Características de pacientes do ambulatório de doenças cerebrovasculares de hospital público universitário do Rio Grande do Sul

Profile of patients attending a cerebrovascular disease clinic in a public school hospital in South Brazil

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RESUMO

Introdução: As doenças cerebrovasculares ainda são as principais causas de mortalidade no Brasil. Este estudo objetiva apresentar as características epidemiológicas e demográficas e os principais fatores de risco para acidente vascular cerebral (AVC) em pacientes atendidos no ambulatório de doenças cerebrovasculares de um hospital público universitário de Porto Alegre, durante os anos de 2008 e 2009. **Métodos:** Foram analisados 446 formulários de casos de pacientes pós-AVC realizando-se análises descritivas e inferenciais das características dos pacientes. **Resultados:** 56,4% eram procedentes da Capital e a média de idade foi de 60 anos. A distribuição por tipo de AVC foi de 66% para AVC isquêmico, 12% para AVC hemorrágico e somente 4% para ataque isquêmico transitório (AIT). Hipertensão arterial, diabetes melito, fumo e dislipidemia foram os fatores de risco mais presentes; porém, apenas 51% dos pacientes faziam uso de anti-hipertensivo. **Conclusão:** Os resultados sugerem que o AVC ainda é uma doença negligenciada, fazendo-se necessária a reorganização da rede assistencial no Estado e a elaboração de estratégias de prevenção primária e secundária e de tratamento.

UNITERMOS: Acidente Vascular Cerebral, Epidemiologia, Epidemiologia dos Serviços de Saúde, Fatores de Risco, Assistência Ambulatorial.

ABSTRACT

Introduction: *Cerebrovascular diseases are still the leading cause of death in Brazil. This study aims to present the epidemiological and demographic characteristics and major risk factors for stroke in patients attending a cerebrovascular diseases clinic in a public school hospital in Porto Alegre from 2008 to 2009.* ***Methods:*** *We analyzed the medical records of 446 post-stroke patients by performing descriptive and inferential analysis of patient data.* ***Results:*** *56.4% of the patients were from Porto Alegre and their mean age was 60 years. Distribution by type of stroke was 66% for ischemic stroke, 12% for hemorrhagic stroke, and only 4% for transient ischemic attack (TIA). Hypertension, diabetes mellitus, smoking, and dyslipidemia were the most common risk factors; however, only 51% of the patients used antihypertensive medication.* ***Conclusion:*** *The results suggest that stroke is still a neglected disease, thus showing the need for a reorganization of the state's healthcare system and development of strategies for primary and secondary prevention and treatment.*

KEYWORDS: *Stroke, Epidemiology, Health Services Epidemiology, Risk Factors, Ambulatory Care.*

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INTRODUCTION

Cerebrovascular disease (CVD) is a major cause of disability worldwide, contributing to the large number of affected patients who become dependent on others (1, 2). CVD is the third leading cause of death worldwide (3) and the first cause of death in Brazil, accounting for 10% of all deaths (4, 5, 6). One third of the mortality rates associated with diseases of the circulatory system is attributed to CVD (7), and Brazil is the South American country with the greatest number of deaths from this disease (8, 2).

Different clinical presentations and distribution of stroke subtypes depend on the prevalence of different risk factors and on social and ethnic differences (9). The INTERSTROKE study (10) showed that ten modifiable risk factors are associated with 90% of all causes of both ischemic and hemorrhagic stroke. This means that 90% of strokes can be prevented by simple measures of primary and secondary prevention. Given the significant heterogeneity among the different regions across Brazil, it is important to define local population levels of stroke risk and prevalence of different stroke subtypes in order to plan public health strategies and policies tailored to specific locations. In addition, 80% of all stroke patients are treated in the public sector and are dependent on government welfare policies to reduce the impact of the disease (4).

Only a few population-based studies have been conducted in Brazil (2, 11, 12) to define the incidence of stroke and to characterize stroke subtypes and risk factors in these patients. To date, no baseline studies of stroke patients have been conducted in Rio Grande do Sul, the southernmost state of Brazil.

