

* Comparison of acute vertigo diagnosis and treatment practices between otolaryngologists and non-otolaryngologists:
A multicenter scenario-based survey

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RESEARCH ARTICLE

Comparison of acute vertigo diagnosis and treatment practices between otolaryngologists and non-otolaryngologists: A multicenter scenario-based survey

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- Acute vertigo is a common and challenging problem encountered in the departments of otolaryngology, emergency medicine (EM), and internal medicine (IM).
- More than 1/3 of Americans visit a health care provider for dizziness during their lifetime.
- 2.5% of ED visits in the emergency department (ED).

* Introduction:

➤ The aim of the study was to investigate differences in diagnosis [Dix-Hallpike test, the head impulse, nystagmus, and the test of skew (HINTS) procedure, and imaging modalities] and treatment (pharmacological treatments and the Epley maneuver) by otolaryngologists and non-otolaryngologists in emergency medicine settings.

* **Objective:**

- We used a multicenter case-based survey for the study.
- Four clinical vignettes of acute vertigo (posterior canal benign paroxysmal positional vertigo, vestibular neuritis, Meniere disease, and nonspecific vertigo) were used.

* Materials and methods:

➤ Total 151 physicians from all study sites participated in the study:

- ✓ 84 non-otolaryngologists (48 emergency physicians and 36 internists).
- ✓ 67 otolaryngologists.

➤ The study used a questionnaire which consisted of 50 questions and two sections. The questions were prepared by two board-certified EM physicians, two board-certified IM physicians and two board-certified otolaryngologists, and were based on real patient situations.

➤ The multivariate analysis indicated that otolaryngologists ordered fewer CT scans (odds ratio (OR), 0.20; 95% confidence interval (CI), 0.07-0.53) and performed fewer HINTS procedures (OR, 0.17; 95% CI, 0.06-0.46), but used the Dix-Hallpike method more often (OR, 2.36; 95% CI, 1.01-5.52) for diagnosis compared to non-otolaryngologists.

* **Results:**

➤ For treatment, otolaryngologists were less likely to use the Epley method (OR, 0.19; 95% CI, 0.07-0.53) and metoclopramide (OR, 0.09; 95% CI, 0.01-0.97) and more likely to use sodium bicarbonate (OR, 20.50; 95% CI, 6.85-61.40) compared to non-otolaryngologists.

Table 1. Physician characteristics and knowledge.

Variables	Total (n = 151)	Otolaryngologist (n = 84)	Non-otolaryngologist (n = 64)	p value
PGY, y, Median (IQR)	5.0 (4.0–8.0)	6.0 (4.0–8.0)	5.0 (3.0–9.0)	0.22
Female sex, No. (%)	32 (21.1)	18 (26.9)	14 (16.7)	0.13
Physician's experience and knowledge about vertigo care				
Number of patients/month, No. (%) by study site				<0.01
1: 0/month	1 (0.7)	0 (0)	1 (1.2)	
2: 1–5/month	46 (30.5)	9 (13.4)	37 (44.1)	
3: 6–10/month	50 (33.1)	15 (22.4)	35 (41.7)	
4: 11–20/month	22 (14.7)	14 (20.9)	8 (9.5)	
5: 21/months or more	32 (21.2)	29 (43.28)	3 (3.6)	
Cost of MRI, No. (%) by study site				0.60
1: 5000 yen (\$44)	3 (2.0)	1 (2.8)	0 (0)	
2: 15000 yen (\$133)	80 (53.0)	18 (50)	27 (56.3)	
3: 50000 yen (\$444)	60 (40.0)	15 (41.7)	20 (41.7)	
4: 80000 yen (\$710)	8 (5.3)	2 (5.6)	1 (2.1)	
Detection of CT by study site				0.76
1: 1%	38 (25.2)	3 (8.3)	16 (33.3)	
2: 2%	32 (21.2)	10 (27.8)	11 (22.9)	
3: 5%	44 (29.1)	14 (38.9)	10 (20.8)	
4: 10%	31 (20.1)	9 (25.0)	8 (16.7)	
5: 30%	6 (4.0)	0 (0)	3 (6.3)	
Rule to take head CT before brain MRI, No. (%) by study site	20 (13.4)	3 (8.3)	14 (30.4)	<0.01
Limitation in obtaining brain MRI by study site				0.30
1: Available for 24 hours	82 (54.3)	17 (47.2)	27 (56.3)	
2: Some limitation but available for 24 hours	59 (39.1)	13 (36.1)	19 (39.6)	
3: No limitation but cannot take MRI at night	6 (4.0)	2 (5.6)	2 (4.2)	
4: Only obtain MRI in daytime with some limitation	4 (2.7)	4 (11.1)	0 (0)	
5: Without MRI	0 (0)	0 (0)	0 (0)	

IQR, interquartile range; CT, computed tomography; MRI, magnetic resonance imaging; PGY, post graduate year.

Table 2. Results of bivariate analysis in diagnosis by physician type.

