

Análise do perfil dos pacientes com tontura em um hospital terciário do Rio Grande do Norte

Profile analysis of patients with dizziness in a tertiary hospital in Rio Grande do Norte

Análisis del perfil de pacientes con mareos en un hospital terciario de Rio Grande do Norte

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Yasmin de Medeiros Carvalho

ORCID: <https://orcid.org/0000-0002-3540-1715>

Federal University of Rio Grande do Norte, Brazil

E-mail: yaasmin.dmc@gmail.com

Henrique de Paula Bedaque

ORCID: <https://orcid.org/0000-0003-4674-3056>

Federal University of Rio Grande do Norte, Brazil

E-mail: drbedaque@gmail.com

Wildna Sharon Martins da Costa

ORCID: <https://orcid.org/0000-0003-2130-2625>

Federal University of Rio Grande do Norte, Brazil

E-mail: wildna2009@hotmail.com

Raysa Vanessa de Medeiros Freitas

ORCID: <https://orcid.org/0000-0002-5291-4045>

Federal University of Rio Grande do Norte, Brazil

E-mail: raysafreitas@hotmail.com

Lidiane Maria de Brito Macedo Ferreira

ORCID: <https://orcid.org/0000-0002-2191-8641>

Federal University of Rio Grande do Norte, Brazil

E-mail: lidianembm@yahoo.com.br

Karyna Myrelly Oliveira Bezerra de Figueiredo Ribeiro

ORCID: <https://orcid.org/0000-0002-5935-6760>

Federal University of Rio Grande do Norte, Brazil

E-mail: karynamy@hotmail.com

José Diniz Júnior

ORCID: <https://orcid.org/0000-0002-2327-945X>

Resumo

Objetivo: conhecer o perfil dos pacientes acometidos com tontura em um hospital terciário do Rio Grande do Norte (RN). **Métodos:** foram analisados 444 prontuários em estudo retrospectivo analítico de caráter exploratório, dentro de uma abordagem quantitativa, divididos em quatro grupos: sexo e idade (1), características da tontura (2), comorbidades e fatores de risco (3) e achados no exame físico (4). Atribuímos um $p < 0,05$ como indicador de significância estatística. **Resultados:** dos 444 prontuários analisados, 367 casos foram admitidos para análise, sendo 92 do sexo masculino e 275 feminino. Ademais, a maioria referia tontura do tipo rotatória (78,3%), de duração de segundos (51%), mas sem associação com queda (25,7%) ou perda de consciência (9,3%). Das etiologias mais prevalentes tivemos vertigem posicional paroxística benigna (33%), disfunção cócleo-vestibular (17%) e doença de Menière (14%). **Conclusões:** o perfil mais frequente de paciente com tontura é sexo feminino, hipertensa, com mediana de idade de 52 anos e vertigem posicional paroxística benigna sendo a etiologia mais prevalente.

Palavras-chave: Tontura; Vertigem; Labirintopatias; Doença vestibular.

Abstract

Objective: to provide a profile of patient with dizziness complaint in a tertiary hospital in Rio Grande do Norte (RN). **Methods:** 444 medical records were analyzed in a retrospective analytical study, within a quantitative approach, divided into four groups: sex and age (1), characteristics of dizziness (2), comorbidities and risk factors (3) and findings in the physical examination (4). We assign $p < 0.05$ as an indicator of statistical significance. **Results:** of the 444 medical records analyzed, 367 cases were admitted for analysis, 92 of whom were male and 275 female. In addition, most of them reported spinning vertigo (78.3%), lasting for seconds (51%) without association with falling (25.7%) or loss of consciousness (9.3%). The most prevalent etiologies were, Benign Paroxysmal Positional Vertigo (33%), cochlear-vestibular dysfunction (17%) and Menière's disease (14%). **Conclusions:** the most frequent profile of patients with dizziness is female, in middle age (median of 52), hypertensive, and Benign Paroxysmal Positional Vertigo is the most prevalent etiology.

Keywords: Dizziness; Vertigo; Labyrinth disorders; Vestibular diseases.

