Research Article

Diagnostic Value of the Video Head Impulse Test in Patients with Vertigo: Can It Be Used as a Screening Tool?

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Highlights

- Pinpointing the site of lesion and severity for vertigo issues is tricky
- vHIT may not be suitable as a general screening tool for patients with vertigo

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ABSTRACT

Background and Aim: Several laboratory tools are used to evaluate balance disorders but, there is still no screening test to determine the site and the severity of the lesion. The aim was to investigate whether video Head Impulse Test (vHIT) can be used as a screening test in patients with chronic or recurrent vertigo and dizziness.

Methods: The files of 965 patients who were followed up in our vertigo outpatient clinic were reviewed retrospectively. Vestibulo-Ocular Reflex (VOR) gains and saccadic movements of the right and left lateral canals in the vHIT test, and Canal Paresis (CP) in the Caloric Testing (CT) were noted.

Results: A total of 325 patients were included in our study. In CT results, the group that CP was most frequently detected was Menière's Disease (MD) group (71 patients (74.7%). While vHIT results were found to be pathological in the vast majority of patients in the Vestibular Neuritis (VN) group (72.7%), the results were found to be normal at the highest rate in the vestibular migraine group (77.9%). Correlation analysis showed a significant but weak correlation between the degree of CP in the CT and the VOR gains of the lateral canals in vHIT in all groups.

Conclusion: Although it has high sensitivity in cases with VN and vestibulopathy, we think that vHIT cannot be used as a screening tool in patients with vertigo, especially for chronic cases, since its sensitivity rate differs in the long term according to the cause of the disease.

Keywords: Video head impulse test; videonystagmography; screening tool; correlation; vestibulopathy; caloric testing

Introduction

Vertigo, which is a common cause of emergency and outpatient clinic visits, is defined as a false sense of motion. Large population-based studies have shown that vertigo affects about 15% to 20% of adults yearly. Vestibular vertigo is related about a quarter of dizziness complaints and has an annual incidence of 1.4% and a 12-month prevalence of 5% [1]. As people get older, they become more susceptible to vestibular vertigo, with its occurrence becoming increasingly common as age advances. Additionally, it is significantly more prevalent among women, with a rate approximately two to three times higher compared to men [1]. Because it is a subjective complaint, the differential diagnosis of vertigo is primarily depending on the anamnesis. Although several laboratory tools are used to evaluate balance disorders, there is still no test to figure out the severity and the site of the pathology. Videonystagmography (VNG) is the main instrument used for the differential diagnosis of vertigo. It analyzes and records eye movements caused by Vestibulo-Ocular Reflex (VOR) with video imaging technology through an eyeglass with an infrared camera. It consists of caloric, oculomotor, and positional tests. Among them, Caloric Testing (CT), which is accepted as a gold standard tool, is the most extensively used objective method for the diagnosis of peripheral vestibular disorders [2]. An abnormal caloric response can be seen in some peripheral vestibular diseases, including Vestibular Neuritis (VN), labyrinthitis, Meniere's Disease (MD), and ototoxicity. But it has some limitations, such as evaluation of only the horizontal semicircular canal at very low frequencies. Therefore, a normal caloric response does not indicate the absence of vestibular pathology. In addition, it makes patients uncomfortable and may cause nausea and vomiting.

Recently, with the development and spread of technology, it has become feasible to measure the semicircular canals, utricle, and saccule separately. While video Head Impulse Test (vHIT) and the CT show the function of the semicircular canals, cervical Vestibular Evoked Myogenic Potential (cVEMP) and ocular Vestibular Evoked Myogenic Potential (oVEMP) show the sacculus and utriculus, respectively [2].