	Total (<i>n</i> = 151)	Otolaryngologist (<i>n</i> = 84)	Non-otolaryngologist (<i>n</i> = 64)	<i>p</i> value
BPPV				
Perform head CT, No. (%)	62 (41.3)	20 (30.0)	42 (50.6)	<0.01
Perform brain MRI	26 (17.3)	16 (23.9)	10 (12.1)	0.08
Perform Dix–Hallpike test, No. (%)	142 (94.0)	62 (92.5)	80 (95.2)	0.51
Perform HINTS procedure, No. (%)	105 (72.4)	44 (69.8)	61 (74.4)	0.58
Percentage of central causes, mean. (SD)	10.2 (8.6)	9.0 (8.9)	11.2 (8.4)	<0.05
Vestibular neuritis				
Perform head CT, No. (%)	61 (40.4)	26 (38.8)	35 (41.7)	0.74
Perform brain MRI	43 (28.5)	28 (41.8)	15 (17.9)	<0.01
Perform Dix–Hallpike test, No. (%)	78 (51.7)	35 (52.2)	43 (51.2)	1.00
Perform HINTS procedure, No. (%)	110 (74.8)	40 (62.5)	70 (84.3)	<0.01
Percentage of central causes, mean. (SD)	11.7 (10.1)	12 (8.2)	11.5 (11.4)	0.25
Meniere disease				
Perform head CT, No. (%)	36 (24.0)	15 (22.4)	21 (25.3)	0.71
Perform brain MRI	24 (16.0)	15 (22.4)	9 (10.8)	0.07
Perform Dix–Hallpike test, No. (%)	79 (52.7)	41 (61.2)	38 (45.8)	0.07
Perform HINTS procedure, No. (%)	95 (65.1)	39 (60.9)	56 (68.3)	0.39
Percentage of central causes, mean. (SD)	12.3 (11.7)	13.2 (12.1)	11.5 (11.4)	0.31
Nonspecific vertigo				
Perform head CT, No. (%)	112 (74.7)	41 (61.2)	71 (85.6)	<0.01
Perform brain MRI	96 (64)	44 (65.7)	52 (62.7)	0.74
Perform Dix–Hallpike test, No. (%)	90 (60.4)	48 (72.7)	42 (50.6)	<0.01
Perform HINTS procedure, No. (%)	103 (71.0)	45 (70.3)	58 (71.6)	1.00
Percentage of central causes, mean. (SD)	25.2 (19.2)	25.2 (19.3)	25.2 (19.2)	0.86

BPPV, benign paroxysmal positional vertigo; CT, computed tomography; MRI, magnetic resonance imaging; HINTS the Head Impulse, Nystagmus, Test of Skew procedure.

Table 3. Results of bivariate analysis in treatment by physician type.

	Total (n = 151)	Otolaryngologist (n = 84)	Non-otolaryngologist (n = 64)	p value
BPPV				
Prescribe metoclopramide, No. (%)	106 (70.2)	38 (56.7)	68 (81.0)	<0.01
Prescribe anti-histamine, No. (%)	100 (66.2)	42 (62.7)	58 (69.1)	0.41
Prescribe sodium bicarbonate, No. (%)	61 (40.4)	39 (58.2)	22 (26.2)	<0.01
Prescribe Epley maneuver, No. (%)	117 (77.5)	41 (61.2)	76 (90.5)	<0.01
Recommend admitting, No. (%)	81 (54.0)	26 (39.4)	55 (65.5)	<0.01
Vestibular neuritis				
Prescribe metoclopramide, No. (%)	142 (94.0)	59 (88.1)	83 (98.8)	<0.01
Prescribe anti-histamine, No. (%)	116 (76.8)	55 (82.1)	61 (72.6)	0.17
Prescribe sodium bicarbonate, No. (%)	85 (56.3)	61 (91.0)	24 (28.6)	<0.01
Prescribe Epley maneuver, No. (%)	8 (5.3)	1 (1.5)	7 (8.3)	0.08
Recommend admitting, No. (%)	137 (90.7)	66 (98.5)	71 (84.5)	<0.01
Meniere disease				
Prescribe metoclopramide, No. (%)	109 (72.2)	44 (65.7)	65 (77.4)	0.14
Prescribe anti-histamine, No. (%)	113 (74.8)	53 (79.1)	60 (71.4)	0.35
Prescribe sodium bicarbonate, No. (%)	88 (58.3)	61 (91.4)	27 (32.1)	<0.01
Prescribe Epley maneuver, No. (%)	9 (6.0)	3 (4.5)	6 (7.1)	0.73
Recommend admitting, No. (%)	98 (64.9)	44 (65.7)	54 (64.3)	1.00
Nonspecific vertigo				
Prescribe metoclopramide, No. (%)	97 (64.2)	39 (58.2)	58 (69.5)	0.18
Prescribe anti-histamine, No. (%)	98 (64.9)	43 (64.2)	55 (65.5)	1.00
Prescribe sodium bicarbonate, No. (%)	76 (50.3)	51 (76.1)	25 (29.8)	<0.01
Prescribe Epley maneuver, No. (%)	18 (11.9)	4 (6.0)	14 (16.7)	0.04
Recommend admitting, No. (%)	97 (64.2)	37 (55.2)	60 (71.4)	0.04

- There were significant differences in acute vertigo diagnosis and treatment practices between non-otolaryngologists and otolaryngologists from a vignette-based research.
- These differences might be caused due to variations in the guideline of each specialty. To improve acute vertigo care in Japan, standardized educational systems for acute vertigo are needed.

 **Conclusion:**