

CLINICAL FEATURES OF THE POSITIONAL NYSTAGMUS AND THE POSITIONING NYSTAGMUS ON VESTIBULAR DIAGNOSIS IN ELDERLY

Valor clínico dos nistagmos posicional e de posicionamento no diagnóstico vestibular de idosos

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ABSTRACT

Purpose: to study the importance of positional nystagmus and positioning in vestibular assessment in the elderly. **Method:** retrospective descriptive study. It was analyzed evaluation charts of 70 patients aged over 60 years submitted of vestibular assessment. These charts were divided into two groups: group A composed of 35 charts with evaluation results of the positional nystagmus and vestibular diagnosis and group B with 35 charts with the results of the evaluation positional nystagmus and vestibular diagnosis. **Results:** nystagmus position highlighted a significant number of peripheral vestibular dysfunction in Group A and nystagmus positioning a large number of positional vertigo in Group B, in which, also, was founded a prevalence of normal results. No significant differences it was found between the two groups for the variables, gender and age. **Conclusion:** the nystagmus position test allowed identifying peripheral vestibular disorders and positioning nystagmus to identify positional vertigo, pointing that the introduction of the latter test was useful but not replace the nystagmus position evaluation.

KEYWORDS: Diagnosis; Elderly; Dizziness; Vertigo

■ INTRODUCTION

According to the Brazilian Institute of Geography and Statistics (IBGE)¹, the Brazilian population has changed in its demographic pattern. The number of elderly people has increase and it's a society in accelerated aging process. Data from 2010 showed that the percentage of children aged 0 to 15 years old accounted for about 24.1% and the number of aged people over 65 years accounted

for 7.4%. Studies have proved that the prevalence of dizziness achieve up to 85% in the population aged over 65 years². Aging carries many changes in the systems responsible for maintaining balanced body, including the vestibular ones³. Dizziness is one of the most common symptoms caused by degenerative processes of hair cells, otoliths, ganglion cells and nerve endings of the Vestibular System and Peripheral Central⁴. Senescence is a precursor of multiples changes related to balance disorders such as vertigo and dizziness, hearing loss, tinnitus, balance disorders, gait disturbances and occasional falls⁵. Dizziness until the age of 65 is the second highest symptom prevalence worldwide. In individuals older than 75 years, the prevalence is bigger, around 80%⁶.

One of the peripheral vestibular disorders that can affect the elderly is benign paroxysmal positional vertigo (BPPV)^{7,8} which is characterized clinically by the episodes of intense vertigo, during seconds and triggered by certain head movements^{9,10}. Depending on its intensity becomes a disabling disorder affecting daily activities¹¹.

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To diagnosis the BPPV and other vestibular disorders otoneurological evaluation is recommended and it requests a detailed history and physical examination based on vestibular system investigation, audiological evaluation, associated with imaging tests. The otoneurological diagnosis needs a multidisciplinary focus, and Otorhinolaryngology, Neurology and Audiology are three areas of expertise who collaborate in this process¹². BPPV is the vertigo of peripheral origin and its diagnosis could reach by the medical history and physical examination, and confirmed by the Dix-Hallpike¹³ and Brandt-Daroff maneuvers¹⁴.

In Brazil, in the 1980s, the otoneurological investigation was performed by the position or positional nystagmus. The patient performs specific movements of the head and the body on a stretcher and he is observed in dorsal and side lying position, head hanging, sitting and right and left cervical torsion. Nystagmus could be present in normal subjects with closed eyes, but with open eyes it is suggestive of vestibular disorder¹⁵.

On the 1990s, the positioning nystagmus was introduced in the clinical evaluation and performed through the Dix-Hallpike and Brandt-Daroff maneuvers. These maneuvers are conclusive for the BPPV diagnosis. In clinical practice, the positional nystagmus does not identify BPPV, but is sensitive to close the diagnosis of the peripheral vestibular dysfunction¹⁶.

A comparative research on the use of positional nystagmus and positioning nystagmus in otoneurological assessment is necessary since the positional nystagmus was replaced by the, positioning nystagmus. It's not justified because these tests have different characteristics and purposes. It is also noteworthy that the two procedures allow indicate peripheral lesions which contribute to the best following up of patients with balance disorders. It is understood that because of these particularities, they are supplementary test.

Based on these, the objective of this research was to study the importance of positional and positioning nystagmus in vestibular assessment of elderly patients.

■ METHOD

This is a retrospective, descriptive and comparative study which was approved by the Ethics and Research Institution of origin and approved under protocol number CAAE: 2891.0.000.107-10.

We selected 70 evaluation charts of patients submitted to vestibular assessment in a private practice of São Paulo, comprising up the period between 2003 and 2007, all aged over 60 years.

The use of patient database was authorized by the clinical directors, and the all charts were divided into two groups:

- Group A: 35 evaluation charts through randomly chosen, with results of the positional nystagmus and vestibular diagnosis performed from January 2003 to December 2005.
- Group B: 35 evaluation charts through randomly chosen, with results of positioning nystagmus and vestibular diagnosis performed from January 2006 to December 2007.