The video head impulse test is a non-invasive, simple method that lets recording of overt and covert catch-up saccades by measuring eye acceleration and angle with the help of video glasses after the head is swung on a smooth axis that fits the semicircular canals. It is easy to use and does not cause nausea and dizziness. With vHIT, 6 semicircular canals in both ears can be evaluated separately at high frequencies. The customary evaluation of the effectiveness of the VOR is through the measurement known as gain. It is identified by determining the relationship between the area under the curve of eye velocity and the area under the curve of head velocity, specifically during the occurrence of a head impulse. A normal VOR gain is expected to be close to 1.0. Reduced VOR gain, especially less than 0.79, may indicate peripheral vestibular loss [3]. The video head impulse test is also able to detect invisible (catch-up covert saccades) or visible (catch-up overt saccades). In various studies involving different vestibular disorders, vHIT has been found to exhibit a high level of specificity (ranging from 90% to 100%). However, its sensitivity has been reported to be comparatively low, ranging from 34% to 56%, when compared to CT [4-8]. The vHIT and CT, both employed for assessing horizontal VOR (hVOR), can yield dissimilar results within the same individual. This disparity may be attributed to differences in the methods of stimulation and the vestibular branches they target. Additionally, their sensitivity varies depending on the specific vestibular disorders being investigated. For instance, the caloric test tends to be more effective in detecting vestibular dysfunction in cases of MD, Vestibular Migraine (VM), and vestibular schwannoma, whereas the vHIT excels in diagnosing patients with VN [2]. It was explained in a study that CT gives more effective results, especially in MD patients, based on cell theory. This theory posits that the crista ampullaris, responsible for detecting angular VOR, consists of two distinct cell types: type I and type II cells. Type I hair cells are primarily responsible for detecting high-frequency head movements, while type II cells are tasked with detecting low-frequency movements. As MD predominantly affects type II cells, the caloric test demonstrates greater sensitivity compared to vHIT in identifying vestibular irregularities in these patients [9].

In our outpatient clinic, we generally start laboratory

tests with vHIT in patients with subacute, recurrent, or chronic balance disorders since it is a quick and inexpensive test that is easy to perform. But the main question that needs to be answered is whether this test can be used as a screening tool. There is still no consensus in the literature on this issue. The aim of our study was to investigate whether vHIT can be utilized as a screening test in individuals with chronic or recurrent vertigo and dizziness. Because there is no more reliable test, the CT, which is considered the gold standard, was used to compare the reliability of vHIT as a new test method in our study.

Methods

In our tertiary referral center, after taking the history and physical examination, laboratory tests, including audiometry, VNG, and vHIT are performed for differential diagnosis and monitoring in most cases with vertigo and dizziness regardless of their preliminary diagnosis. The files of 965 patients who were followed up between January 2016 and May 2021 were reviewed retrospectively. 325 patients who had both vHIT and VNG tests were included in the study.

Inclusion criteria for this study were:

• Patients followed in our balance disorders referral center

• Patients who had both vHIT and VNG tests

Exclusion criteria for this study were:

• Patients with missing test batteries

• Patients who did not attend follow-ups regularly

Patients eligible for the study were grouped according to their diagnosed diseases as MD, VM, VN, idiopathic recurrent or bilateral vestibulopathy, Cervicogenic Dizziness (CD), central pathology, and non-specific. An informed consent form was obtained from all patients before the procedure.

The 1995 criteria of the American Academy of Otolaryngology-Head and Neck Surgery for the diagnosis of MD and the Neuhauser criteria for the diagnosis of VM were considered [10, 11].

Neuhauser criteria for definite VM:

- Recurrent moderate or severe vertigo attacks

- A diagnosis of migraine according to the 2004 classification of the International Headache Society

- Accompaniment of at least one of migraineous headache, photophobia, phonophobia, visual and other auras to at least two vertigo attacks

- Exclusion of the causes which may lead to this picture by appropriate investigations.

Neuhauser criteria for probable VM:

- Recurrent moderate or severe vertigo attacks

- Presence of at least one of the following:

a- A diagnosis of migraine according to the 2004 classification of the International Headache Society

b- Accompaniment of migraineous symptom to at least two vertigo attacks

c- Accompaniment of migraine triggers to more than 50% of vertigo attacks before attacks: certain foods, sleep irregularities, hormonal changes

d- Response to migraine treatment in more than 50% of the attacks

e- Exclusion of the causes which may lead to this picture by appropriate investigations.

