Presbivertigem como causa de tontura no idoso******

Presbyvertigo as a cause of dizziness in elderly

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******Trabalho Realizado no Serviço de Otoneurologia do Hospital das Clinícas da Universidade Federal de Minas Gerais.

Artigo Original de Pesquisa

Artigo Submetido a Avaliação por Pares

Conflito de Interesse: não

Recebido em 30.10.2007.
Revisado em 13.03.2008; 9.05.2008.
Aceito para Publicação em 9.05.2008.

Abstract
Background: dizziness is a frequent complaint in the geriatric population and has a negative impact in the life quality of these individuals. Aim: to correlate the types of dizziness and alterations in the caloric test and to verify the frequency of presbyvertigo in an elderly population with dizziness. Method: The records of 132 patients aged over 60 and with balance disturbance were reviewed. These patients were evaluated in the Otoneurology Service of the Clinical Hospital of the Federal University of Minas Gerais between the years of 1998 and 2007. The variables considered for analysis were: epidemiologic data, clinical history, associated diseases and the result of the caloric test. Patients with positional and central vertigo were excluded from the analysis. Results: The research sample consisted of 120 patients, with an average age was of 70 years, being 71% (n=87) of sample women. Vertigo with the duration of a few minutes and of a daily frequency was the most frequent type of dizziness. In relation to the caloric test, normal results were observed in 73% of the sample. Altered results included unilateral weakness (14%), bilateral weakness (10%) and hyperactive caloric response (3%). Correlating the caloric test with the type of dizziness, bilateral weakness was associated with postural instability (p=0.006; IC=2 - 419). Conclusion: dizziness in elderly has many causes. Bilateral weakness of the vestibular function can be related to presbyvertigo and must be considered in aged individuals who present unbalance. Metabolic, psychiatric, disautonomic, orthopedic, visual and proprioceptive disturbances may be the cause of dizziness in aged individuals who present normal vestibular evaluation.
Key Words: Aged; Vestibular Function Tests; Dizziness.

Resumo
Introdução: tontura é queixa freqüente na população geriátrica e interfere na qualidade de vida desses indivíduos. Objetivo: descrever as causas de tontura, correlacionar sintomas e alterações na prova calórica e verificar o impacto da presbivertigem como fator primário de tontura em população de idosos. Método: revisão do prontuário de 132 pacientes com mais de 60 anos e distúrbio do equilíbrio corporal, atendidos no ambulatório de Otoneurologia do Hospital das Clínicas da UFMG, no período de 1998 a 2007. As variáveis analisadas foram: dados epidemiológicos, história clínica, doenças associadas e resultado da prova calórica. Casos de vertigem de posição e suspeita de lesão central foram excluídos da análise. Resultados: A amostra constou de 120 pacientes. A idade média foi de 70 anos, sendo 87 (71%) mulheres. Dentre os tipos de tontura, vertigem de alguns minutos de duração e freqüência diária foi mais freqüente. Em relação ao resultado da prova calórica, exame normal foi observado em 73% e, dentre os resultados alterados, hiporreflexia bilateral (presbivertigem) foi observada em 8%. Correlacionando-se com o tipo de tontura, hiporreflexia bilateral associou-se com instabilidade postural (p = 0,006; IC = 2 - 419). Conclusão: tontura no idoso tem causa multifatorial. Perda da função vestibular periférica pode estar relacionada à presbivertigem e deve ser considerada em pessoas idosas com desequilíbrio. Distúrbios metabólicos, psíquicos, disautonômicos, ortopédicos, visuais e de propriocepção podem ser causa de tontura em idosos com exame vestibular normal.
Palavras-Chave: Idoso; Testes de Função Vestibular; Tontura.

Referenciar este material como:
Felipe L, Cunha LCM, Cunha FCM, Cintra MTG, Gonçalves DU. Presbyvertigo as a cause of dizziness in elderly (original title: Presbivertigem como causa de tontura no idoso). Pró-Fono Revista de Atualização Científica. 2008 abr-jun;20(2):99-104.

Introduction

Dizziness is a frequent complaint among the geriatric population. It is a very relevant problem, due to the fact that it is frequently associated with falls, which are a cause of morbidity and death for individuals at this age range.

It is estimated that 85% of the individuals over 65 years-old suffer from dizziness, which may have several causes and develop as imbalance, vertigo and/or other kinds of dizziness. Such manifestations at old age are caused by the increase of sensorial function disturbs and of the integration of peripheral and central information, as well as by the aging of neuromuscular systems and skeletal functions.

There are several conditions that directly affect such functions. The main ones are cardiovascular and orthopedic diseases, decrease of visual acuity and also diseases related to the vestibular system. Among the alterations associated with the vestibular system, presbyvertigo is a very important one, since it is related with the degeneration process of vestibular system structures that occurs at advanced age as a part of the multiple sensorial loss of aged individuals(7-10).