Resumen

Objetivo: conocer el perfil de los pacientes afectados por mareos en un hospital terciario de Rio Grande do Norte (RN). Métodos: se analizaron 444 historias clínicas en un estudio analítico retrospectivo de carácter exploratorio, dentro de un abordaje cuantitativo, dividido en cuatro grupos: sexo y edad (1), características del mareo (2), comorbilidades y factores de riesgo (3) y hallazgos en examen físico (4). Asignamos $p < 0.05$ como indicador de significancia estadística. Resultados: de las 444 historias clínicas analizadas, 367 casos ingresaron para análisis, 92 de los cuales eran hombres y 275 mujeres. Además, la mayoría refirió mareos de tipo rotacional (78,3%), con una duración de segundos (51%), pero sin asociación con caídas (25,7%) o pérdida del conocimiento (9,3%). De las etiologías más prevalentes, tuvimos vértigo posicional paroxístico benigno (33%), disfunción coclear-vestibular (17%) y enfermedad de Menière (14%). Conclusiones: el perfil más frecuente de un paciente con mareo es el femenino, hipertenso, con una mediana de edad de 52 años y el vértigo posicional paroxístico benigno siendo la etiología más prevalente.

Palabras clave: Mareos; Vértigo; Trastornos del laberinto; Enfermedad vestibular.

1. Introduction

Both in doctors' offices and in emergency rooms, dizziness and vertigo are common complaints reported to doctors, with a prevalence of up to 30% for dizziness (sensation of body imbalance) and 10% for vertigo (sensation of rotation of the environment or of oneself) (Mudin & Schilder, 2015). Patients may report a series of symptoms involving sensations of oscillation in the body or the environment, instability, loss of balance, visual darkening, weakness and even falling, which may be associated with neurovegetative symptoms such as nausea and vomiting.

Such symptoms are related to different etiologies, and it is necessary at first to differentiate the causes of dizziness and how they affect different organic structures, such as the inner ear, central nervous system, cervical, hemodynamic, metabolic and mood disorders (Wipperman, 2014). Therefore, clinical history and physical examination are essential to guide the diagnosis and, consequently, the correct treatment. Among the possible etiologies of vertigo, benign paroxysmal positional vertigo (BPPV) is the most prevalent (28.5%), followed by phobic postural vertigo (11.5%), central vertigo (10.1%), vestibular neuritis (9.7%), Menière's disease (8.5%) and, finally, migraine (6.4%) (Kanashiro et al., 2005).

It is important to note that uncontrolled metabolic diseases, such as diabetes mellitus, are implicated in the pathogenesis of some cases of vertigo causing Menière's disease. This factor is important in the Brazilian context, as projections indicate a number of around 11 million diabetics in 2025, reflecting a possible increase in cases of dizziness and vertigo due to this etiology over the years and the importance of better understanding the profile of each patient (International Diabetes Federation, 2015).

Although dizziness can be present in all age groups, there are different prevalence among young people and the elderly, reaching 50% in those over 85 years old, while in children the prevalence is much lower, being around 5.3% (Jonsson, et al., 2004; Li, et al., 2016). Furthermore, the consequences and risks of dizziness and vertigo are different in each age group, due to the presence of dizziness being a predictor of falls in the elderly, in addition to contributing to the burden of disability in people over 65 years old (Agrawal, et al., 2009; Mueller, et al., 2014)^{7,8}.

Thus, this study aims to provide a clinical and epidemiological profile of patients affected with diseases that cause vertigo and dizziness, understanding the particularities of different age groups and comorbidities. In addition, we hypothesized that some comorbidity would be related to spinning vertigo.

2. Methodology

The Otorhinolaryngology Department of Hospital Universitário Onofre Lopes (HUOL) has a specific otolaryngology outpatient clinic in otoneurology for the care of patients with vertigo, which performs about 6 visits per week through a specific anamnesis form, in addition to the electronic medical record.

Thus, it is an analytical research of exploratory character, within a quantitative approach.

We considered as a sample the totality of specific physical assistance protocols (medical records) kept in the otorhinolaryngology sector itself, which provided us with an “n” of 444 medical records for data collection. Among the sample space, we adopted as a inclusion criterion patient with vertigo accompanied by the specific outpatient clinic and as an exclusion criteria the absence of three or more data from the medical record that were used in the statistical analysis (Ex.: Age, sex, presence of dizziness, duration of dizziness). In this context, when more than 3 variables are missing from the same medical record, it will be excluded from the analysis.

The research project was sent to the Research Ethics Committee of HUOL (CEP - HUOL) with the letter of consent for the use of medical records without any identification of the research subjects. In addition, we reinforce that the propositions contained in Resolution 466/12 of the National Health Council were used as a basis for the ethical aspects of research with humans. The research was authorized under CAAE number: 88909118.8.0000.5292.