The VN group consisted of patients who were hospitalized in our clinic in the acute period and followed up and treated. Both the VNG and vHIT test were done in the subacute phase with VN patients (3 weeks after an acute attack). Patients who did not have hearing loss in the audiometry test and had low VOR gain in vHIT or unilateral Canal Paresis (CP) in the CT were evaluated in the idiopathic vestibulopathy group. Patients with bilateral reduced or absent bithermal caloric stimulation and chronic unsteadiness and oscillopsia were accepted as bilateral vestibulopathy. Patients with an anamnesis of neck pain, neck injury, or neck pathology were defined as CD after excluding other possible vestibular and central causes of dizziness and vertigo by history, examination (e.g. positional, cerebellar, vestibulospinal system, vestibulo-ocular system, etc.) and laboratory tests (e.g. complete blood count, vitamin B12, folate, etc.). In the central group, patients who did not have peripheral vestibular findings in examination and laboratory tests, and who had a history of circulatory disorders and neurological pathology were included. Patients who could not be diagnosed, who had no apparent findings in their examinations, but whose complaints of vertigo and dizziness continued, were evaluated in the non-specific group. Benign Paroxysmal Positional Vertigo (BPPV), which is the most common cause of peripheral vertigo, is also the most frequently detected disease in our outpatient clinic. However, patients diagnosed with BPPV were not included in our study, since vHIT and VNG tests were not routinely applied to such patients. Because it is easily diagnosed with positional test maneuvers no further laboratory test was needed for all

BPPV patients.

VOR gains and saccadic movements of the right and left lateral canals in the vHIT test, and oculomotor test parameters in the VNG test, and CP and Directional Preponderance (DP) in the CT were noted. For recording hVORs, EyeSeeCam® vHIT (Interacoustics, Middelfart, Denmark) and for the bithermal CT, the Otometrics ICS Chartr 200 VNG and Air Caloric System (GN Otometrics A/S, Denmark) was used in our audiology laboratory. While performing vHIT, unpredictable head impulses with a velocity of 120–150°/s were applied to the participant with amplitudes of roughly 10° to 20° from center to horizontal or vertical and 15 records were held separately on each side. A gain value of the horizontal canal below 0.79, and overt and covert refixation saccades were considered as abnormal [6].

During CT, horizontal eye movements were recorded with a binocular video-oculography system. Following each irrigation, the maximum Slow Phase Velocity (SPV) of nystagmus was calculated. To determine DP and CP in the CT, Jongkees formula was used and a response difference of more than 25% between the two ears was defined as CP and a result more than 30% was defined as DP [4]. Jongkess formula was calculated as:

CP=(right cold+right warm)–(left cold+left warm)/(left cold+right cold+left warm+right warm)

DP=(left cold+right warm)–(right cold+left warm)/(left cold+right cold+left warm+right warm)

Correlation analyses between the CP degree in the CT and the VOR gains in the vHIT were also determined and evaluated statistically.

Statistical analysis

The normality of numerical variables was assessed using the Kolmogorov-Smirnov test and Skewness and Kurtosis values were examined. Accordingly, it was determined that some scales did not show normal distribution. Therefore, to compare numerical variables with no normal distribution between the two groups, non-parametric tests were employed. To compare numerical variables with no normal distribution, Kruskal Wallis (non-parametric) test; and to compare numerical variables with normal distribution, one-way ANOVA test was used. The presentation of numerical variables included either mean±standard deviation or median values. Categorical variables, on the other hand, were compared using the appropriate form of the Chi-square test and were presented as numbers and percentages.

For correlation analyses, Spearman's rank test was utilized. Statistical significance was determined with a threshold of $p<0.05$. All analyses were conducted using SPSS statistical software (IBM SPSS Statistics, Version 22.0. Armonk, NY: IBM Corp.).