The protocols of this private practice on the period from 2003 to 2005, included the following tests: a) positional nystagmus (NP) test, b) eye movement calibration, c) Recording of spontaneous nystagmus with open and closed eyes, d) gaze nystagmus, e) eye tracking test, f) optokinetic nystagmus, g) swing torsion test h) bilateral caloric tests. Since January 2006 it was included de positioning test (NPST) replacing the positional nystagmus test.

The diagnosis of Peripheral vestibular dysfunction (PVD) was defined by the clinician and was recorded on the copy of the care protocol contained in the medical record. For group A, the peripheral vestibular dysfunction diagnosis considered the following parameters: positional nystagmus, the presence of spontaneous nystagmus with eyes closed and labyrinth preponderance and/or predominance in the caloric test. The central dysfunction was based on changes gaze and optokinetic nystagmus, as shown in other studies^{8,11,15}.

In group B, were considered the presence of spontaneous nystagmus with eyes closed and labyrinth preponderance and predominance in the caloric test, followed by the above-mentioned parameters. The presence of positioning nystagmus confirmed the diagnosis of BPPV, but it was used to compose the peripheral dysfunction diagnosis, since the classical description of BPPV is the positioning nystagmus abnormal with vestibular function examination within normal parameters.

In both group, it was analyzed the distribution by quartiles of age and by gender. We tried to also associate the results of these two tests with vestibular diagnosis.

Data analysis was performed using SPSS 20.0 software and it was use descriptive statistics and parametric tests for two variables: ANOVA - Analysis of Variance, Equality of Two Proportions Testing, and Confidence Intervals for the Mean.

All significant data were highlighted with the use of an asterisk (*) and the parameters of significance remained within the limits of the statistical study of 0.05%.

■ RESULTS

Table 1 shows the comparison by ANOVA test for the results of the age between groups

There was verified no statistically significant association for the age into the two groups.

The data analysis of the association the results with gender for the two groups are present on Table 2.

It was observed that, although females have been most frequent in both groups, no significant association for the gender.

The comparative analysis of the two groups for the positional (Group A) and positioning nystagmus (Group B) it is presented on Table 3 and Figure 1.

It was found significant differences between positive responses for the nystagmus characteristics. So, we verified the frequency of 74, 3% on the Group B and 34,3% on Group A.

Table 4 shows the comparison between the results of vestibular assessment and the results of equality of two proportions testing and frequency.

It was observed there was a significant difference between the results of the normal vestibular diagnosis and PVD in both groups. Group A showed a higher prevalence of PVD diagnosis than Group B. The normal results were more frequent in Group B compared to Group A.

Table 1 – Distribution of the results of age, media, medium and standard deviation of the group A and B

Age	Group A	Group B
Media	67,31	69,31
Medium	66	69
Standard Deviation	6,14	6,54
Cross Validation	9,1%	9,4%
Minimum Age	60	60
Maximum age	80	82
Total	35	35
Confidence Intervals	2,03	2,17
p - value	0,192	

p - value = 0,192 to A-Nova Test

Table 2 – Distribution of the gender on the groups A and B

Gender	Group A		Group B		p-value
	n	%	n	%	
Female	24	68,6%	25	71,4%	0,794
Male	11	31,4%	10	28,6%	

p - value = 0,79 to the Equality of Two Proportions Test

Table 3 – Results and frequency of presence and absence of positional and positioning nystagmus test on the group A and B

Positional/ Positioning	Group A		Group B		p-value
	n	%	p-value	%	
Absence	23	65,7%	9	25,7%	0,001*
Presence	12	34,3%	26	74,3%	

p- value = 0,001 to Equality of Two Proportions Testing

Table 4 – Analysis and frequency of the results of the vestibular diagnosis on the group A and B

Vestibular examination	Group A		Group B		p-value
	n	%	n	%	
Normal	5	14,3%	26	74,3%	0,001*
CVD	2	5,7%	0	0,0%	0,151
PVD	3	8,6%	1	2,9%	0,303
HVD	25	71,4%	8	22,9%	0,001*