The Free and Informed Consent Form was sent to the participants after contact made by the Medical Archive and Statistics Service of HUOL (SAME - HUOL) through the phones provided by the patients at the time of registration at the hospital. Two calls were made in the attempt to contact and, in cases in which contact was not possible, the medical record was admitted to the research.

Data collection took place by transferring the data contained in the specific physical records, which were initially adopted in 2013 and suspended in 2016 by using the Management Application for University Hospitals (AGHU), to an Excel table and, later, to the IBM SPSS 20 program where the relevant statistical analyzes were performed.

The data collected from the medical records were divided into four groups. In the first one, the data of the sex and age of the patients at the time of the outpatient consultation. In the second, the characteristics of dizziness described in the anamnesis such as type of dizziness, frequency of dizziness, triggering position, falls and loss of consciousness due to dizziness and associated neurovegetative symptoms. In the third, we analyzed comorbidities and risk factors specifically for systemic arterial hypertension, diabetes mellitus, thyroid disorders, dyslipidemia, physical inactivity, alcohol consumption, smoking, number of medications and caffeine abuse. Finally, in the fourth group we researched the findings on physical examination, with emphasis on specific tests in the differential diagnosis of dizziness such as alteration of peripheral nerves, Romberg sign and Fukuda tests, nystagmus research, Head Impulse and Head Shake tests, cerebellar function, Dix-Hallpike and orthostatic hypotension tests.

Since data were collected separately, for the reason that it is not mandatory to be described in the first consultation, the diagnoses and differential diagnoses were also collected and analyzed proportionally to obtain an etiological profile of the causes of vertigo in this specific clinic. *A posteriori*, we performed a comparison between this epidemiology found and that described in the medical literature (Kanashiro, et al., 2005).

In this context, with the database formed, we carry out proportional analyzes with the use of a percentage for each of the characteristics evaluated and with the separation by gender of the patient, using for this analysis the SPSS program and Excel in the realization of the graphs, due to their greater variety of customization.

In addition, we cross-checked the variables collected using the Chi Square Test for qualitative variables and Pearson's Correlation for quantitative variables, using the two-tailed p value less than 0.05 as an indication of statistical significance and we use the confidence interval (CI) of 95%. When a variable has a value less than 10, it was decided to choose the fisher's exact test value instead of the Chi-Square.

Lastly, for quantitative variables, we performed a normality analysis by Kolmogorov-Smirnov before choosing the description by average or median. If normality is confirmed, we choose the t test and if we are faced with a nonparametric variable, the Mann-Whitney test.

3. Results

A total of 444 medical records were collected, of which 77 met the exclusion criteria, with 367 cases remaining for analysis. Of these, 92 (25.1%) were male and 275 (74.9%) female and with a median of 52 with a minimum age of 3 and a maximum age of 90 years. In addition, we did not find a significant difference between the mean ages for the sexes ($p= 0.055$), as presented in table 01.

In addition, each patient used a median of 2 and a maximum number of 10 drugs. Furthermore, the average number of medications was not different between the sexes ($p= 0.088$). Of the characteristics in Table 01, only the presence or absence of neurovegetative symptoms was related to spinning vertigo ($p= 0.027$). Other epidemiological data and clinical characteristics of dizziness are described in Table 1.

Table 1. Epidemiological and clinical examination characteristics.

VARIABLES		MALE	FEMALE	TOTAL
AGE (N=344)	Average	48,47	53,08	51,94
	Median	49	53	52
SEX (N=367)		92 (25,1%)	275 (74,9%)	
DIZZINESS (N=351)	Spinning	58 (70,7%)	217 (80,7%)	275 (78,3%)
	Non-Spinning	24 (29,3%)	52 (19,3%)	76 (21,7%)
LOSS OF BALANCE? (N=353)	Yes	64 (73,6%)	179 (67,3%)	243 (68,8%)
	No	23 (26,4%)	87 (32,7%)	110 (31,2%)
DURATION OF DIZZINESS (N=302)	Seconds	34 (47,2%)	120 (52,2%)	154 (51%)
	Minutes	16 (22,2%)	61 (26,5%)	77 (25,5%)
	Hours	9 (12,5%)	29 (12,6)	38 (12,6%)
	Days	13 (18,1%)	20 (8,7%)	33 (10,9%)
FREQUENCY OF DIZZINESS (N=314)	Daily	25 (33,8%)	87 (36,3%)	112 (35,7%)
	Monthly	8 (10,8%)	26 (10,8%)	34 (10,8%)
	Variable	41 (55,4%)	127 (52,9%)	168 (53,5%)
TRIGGERING POSITION (N=133)	Lying position	6 (17,1%)	29 (29,6%)	35 (26,3%)
	Standing positions	12 (34,3%)	29 (29,6%)	41 (30,8%)
	Sitting	3 (8,6%)	7 (7,1%)	10 (7,5%)
	Walking	6 (17,1%)	10 (10,2%)	16 (12%)
	Non applied	8 (22,9%)	23 (23,5%)	31 (23,3%)
FALLING (N=331)	Yes	19 (23,8%)	66 (26,3%)	85 (25,7%)
	No	61 (76,3%)	185 (73,7%)	246 (74,3%)
LOSS OF CONSCIOUSNESS (N=332)	Yes	8 (10,1%)	23 (9,1%)	31 (9,3%)
	No	71 (89,9%)	230 (90,9%)	301 (90,3%)
NEUROVEGETATIVE SYMPTOMS (N=336)	Yes	49 (61,3%)	183 (71,5%)	232 (69 %)
	No	31 (38,7%)	73 (28,5%)	104 (31%)