Results

A total of 325 patients, 95 with MD, 95 with VM, 22 with VN, 39 with recurrent or bilateral vestibulopathy, 24 with CD, 33 with central pathology, and 17 with non-specific diagnosis, were included in our study. The age and sex distribution of the patients in all groups are shown in Table 1. According to the statistical analysis, while there was a significant difference between the groups in terms of gender, no significant difference was found in terms of age ($p<0.05$, $p=0.634$; respectively). The difference in gender was in favor of women for all patient groups, consistent with what is expected in the literature, and this difference was most notable in the VM group, again in line with the literature [1].

In CT results, the groups in which CP was most frequently detected were MD (71 patients i.e. 74.7% of the group), VN (19 patients, i.e.86.4% of the group), and vestibulopathy (35 patients, i.e. 89.8% of the group) ($p<0.0001$). When the results were analyzed in terms of DP, it was observed in 24.2% (23 patients), 27.3%

Table 1. Age and sex distribution of the patients in all groups

	MD (n=95)	VM (n=95)	VN (n=22)	Ves. (n=39)	CD (n=24)	CEP (n=33)	NS (n=17)	p
Age [(Mean ± SD (min-max)]	51±11.4 (24-85)	45.3±11.7 (7-79)	48.4±14.02 (24-84)	54.1±16.1 (23-82)	49.4±11.3 (27-70)	58.7±12.2 (32-80)	53.4±12.3 (32-78)	0.634*
Sex (male/female)	34/61	11/84	9/13	17/21	7/18	11/22	6/11	<0.05**

MD; Meniere's disease, VM; vestibular migraine, VN; vestibular neuritis, Ves.; vestibulopathy, CD; cervicogenic dizziness, CEP; central pathology, NS; non-spesific

* One way ANOVA, ** Kruskal Wallis test

Table 2. Type of caloric test and video head impulse test pathologies in the patients within the groups

			MD	VM	VN	Ves.	CD	CEP	NS	Total
Caloric test	Normal	N	24	60	3	4	24	27	15	157
		% within group	25.3%	63.2%	13.6%	10.2%	100.0%	81.8%	88.2%	48.3%
	CP	N	71	35	19	35	0	6	2	168
		% within group	74.7%	36.8%	86.4%	89.8%	0.0%	18.2%	11.8%	51.7%
	DP-No	N	72	87	16	29	23	30	17	274
		% within group	75.8%	91.6%	72.7%	74.4%	96.0%	90.9%	100.0%	84.3%
	DP-Yes	N	23	8	6	10	1	3	0	51
		% within group	24.2%	8.4%	27.3%	25.6%	4.0%	9.1%	0.0%	15.7%
vHIT	Normal	N	53	74	6	17	15	19	12	196
		% within group	55.8%	77.9%	27.3%	43.8%	62.5%	57.6%	70.6%	60.3%
	Abnormal	N	42	21	16	22	9	14	5	129
		% within group	44.2%	22.1%	72.7%	56.4%	37.5%	42.4%	29.4%	39.7%
Saccade	No	N	53	80	8	23	18	27	12	221
		% within group	55.8%	84.2%	36.4%	58.9%	75.0%	81.8%	70.6%	68%
	Overt	N	42	15	14	16	6	6	5	104
		% within group	44.2%	15.8%	63.6%	41.1%	25.0%	18.2%	29.4%	32.0%
	Covert	N	0	0	0	0	0	0	0	0
		% within group	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

MD; Meniere's disease, VM; vestibular migraine, VN; vestibular neuritis, Ves.; vestibulopathy, CD; cervicogenic dizziness, CEP; central pathology, NS; non-spesific, CP; canal paresis, DP; directional preponderance

(6 patients), and 25.6% (10 patients) of these groups, respectively (p=0.005) (Table 2).

While vHIT results were found to be pathological in the vast majority of patients in the VN group (72.7% of the group), the results were found to be normal at the highest rate in the VM group (77.9% of the group). When the saccadic movements were examined, there was no covert saccade in any group, but overt saccades were observed most frequently in the VN group (63.6% of the group) (p<0.0001) (Table 2).