p- value = 0,001 to Equality of Two Proportions Testing

Legend: CVD = Central Vestibular Dysfunction

PVD = Peripheral Vestibular Dysfunction

HVD = Hypofunction Vestibular Dysfunction

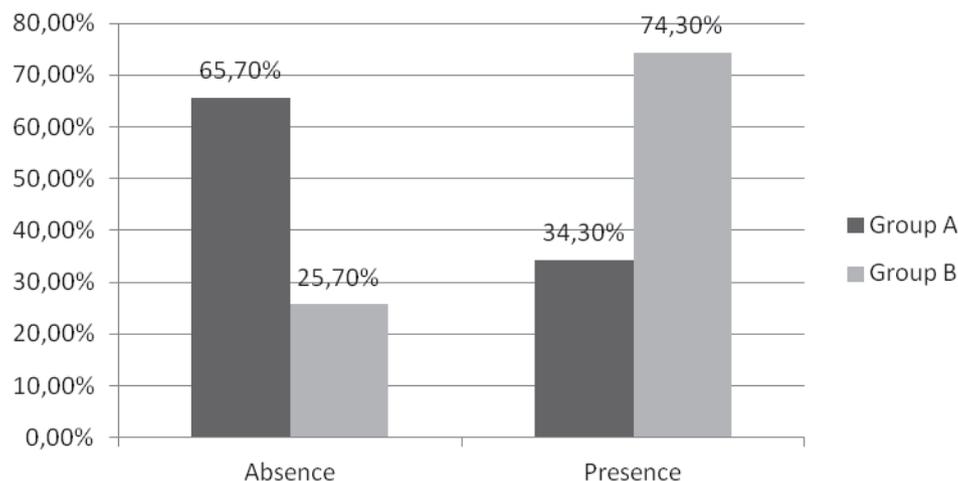


Figure 1 – Percentage distribution of comparison between Group A and B on positional and positioning tests

■ DISCUSSION

The patient's age distribution was homogeneous in both groups. This result that can be attributed to the sample selection criteria since they were included to study the chart records of patients over 60 years of age. Many kinds of dizziness, progressive gait imbalance, falls, and other symptoms are common in elderly patients is very common in elderly people^{17,18}.

In the present study we did not find a significant difference between the results of vestibular evaluation and gender into two groups. There was a higher frequency as the females in both groups, which agreed with others papers¹⁹⁻²¹. Several studies also suggest that dizziness is more prevalent in women^{6, 22}. The present study agrees with studies^{23,24} that found that female gender has the worst performance in muscular skeletal system functionality and in muscle strength compared to males.

The occurrence of NP has been found in fewer than NPST. But it was possible to identify subjects with dizziness, which is not possible through NPST. The NPST identified the positional vertigo, revealing the need for insertion into routine clinical research of nystagmus, because confirm the BPPV, which is common and affects most elderly population^{9,13,25-30}.

To BPPV's treatment is indicated the repositioning maneuvers that replace the debris on the affected side³¹.

It was possible verified significant vestibular diagnosis results between groups A and B. On the group A, 25 of 35 charts were diagnosed with peripheral vestibular dysfunction. In group B, 26 of 35 charts showed normal vestibular responses. The positional nystagmus presence was considered peripheral dysfunction of vestibular system. Authors related that the positional nystagmus beating more than a minute, not fatigable without vertigo without rotational ageotropic nystagmus or with vertical direction (hitting up or down) is suggestive of central affection²³. The NP test would be considered

suggestive of vestibular alteration, and the site of the lesion depends on the all evaluation. The positive results on NPST not characterized vestibular dysfunction because confirmed the displacement of the debris of utricular macula toward posterior semicircular canal. The BPPV featuring could be verified just by Brandt-Daroff or Dix-Hallpike maneuvers^{26, 28,31-35}.

In Both groups were diagnosed vestibular disorders. In group A it was verified peripheral disorder (71.4%), hypofunction disorder (8.6%), central lesion (5.7%) and only 14.3% it was normal. In group B there were 74.3% of normal results, 2.9% with hypofunction disorder and 22.9% with peripheral vestibular dysfunction. On the group B, 74.3% presented positive positioning signals.

The occurrence of peripheral changes presented here agree with studies^{5,33,34} showed that the impaired ability of the central nervous system to

perform the signal processing vestibular, visual and proprioceptive responsible for maintaining body balance, as well as a decreased ability modifications of adaptive reflexes of aging. The occurrence of abnormal results, whether in nystagmus, as well as in vestibular diagnosis, is supported by the literature suggests that the frequency of up to 85% of the population complains of balance over 65 years, manifested by imbalance, gait deviation and instability^{5, 36}.

■ CONCLUSION

It was concluded that the two tests are different. The nystagmus position test was useful to identifying peripheral vestibular disorders and positioning identified positional vertigo. The introduction of the positioning test was positive but not replaces the positional nystagmus test.

RESUMO

Objetivo: estudar a importância da pesquisa do nistagmo posicional e de posicionamento na avaliação vestibular em idosos. **Método:** estudo retrospectivo e descritivo. Foram analisados 70 prontuários de pacientes com idade superior a 60 anos submetidos à avaliação vestibular, divididos em dois grupos: grupo A composto por 35 prontuários com resultados da avaliação do nistagmo posicional e diagnóstico vestibular e grupo B composto por 35 prontuários com resultados da avaliação do nistagmo de posicionamento e diagnóstico vestibular. **Resultados:** a pesquisa do nistagmo de posição destacou uma parcela significativa de disfunção vestibular periférica no Grupo A e a pesquisa do nistagmo de posicionamento um número expressivo de vertigem posicional no Grupo B, que, ainda, apresentou prevalência de resultados normais. Não foram encontradas diferenças significantes entre os dois grupos para as variáveis, gênero e idade. **Conclusão:** a pesquisa do nistagmo de posição auxiliou na identificação de alterações vestibulares periféricas e a de posicionamento identificou a vertigem posicional, revelando que a introdução deste último parâmetro de avaliação foi positiva, porém não substitui o a pesquisa do nistagmo de posição.

DESCRIPTORIOS: Diagnóstico; Idoso; Tontura; Vertigem

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