setting and also in patients with acute imbalance syndrome.