In Table 3, the number of patients with normal and abnormal caloric and vHIT tests are given. The percentage of patients with abnormal results was highest in the VN group (68.2%). The number of patients with normal results for both tests were highest in the CD group (15 patients i.e. 60%). The number of patients with abnormal vHIT, and normal CT was 7 (7.4%) in the MD group, 9 (9.5%) in the VM group, 3 (12%) in the CD group, 11 (33.3%) in the central pathology group, and 2 (11.7%) in the non-specific group.

In the correlation analysis using Spearman's rank test, a significant but weak correlation was found between the degree of CP in the CT and the VOR gains of the lateral canals in vHIT in all patient groups (r=0.3, p=0.001) (Figure 1). There was a statistically significant difference in the correlation analysis between the sum of ipsilateral SPV and ipsilateral VOR gains in the CT in all patient groups, and a weak correlation was found (r=0.2, p=0.035) (Figure 2).

Table 3. Comparison of video head impulse test and caloric test results for each group

	vHIT		Caloric testing		
			Normal	Abnormal	Total
Meniere's disease	**Normal**	**n**	13	40	53
		%	13.7%	42.1%	55.8%
	Abnormal	**n**	11	31	42
		%	11.6%	32.6%	44.2%
Vestibular migraine	**Normal**	**n**	44	30	74
		%	46.3%	31.6%	77.9%
	Abnormal	**n**	16	5	21
		%	16.8%	5.3%	22.1%
Vestibular neuritis	**Normal**	**n**	2	4	6
		%	9.1%	18.2%	27.3%
	Abnormal	**n**	1	15	16
		%	4.5%	68.2%	72.7%
Vestibulopathy	**Normal**	**n**	3	14	17
		%	7.9%	35.8%	43.7%
	Abnormal	**n**	1	21	22
		%	2.5%	53.8%	56.3%
Cervicogenic dizziness	**Normal**	**n**	15	0	15
		%	62.5%	0.0%	62.5%
	Abnormal	**n**	9	0	9
		%	37.5%	0.0%	37.5%
Central pathology	**Normal**	**n**	13	6	19
		%	39.4%	18.2%	57.6%
	Abnormal	**n**	14	0	14
		%	42.4%	0.0%	42.4%
Non-specific	**Normal**	**n**	10	2	12
		%	58.8%	11.8%	70.6%
	Abnormal	**n**	5	0	5
		%	29.4%	0.0%	29.4%