Vestibular test allow an objective evaluation of the vestibular system and the determination of the topodiagnosis associated with the lesion (central or peripherical). Among the commonly performed tests, caloric test is the most important one, since it provides an objective measurement of the peripheral vestibular function of the lateral semicircular canal. Nevertheless, its utility is limited in the case of a primary approach of dizziness in aged individuals, since it only evaluates labyrinth function and does not provide information related to proprioception and visual acuity, which are important for balance at advanced ages(11-15).

The object of the present study was to describe the main causes of imbalance for aged individuals by correlating different kinds of dizziness with caloric test results and also to verify the impact of presbyvertigo as a primary factor associated with dizziness in aged individuals evaluated at the Otoneurology Service - Clinical Hospital, Federal University of Minas Gerais (HC-UFMG).

Method

Were reviewed 132 medical records of aged individuals suffering from corporal balance disturbs and/or vestibular diseases. The patients had been evaluated between 1998 and 2007 at the Otoneurology Service of HC - UFMG.

The studied population consisted of patients aged 60 years or more suffering from dizziness, which had motivated the otorhinolaryngologist to prescribe a vestibular test. Cases in which positional tests had suggested a suspect of benign paroxysmal positional vertigo (BPPV) were excluded from the analysis, as well as patients with neurological symptoms related to dizziness and with vestibular tests suggesting central vestibular disease. Therefore, the study focused on aged individuals with non-positional peripheral dizziness. The analyzed data were concerned type of dizziness, duration, presence of hearing loss, tinnitus, caloric test results and associated diseases.

All the patients had performed vestibular tests by vectoelectronystagmography (Contronic, BRASIL, model SCV 5.1 with four recording channels). For the caloric test, stimulation with water at 44oC and 30oC was performed by means of an otocalorimeter (Contronic, BRASIL, model E-96). Analysis of the results was based on the principle according to which normal labyrinths tend to present a symmetrical caloric response, measurable within a previously known normal range. Assimetric responses would be associated with current or previous labyrinth diseases. Absence or reduction of response would indicate loss of peripheral vestibular function. Vestibular response is measured through the intensity of nystagmus generated through labyrinth stimulation. Such nystagmus derives from the vestibular-ocular reflex, a simple reflex-arc. Therefore, interpretation of the test should be made considering the comparative analysis between the two sides (response symmetry) and the analysis of absolute values (nystagmographic response) (11, 16).

In the analysis of absolute values, the interest was to evaluate whether the nystagmus generated by the caloric stimulus measured by means of the angular velocity of the slow component (AVSC) was above or below the normal range expected for individuals without vestibular disease, which is between 06º/s and 50º/s. Nystagmographic responses above the upper limit of the normal range were considered as hyperactive caloric response. Responses below the lower limit were considered as weakness and no caloric response, defined as the absence of caloric response (16).

In a comparative evaluation of peripheral vestibular function, Jongkees (II) developed a formula for calculus of canal paresis (CP), that is, loss or reduction of a labyrinth function in relation to its contralateral counterpart. Stimulation with water at 30oC and 44oC was used at a 250 ml/min

flow rate. A difference in nystagmographic response higher than 20% between the two sides was considered as canal paresis and the labyrinth presenting the poorest caloric response was considered as the worst one.

The normal standards defining canal paresis vary depending on the medical service. It may range between 20% and 30%, depending on the internal standards. In Brazil, the term paresis is not very often used. Usually, the labyrinth presenting the best response is indicated and the term referred to is labyrinth predominance. In this study CP of up to 20% (16) was considered normal.

In the statistical analysis, the chi-square test was used for the categorical variables and Student's T for continuous variables. Significance level was 5%.

This study was evaluated and approved by the Research Ethics Committee (COEP) of UFMG (ETIC 118/07).

Results

From the 132 records evaluated, nine were excluded from the study for being cases of positional vertigo and three for being cases suggesting central vestibular disease. Therefore, the studied sample consisted of 120 elderly with an average age of 70.4 years ranging between 60 and 90 years. Eighty eight patients (71.5%) were women and thirty five (28.5%) were men.

Vertigo was the type of dizziness most frequently reported by the patients (60.2%), followed by instability (34.1%), fluctuation (3.3%) and syncope (1.6%). Cases of vertigo at a daily basis (32.5%) persisting for some minutes (52.8%) were predominant.

The majority of the patients did not mention diseases related to dizziness (83.6%). As for the otoneurological symptoms, hearing loss and tinnitus were concomitant with dizziness in 77 (62.3%) and 96 (78%) of the patients, respectively. Association of vertigo, hearing loss and tinnitus in the same patient was observed in 45 subjects.

Normal results were verified in the caloric tests of 72.5% of the studied population (Table 1). In the case of abnormal tests, the most common results were unilateral weakness (14.2%) and bilateral weakness (8.3%).

Correlation between otoneurological symptoms and caloric tests indicated that complaints of instability were statistically associated to bilateral weakness (P = 0.006). When put together, bilateral weakness and no caloric response (12 cases) were statistically associated with instability (P=0.0001; OR= 23; IC = 3-504).