Source: Author data.

Another analyzed axis sought to know the associated conditions (comorbidity or risky activities) that are present in the evaluated patients, available in Table 02. Thus, we found an association between systemic arterial hypertension and spinning vertigo ($p = 0.031$), which was the most prevalent disease in our sample (with 43.1% of it). On the other hand, diabetes mellitus ($p = 0.787$), thyroid disorders ($p = 0.579$), dyslipidemia ($p = 0.227$), smoking ($p = 0.331$), alcohol consumption ($p = 0.833$) and caffeine abuse ($p = 0.657$) did not show relationship with spinning vertigo.

Table 2. Associated factors of patient with dizziness.

VARIABLE*	YES	NO	SPINNING VERTIGO
SAH (N=343)	148 (43,1%)	195 (56,9%)	<i>p</i> =0,031
DM (N=336)	56 (16,7%)	280 (83,3%)	<i>p</i> =0,787
THYROPATHIES (N=335)	52 (15,5%)	283 (84,5%)	<i>p</i> =0,579
DYSLIPIDEMIA (N=333)	129 (38,7%)	204 (61,3%)	<i>p</i> =0,227
PHYSICAL ACTIVITY (N=328)	95 (29%)	233 (71%)	<i>p</i> =0,709
SMOKING (N=335)	49 (14,6%)	286 (85,4%)	<i>p</i> =0,331
ALCOHOL CONSUMPTION (N=337)	37 (11%)	300 (89%)	<i>p</i> =0,833
CAFFEINE ABUSE (N=330)	124 (37,6%)	206 (62,4%)	<i>p</i> =0,657
PREVIOUS TREATMENT (N=309)	148 (47,9%)	161 (52,1%)	<i>p</i> =0,161

* SAH = Systemic Arterial Hypertension; DM = Diabetes Melitus type 01 or 02; Smoking = Any smoking charge; Alcohol Consumption = 30g of alcohol per day; Caffeine abuse = More than 4 cups a day.

In the 4th column we have the result of the chi-square test of the occurrence of spinning vertigo or not with the associated factors.

Source: Author data.

In addition, we analyzed the findings of the specific physical examination of the patient with dizziness, such as the Fukuda test performed on 91 patients, of which 49 (53.8%) had to the right, 13 (14.3%) to the front and 29 (31.9%) to the left. In addition, we were able to support the association between spinning vertigo with a positive Dix-Hallpike maneuver (*p*= 0.001). Other findings of the physical examination are shown in Table 3.

Table 3. Physical exams findings.

VARIABLE*	YES	NO	SPINNING VERTIGO
ALTERATION OF PERIPHERAL NERVE (N=274)	11 (4%)	263 (96%)	$p=0,715$
ROMBERG SIGN (N=276)	55 (19,9%)	221 (80,1%)	$p=0,68$
SPONTANEOUS NYSTAGMUS (N=298)	3 (1%)	295 (99%)	$p=1$
SEMI-SPONTANEOUS NYSTAGMUS (N=299)	21 (7%)	278 (93%)	$p=0,18$
HEAD IMPULSE TEST (N=258)	15 (5,8%)	243 (94,2%)	$p=0,764$
HEAD SHAKING TEST (N=256)	12 (4,7%)	244 (95,3%)	$p=0,736$
CEREBELLAR ALTERATION (N=298)	32 (10,7%)	266 (89,3%)	$p=0,505$
DIX-HALLPIKE TEST (N=154)	47 (30,5%)	107 (69,5%)	$p=0,001$
ORTHOSTATIC HYPOTENSION (N=45)	10 (22,2%)	35 (77,8%)	$p=1$