vHIT; video head ımpulse test

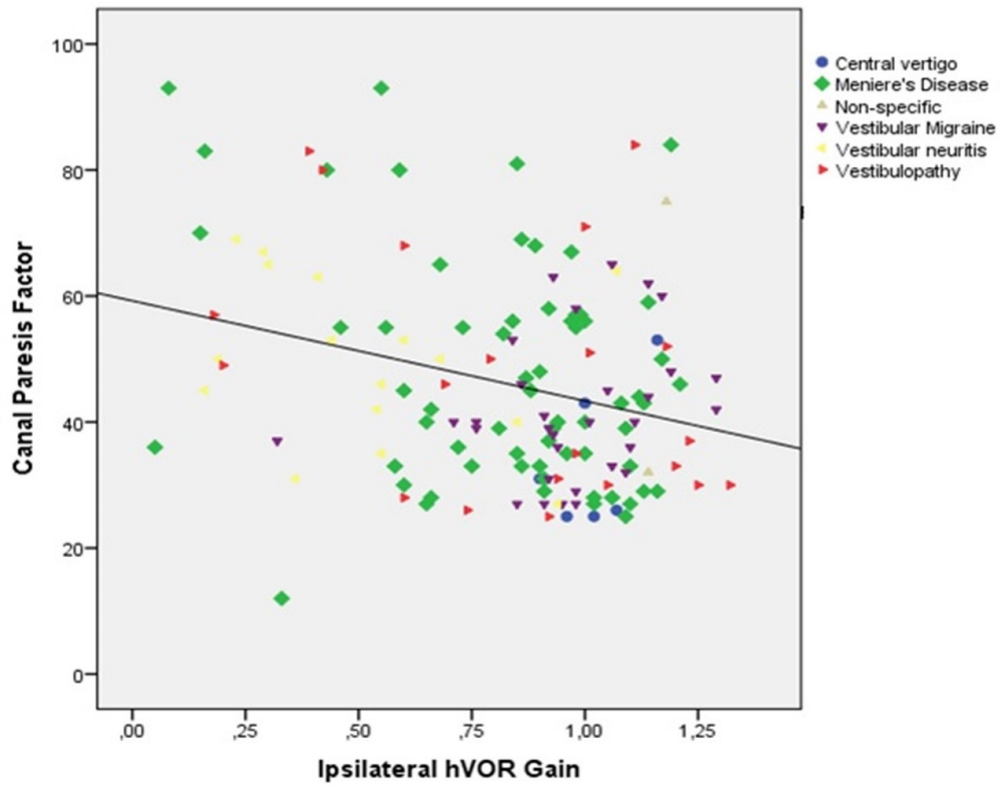

Figure 1. Correlation analysis between the degree of canal paresis in the caloric testing and the vestibulo-ocular reflex gains of the lateral canals in video head impulse test in all patient groups. hVOR; horizontal vestibulo-ocular reflex

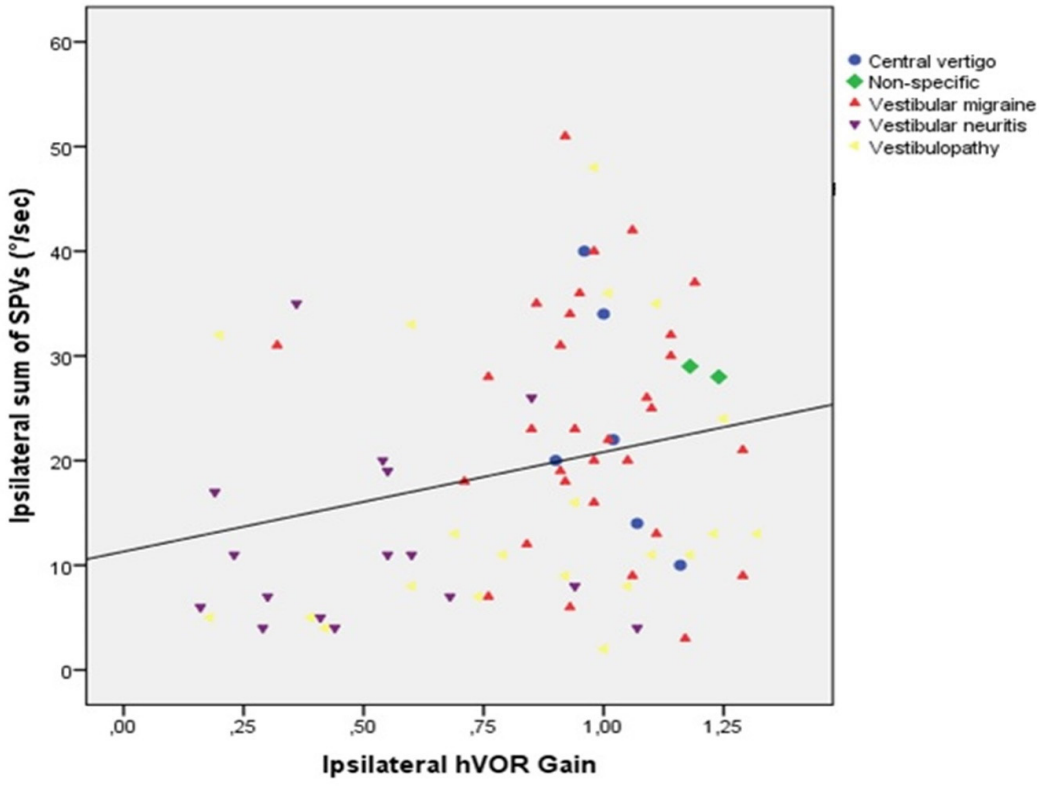

Figure 2. Correlation analysis between the sum of ipsilateral slow phase velocity and ipsilateral vestibulo-ocular reflex gains in the caloric testing in all patient groups. SPV; slow phase velocity, hVOR; horizontal vestibulo-ocular reflex