TABLE 1. Correlation between caloric test result and types of dizziness in 120 aged individuals with otoneurological symptoms.

Caloric Test Result	Type of dizziness		Total (%)	P	OR(IC)
	Vertigo	Instability			
Normal	59	28	87 (72,5)	1	-
Unilateral weakness	14	3	17 (14,2)	0.36	-
Bilateral weakness	1	9	10 (8,3)	0.006	19 (2-419)
Bilateral no caloric response	0	2	2 (1,7)	-	-
Bilateral Hyperactive Caloric Response	3	1	4 (3,3)	0.61	-
TOTAL	**77**	**43**	**120**	-	-

Discussion

Cases of short duration vertigo at a daily basis were the most frequent otoneurological complaints on this study, which is in agreement with other studies involving geriatric populations(3,7). Dizziness was more common among female individuals, at a proportion of two female for each male patient, which had also been previously demonstrated(6, 8). The chronic aspect of dizziness among the geriatric population may derive from the difficulties related to vestibular compensation at this age range and from the several factors associated with imbalance in aged individuals(1-3).

The normal caloric tests for most of the patients (72.5%) may be related to the multifactorial character, with non-vestibular causes, of dizziness in elderly. At this age range, several factors may lead to instability, such as cardiovascular, neurological and skeletal-muscular diseases, diabetes, postural hypotension and the use of several kinds of drugs, including diuretics, anticonvulsants, antihypertensives, anxiolytics and antidepressants (17-21). The fact that most of the caloric test results are within the normal range corroborates the theory of multifactorial instability for aged individuals, since caloric testing only evaluates the lateral semicircular canal, which is specifically related to vestibular function. Therefore, dizziness in elderly is not necessarily associated with vestibular disease. Special attention should be paid to proprioceptive alterations, which are mentioned as being the primary cause for imbalance in 7% of the aged population (10,22).

BPPV was considered as an exclusion criterion, since it does not affect caloric testing and does not cause chronic instability, although it is commonly found among aged individuals. It is characterized by short vertigo periods related to changes of cephalic movement (18). Previous studies mention a BPPV incidence ranging from 20% to 34% among aged individuals (23-24). The BPPV frequency observed in this study was 7.5% (9/120), which is lower than what has been reported. This may be justified by factors associated with sample selection, since many of the patients with BPPV might not have been prescribed a caloric test by their otorhinolaryngologists, due to the fact that the diagnosis is based on position maneuvers (9).

Among the abnormal caloric test results, unilateral weakness was the most frequent one (17%33; 52%) reflecting a reduction of unilateral vestibular activity caused by current or previous peripheral vestibular disease. Hence, from the 120 patients evaluated, 14.2% were defined as suffering from unilateral peripheral vestibular disease. Therefore, it seems that vestibular diseases as a primary cause for vertigo is not common among aged individuals (3, 18-19).

Bilateral weakness or no caloric response were observed in 12/33 (36%) of the tests with abnormal results. Reduction or absence of bilateral caloric response is not common among young individuals. It is generally associated with infections, autoimmune diseases, idiopathic causes or the use of medicines. In the case of aged individuals, it may be associated with the degeneration of structures that integrate the vestibular system, which derives from the ageing process, known as presbyvertigo. In such cases the patient may suffer from instability due to the loss of peripheral vestibular perception during movements, specially angular ones. Consequently, individuals becomes insecure and search for support as they walk, avoiding changes of direction (8, 10, 14, 19, 25). The association between instability and bilateral weakness of peripheral vestibular function, which has already been mentioned in the literature (26), was clearly demonstrated in this study ($P = 0.0001$). Physical activities such as dance, yoga, etc. are extremely important for the rehabilitation of patients with presbyvertigo (27).

Bilateral hyperactive caloric response, observed in 4/33 (12%) of the abnormal tests, has a limited value as a topodiagnosis, due to the fact that it may correlate with mood variation and therefore cause subjectivity in the answer pattern (28).

The prevalence of specific etiologies varies in the balance disturbs of aged individuals. Some authors even propose that imbalance of aged individuals should be considered as a geriatric syndrome, characterized by multisensory modifications secondary to diseases in several systems and organs (3-4.6). Thus, considering the problems associated with balance, an increase in the level of disturbs of sensorial functions, integration of central peripheric information, as well as aging of neuromuscular systems and skeletal function is observed in aged individuals(4,6).

Conclusion

In order to achieve an accurate evaluation of the causes leading to imbalance, a clinical evaluation must be performed taking into account the patient's complaints, associated diseases, as well as a general evaluation of the systems related with balance and their eventual limitations. Presbyvertigo should be considered as a possible cause for dizziness in aged patients. An adequate approach for dizziness at this age range should include the evaluation of cardiologic, neurological, rheumatologic, visual and proprioceptive risk factors, as well as the revision of drugs that might suppress vestibular function.

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