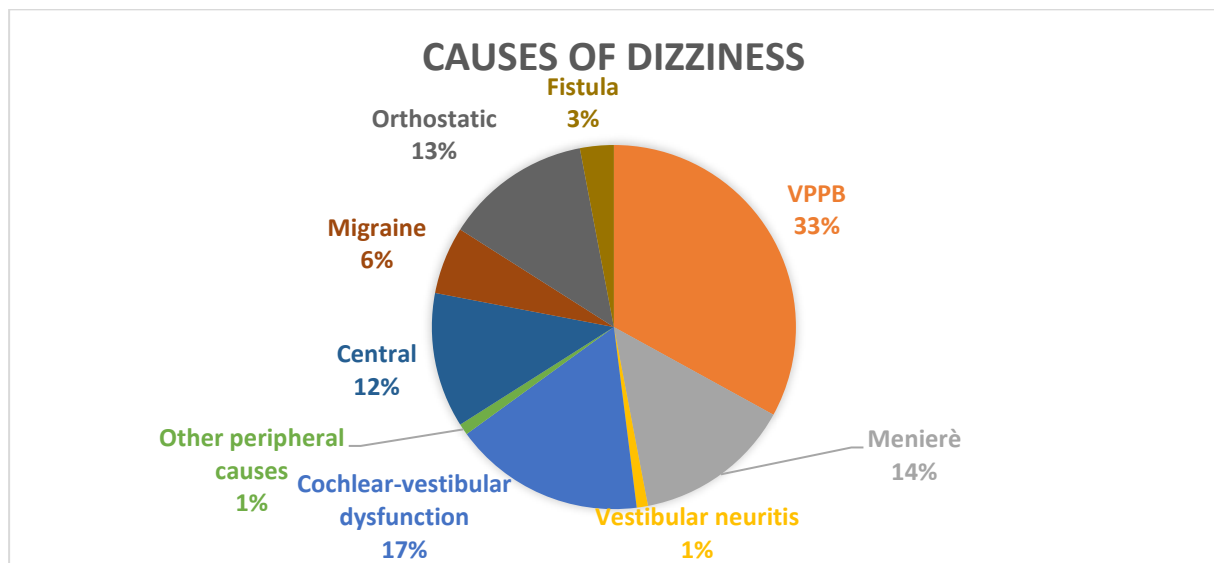
In the 4th column we have the result of the chi-square test between whether the patient has spinning vertigo or not with the associated physical exam findings.

Source: Author data.

A most important finding is the etiological proportion of the causes of dizziness, available in Graph 1. In it we see the preponderance of benign paroxysmal positional vertigo (BPPV) in 33% of the cases, which represents twice the second etiological cause, the cochlear dysfunctions -vestibular (which include multifactorial and systemic causes) with 17% of the causes. Right afterwards, we have Menière's disease (14%) and postural etiology (13%) as important reasons for dizziness.

In addition, by separating migraine (6%) and other central causes (12%) we ended up reducing their relative importance, since together the central causes would be the second most prevalent with 18%.

Graph 1. Distribution of etiological causes.



Source: Author data.

4. Discussion

This study aimed to provide the profile of patients with dizziness complaint treated at a specialized outpatient clinic. With regard to sex, it was possible to observe a high prevalence of females (74.9%) in relation to males (25.1%). In addition, the number of medications had no significant difference between genders, which excludes the polypharmacy factor, already known as a cause of dizziness, as a possible factor that makes analysis difficult (Lin & Aligene, 2013). Thus, the prevalence of females is notorious, having previously been attributed in part to the hormonal variation of women (Bittar, 1996).

As for anamnesis data, the predominance of dizziness lasting seconds (51%) when compared to minutes, hours and days, shows a direct correlation with the higher prevalence of BPPV cases in the outpatient clinic. The same is observed in relation to the triggering position, where the lying and standing positions were observed, adding up 57.1% of complaints in the anamnesis, also representing the correlation with cases of BPPV (Wipperman, 2014; Sandhu & Rea, 2016; Furman & Cass, 1999).