Discussion

The purpose of this study was to investigate the results of the vHIT in patients with recurrent or chronic imbalance problems and to infer whether it can be used as a screening test. For this reason, we included all patients followed in our vertigo clinic in the study and were able to compare the results in different patient groups. In CT results, CP was most frequently detected in MD group. While vHIT results were found to be pathological in the vast majority of patients in the VN group, the results were found to be normal at the highest rate in the VM group. Correlation analysis showed a significant but weak correlation between the degree of CP in the CT and the VOR gains of the lateral canals in vHIT in all groups.

As a relatively new tool, vHIT can be used to evaluate patients with recurrent vertigo attacks and chronic imbalance. Furthermore, it gives valuable information in the differential diagnosis of patients with acute vestibular syndrome in both the acute and subacute periods. In a patient with the first attack of acute, spontaneous, isolated vertigo, differential diagnosis of VN and cerebellar infarction must be done in the acute period. An abnormal vHIT indicates VN, whereas in the case of normal vHIT, cerebellar infarction, which is a very serious condition, should be suspected. Therefore, vHIT has also begun to be used in emergency services since it provides more reliable data than the clinical Head Impulse Test (HIT) and is very useful in distinguishing central or peripheral pathology in acute vestibular syndrome. Weeks after an acute vestibular syndrome, if vHIT is still abnormal on one side, the diagnosis of VN can be made retrospectively [3]. Bartolomeo et al. showed that the sensitivity and specificity of vHIT increased up to 86.7% and 100%, respectively, in the case of VN, with caloric weakness between 40 and 65% [4]. They thought that the CT is unnecessary for patients with abnormal vHIT, whereas when the vHIT is normal, CT is mandatory for differential diagnosis. We have done both caloric and vHIT on the same day, 3 weeks after an acute attack in our patients with VN. An abnormal vHIT or CT result was found in 16 (72.7%) and 19 (86.4%) of 22 patients with VN.

Although both the vHIT and the CT are used to measure hVOR, results in the same person may differ between these tests. The possible reason for this may be the stimulation mechanisms and the affected vestibular branches. Moreover, their sensitivities may vary according to different diseases. While CT is more sensitive in MD, VM, and vestibular schwannoma, vHIT is more useful in patients with VN. There must be at least 40% weakness to determine vestibular hypofunction detected by the CT in vHIT [2]. In their study, Mahringer and Rambold [6], investigated the efficacy of bithermal water CT and vHIT in patients with balance disorders attending a community hospital. They reported that vHIT demonstrated a notable limitation in detecting vestibular abnormalities in patients with significant CP. In a review article, Vallim et al. showed that the sensitivity and specificity of vHIT in comparison to CT were 34% and 94% in patients with chronic vestibular disorders, respectively [12]. This means that vHIT could show correct results in only 1/3 cases. Therefore, they concluded that it could not replace the CT and be used as a screening tool. We had caloric weakness in 168 of 325 (51.7%) patients in our study group. Among them, 72 patients had abnormal vHIT results. Our overall sensitivity rate of vHIT was 42.8% in comparison to CT. We found the highest sensitivity rate of vHIT in patients with VN (78.9%), vestibulopathy (60%), and MD (43,6%).

Furthermore, we assessed the relationship between the degree of CP as measured in the CT and the VOR gains of the lateral canals in vHIT. The analysis revealed a statistically significant but weak correlation, with a correlation coefficient (r) of 0.28 and a p-value of 0.001. Also, when the sum of ipsilateral SPV and ipsilateral VOR gains in the CT were analyzed, we observed a significant but weak correlation between all patient groups (r=0.2, p=0.035). Blödow et al. reported in their study that correlation analysis of all study group indicated a significant but only modest correlation (r=0.4, p=0.03) of CP and VOR gains of vHIT [5]. In a study conducted by Park et al., a comparison was made between the outcomes of CT and vHIT in both patients with vertigo and healthy individuals serving as controls. The study aimed to assess the role of vHIT in identifying lateralization of vestibulopathy. The findings indicated a statistically significant negative correlation between unilateral weakness and the VOR gain of the affected ear. Consequently, the study concluded that the VOR gain measured through vHIT could be considered as a crucial objective parameter for evaluating both unilateral and bilateral hypofunction of the vestibular system [13].

