

**Table 1** Characteristics of included studies

Study	Design	Setting	Inclusion criteria	Exclusion criteria	No. of patients	Mean age (years)	Sex (%men)	Assessment	Diagnostic standard	Time to scanning (h)
Chen et al <sup>(16)</sup>	Prospective, single-centre	ED/HA	AVS (>24hours with vegetative symptoms without presence of other brainstem signs)	Focal neurological signs, tinnitus, viral illness	24	64±13 <sup>a</sup>	63%	‘4 Step ocular motor signs examination’ <sup>b</sup> within 12 hours of referral	MRI with DWI and time-of-flight MRA	99.1±45.6 <sup>a,c</sup> Range: 24-216 <sup>c</sup>
Choi et al <sup>(11)</sup>	Prospective, single-centre, observational	ED/ND	AVS (signs and symptoms <24 hours), No previous history of vertigo	BPPV, MS, orthostatic hypotension, drug induced, cardiac arrhythmia, history of neurological disease	23 <sup>d</sup>	59±14 <sup>a,d</sup>	50% <sup>d</sup>	HINTS plus <sup>e</sup> ABCD2 Caloric test	MRI with DWI and MRA; PWI performed if diagnosis not identified	91% < 24 <sup>c</sup> Range: 0-84 <sup>c</sup>
Newman-Toker et al <sup>(13)</sup>	Prospective, cross-sectional, single centre	ED/HA/ 3 months follow up for peripheral vestibular disorders	AVS lasting more than 1 hour and within 1 week of onset and ≥1 stroke risk factor	Symptoms lasting <24 hours, history of recurrent vertigo, Menière’s disease, vestibular migraine, idiopathic recurrent vertigo, BPPV, lethargy preventing examination	190	61.0 (52.0–70.0) <sup>f</sup>	60.5%	HINTS (plus variants) ABCD2	MRI with DWI (n=186) & CT (n=4). Repeat delayed MRI if clinical signs suggestive of central cause	All < 24 <sup>g</sup>
Batuecas-Caletrio et al <sup>(34)h</sup>	observational	ED/HA	AVS	Not available	91	55.8 <sup>a</sup>	Not available	HINTS	MRI	Not available
Kerber et al <sup>(14)</sup>	Prospective, single-centre observational	ED/small number OP and HA	Persistent dizziness (vertigo/gait imbalance/light-headedness) at time of assessment, nystagmus or gait imbalance.	Age <18 years, unable to consent, symptom onset >14 days at presentation, chronic dizziness, BPPV, MS, moderate to/severe new CNS abnormalities, contraindication to MRI	202 <sup>i</sup>	60.6 (51.0-71.3) <sup>f,j</sup>	72% <sup>j</sup>	HINTS ABCD2	MRI with DWI	36 (26-111) <sup>c,j</sup> Range: 24-336 <sup>c</sup>
Carmona et al <sup>(15)</sup>	retrospective, observational, descriptive, cross-sectional	ED	AVS	Not available	114	57.9±11 <sup>a,k</sup>	42%	HINTS Caloric test Pure tone audiogram Ataxia grade Asynergy <sup>l</sup>	MRI with DWI and MRA	Range: 12-48 <sup>g</sup>

AVS: acute vestibular syndrome; BPPV: benign paroxysmal positional vertigo; DWI: diffusion weighted imaging; ED: emergency department; HA: hospital admissions; ICH: intracerebral haemorrhage; MRA: magnetic resonance angiography; MRI: magnetic resonance imaging; MS: multiple sclerosis; ND: neurology department; OP: outpatients; PWI: perfusion weighted imaging

- a. Mean  $\pm$ SD (if available)
- b. 4 step test incorporated horizontal head impulse test, directionality of nystagmus, skew deviation and vertical smooth pursuit
- c. Time of symptom onset to neuroimaging
- d. 86 patients included in main study, only 23 were symptomatic at time of examination and therefore had HINTS examination. Demographic data is only available for the 86 patients combined
- e. HINTS plus= addition of new hearing loss as a predictor of inner ear or cochlear nucleus stroke which is uncommon in AVS
- f. Median (IQR) (if available)
- g. Time from presentation to medical services to neuroimaging
- h. Only abstract available in English
- i. 320 patients recruited into study; 48 excluded as diagnosis of stroke made without MRI, 70 excluded for not having HINTS examination
- j. Data presented in patients who were in the stroke group (n=29) in the non-stroke group n=243. 46% of patients were male and the median(IQR) age of 56.1 (48.6, 66.5). The median (IQR) time from symptom onset to scanning was 145 (48-238) hours for the non-stroke group.
- k. Average age presented is for patients in the stroke group n=42. In the non-stroke group (n=72), average age (mean $\pm$ SD) was 43.3 $\pm$ 14.9 years.
- l. Inability to sit up from supine