Most patients¹ did not report falls (74.3%) associated with episodes of dizziness, what reduces the likelihood of the hypothesis of cerebellar or cardiac complaints (frequent cause of syncope, which can lead to falls), that are expected to be high in an ambulatory specialized in vertigo. In addition, there was a predominance of cases accompanied by neurovegetative symptoms (69%), closely related to BPPV, Menière's, postural hypotension and vestibular

neuritis, which together account for 63% of diagnoses. Likewise, the significant majority (90.3%) did not report loss of consciousness, ruling out cardiac causes from the diagnoses and reflecting diagnoses of vestibulopathy, also associated with the predominance of the sensation insteadness (68.8%) in the studied sample.

Although the association between systemic arterial hypertension and vertigo may be affected by the high prevalence of this comorbidity in the population studied (41.3%), the results corroborate those found in the literature, which show a significant association between the two entities (Marchiori & Filho, 2007). This finding is related to central and / or peripheral damage caused by hypertension, which can cause vestibular changes, resulting in a worsening of the quality of life of hypertensive patients and, consequently, requiring conducts aimed at prevention and treatment (Marchiori, et al., 2010).

On the other hand, there was no significant association between spinning vertigo and metabolic diseases such as diabetes mellitus in the studied population, going against findings in the literature (Fonseca & Davidsohn, 2006; Bittar, et al., 2003), despite the prevalence in the sample (16.7%) surpassing the prevalence of the Brazilian population aged 18 or over (6.2%) (IBGE, 2013). The results found may be related to the sample size, mainly due to the prevalence of Menière's disease in the population, etiology closely related to changes in glucose metabolism (D'ávila & Lavinsky, 2005).

Similarly, no significant results were found regarding associations between vertigo and caffeine abuse, alcohol consumption alcoholism and smoking, different from what is found in the literature (Klagenberg, et al., 2007; Wada, et al., 2017).

Among the exams, the high positivity (30.5%) of the Dix-hallpike maneuver compared to others corroborates the prevalence of BPPV, while the low positivity of changes in the peripheral nerve (3%) reflects the low prevalence of vestibular neuritis (4%) among the diagnoses. Similarly, cerebellar changes and orthostatic hypotension correspond to findings in differential diagnoses of central and postural causes. Other less specific tests such as Romberg's sign, spontaneous and semi-spontaneous nystagmus, head impulse and head shaking varied among the population studied.

Regarding the etiology of diseases it was observed that the patients seen at the outpatient clinic have a predominant spinning vertigo. Among the etiologies, there was a high correspondence with findings found in the literature when comparing the results within the Brazilian context, since our results showed a predominance of BPPV with 33% of cases, similar to the 35% found by Kanashiro (Kanashiro, et al., 2005). Other etiologies had slight variations in the order of prevalence, but with similar results, such as Menière's disease (14% of our

sample and 11% of the compared sample), postural etiology (13% of our sample and 15% of the compared sample) and migraine (6% of our sample and 8% of the compared sample)³. In addition, vertigo from central causes affected 12% of both samples, while vestibular neuritis was the only etiology with great divergence, having been diagnosed in only 1% of our sample while Kanashiro diagnosed in 12% of his sample, placing it as the third most prevalent (Kanashiro, et al., 2005). This can be explained by the acute character of vestibular neuritis that takes most of its diagnosis in emergency care, different from our outpatient sample. Finally, we grouped cochlear-vestibular disorders in a group with a prevalence of 17%, ranking second in prevalence in our sample, whereas Kanashiro separated this etiology from his analysis (Kanashiro, et al., 2005).

The main limitation of the research was the absence of all maneuvers performed on all patients, since the diagnostic maneuvers during consultations were aimed at the diagnostic hypothesis. In addition, because it was a retrospective research through the collection of medical records, it is dependent on the examiner and the information contained in the medical records, which were sometimes incomplete and decreased the sample size with the application of the exclusion criteria.

5. Conclusion

Thus, it can be concluded that female, in middle age, hypertensive, is the most frequent profile of patients with dizziness in a tertiary hospital, in addition to benign paroxysmal positional vertigo being the most prevalent etiology (a good predictor of case resolution using ambulatory maneuvers). In addition, our study reinforces the importance of anamnesis and physical examination to guide the diagnosis of patients with dizziness, in addition to reducing costs for the health system.

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Percentage of contribution of each author in the manuscript

Yasmin de Medeiros Carvalho – 25%

Henrique de Paula Bedaque – 25%

Wildna Sharon Martins da Costa – 10%

Raysa Vanessa de Medeiros Freitas – 10%

Lidiane Maria de Brito Macedo Ferreira – 10%

Karyna Myrelly Oliveira Bezerra de Figueiredo Ribeiro – 10%

José Diniz Júnior – 10%