Another clinical application of vHIT is in patients with recurrent vertigo attacks. It can provide valuable information in patients with MD, VM, and recurrent vestibulopathy. In a systematic review conducted by Alhabib and Saliba, where they assessed the efficacy of vHIT in comparison to the CT, it was found that vHIT exhibited a relatively low sensitivity (ranging from 35% to 45%) but a high specificity (90%) when examining the horizontal semicircular canals in patients diagnosed with MD [14]. Blödow et al. conducted a comparative study involving 53 patients diagnosed with VM and MD to assess the sensitivity and specificity of vHIT [5]. Their findings revealed that CT showed abnormal results in 67% of MD patients and 22% of VM patients. On the other hand, pathological vHIT results were observed in 37% of MD patients and 9% of VM patients. Overall, CT was abnormal in 47% of patients compared to 25% for vHIT. McCaslin et al. provided an explanation for the discrepancy between the two tests in patients with MD based on the cell type theory [9]. According to this theory, the crista ampullaris, responsible for angular VOR detection, comprises type I and type II cells. Type I hair cells are involved in detecting high-frequency head movements, while type II cells are responsible for low-frequency movements. Since MD predominantly affects the type II cells, CT exhibits higher sensitivity than vHIT in detecting vestibular abnormalities in these patients. Although BPPV is the most common cause of vertigo with a peripheral origin, we do not perform vHIT in these patients routinely in our clinic. Diagnosis of BPPV can easily be made with positional tests. Because VOR gain is not affected, vHIT shows normal results in these patients with BPPV [15].

Measurement of VOR is believed to be a fundamental tool in the physical examination of patients with acute vertigo. Because it is more sensitive than HIT for the detection of overt and covert saccades, vHIT is commonly used for the evaluation of VOR, especially in acute vertigo. It is also a fast and straightforward test without any discomfort and is easy to interpret. Therefore, vHIT has begun to be used for evaluation of VOR in chronic cases. According to van Esch et al., the substantial high positive predictive value of vHIT suggests a strong association between an abnormal vHIT result and an abnormal CT outcome. As a result, there is no need for further CT when vHIT indicates an abnormality [16]. They concluded that vHIT could be used as the first test in patients with balance disorders. To support this, we think that the evaluation of patients with vertigo should be begun with the vHIT test. However, it has some limitations such as low sensitivity, especially in chronic cases, and requires training, practice, and learning to recognize artifacts.

Conclusion

In conclusion, although it can give important information and has high sensitivity in cases with vestibular neuritis and vestibulopathy, we think that video Head Impulse Test (vHIT) cannot be used as a screening tool in patients with vertigo, especially for chronic cases, since its sensitivity rate differs in the long term according to the cause of the disease. Caloric Testing (CT) still seems to be the gold standard test in the diagnosis of vertigo. Nevertheless, it is not a bad idea to start with vHIT to evaluate dizzy patients since it can give complementary information to CT fast and easily.

Ethical Considerations

Compliance with ethical guidelines

Our study was initiated after approval of the local ethics committee (Institutional Review Board of the Sakarya University Board of Ethics. 05.07.2021/292) and performed following the Declaration of Helsinki principles.

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Authors' contributions

OKE: Study design, acquisition of data, and drafting the manuscript; MSY: Study design and supervision, interpretation of the results, and critical revision of the manuscript; SGE: Literature review, data collection; MK: Data collection, drafting the manuscript; AK: Statistical analysis; MG: Interpretation of the results and critical revision of the manuscript.

Conflict of interest

There are no competing financial interests.

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