This study aimed to describe demographic and epidemiological characteristics, major risk factors, and frequency of stroke subtypes and to investigate the association of ischemic and hemorrhagic stroke with risk factors in patients attending a CVD outpatient clinic in a public teaching hospital in the state of Rio Grande do Sul, Southern Brazil.

METHODS

Participants

A total of 446 consecutive patients with a diagnosis of stroke attending the CVD outpatient clinic at Hospital de Clínicas de Porto Alegre, Rio Grande do Sul, Southern Brazil, between December 2008 and July 2009 were enrolled in the study. Hospital de Clínicas de Porto Alegre is a public teaching hospital affiliated with Universidade Federal do Rio Grande do Sul, recognized as a center of excellence in the treatment of stroke, in addition to being a teaching setting for the university and promoting scientific and technological research.

Instruments and procedures

We reviewed forms that were completed prospectively for each consecutive stroke patient treated on a regular basis in the CVD outpatient clinic at Hospital de Clínicas de Porto Alegre. A standardized protocol was used in the CVD outpatient clinic to systematically collect data. This database was designed to facilitate research on characteristics, clinical course, and outcomes of stroke patients. Each patient was examined by a stroke neurologist, and the diagnosis of stroke was confirmed by computed tomography (CT) scan in all cases.

All forms contained information on demographic data (age at first appointment, sex, and race), stroke-related risk factors (systemic hypertension, diabetes mellitus, dyslipidemia, smoking, alcohol consumption, and family history), classification of stroke subtype, history of stroke-related diseases, and medication use. Stroke was classified into the following subtypes: ischemic stroke, hemorrhagic stroke, transient ischemic attack (TIA), and 'not classified'. The cause of ischemic stroke was classified according to the Trial of Org 10172 in Acute Stroke Treatment (TOAST) criteria (13).

Patients

Patients with stroke were consecutively enrolled between December 2008 and July 2009 in the CVD outpatient clinic at Hospital de Clínicas de Porto Alegre, Brazil. The study was approved by the Hospital de Clínicas de Porto Alegre Ethics Committee (Institutional Review Board-equivalent - protocol number 100149) and was conducted in accordance with the provisions of the Declaration of Helsinki.

Hospital de Clínicas de Porto Alegre is a public teaching hospital affiliated with Universidade Federal do Rio Grande do Sul, located in Porto Alegre, city capital of Rio Grande do Sul, the southernmost state of Brazil. The institution is recognized as a center of excellence in the treatment of stroke in the state and provides federally funded public services primarily for patients from the city of Porto Alegre (about 1.500.000 inhabitants), and also from the entire state of Rio Grande do Sul (about 10.000.000 inhabitants).

As a standardized protocol to systematically collect data about care provided to patients attending the CVD outpatient clinic, physicians prospectively completed a data collection form to record patients' sociodemographic information and clinical data, such as symptoms, risk factors, clinical course and outcomes for the disease, among others. The diagnosis of stroke was based on clinical and imaging findings. All patients were examined by a stroke neurologist, and the diagnosis of stroke was confirmed by computed tomography (CT) scan.

Variables of interest

All patient records were reviewed, and pertinent data were compiled. Information was collected on age at first

appointment, sex, race, stroke-related risk factors (systemic hypertension, diabetes mellitus, dyslipidemia, smoking, alcohol use, and family history), stroke subtype, history of stroke-related diseases, and medication use. Stroke was classified into the following subtypes: ischemic stroke, hemorrhagic stroke, transient ischemic attack (TIA), and 'not classified'. The cause of ischemic stroke was classified according to the Trial of Org 10172 in Acute Stroke Treatment (TOAST) criteria into large-artery atherosclerosis, cardioembolism, small-vessel occlusion (lacunar), and stroke of other determined or undetermined etiology (13).

Statistical analysis

Data were entered in a tabulated form, and a descriptive analysis was performed. Continuous variables were expressed as mean ± standard deviation (SD) and categorical variables as count and percentage. Comparisons were performed using Student's t test or one-way analysis of variance (ANOVA) for continuous variables. The chi-square test was used to analyze a possible association between categorical variables. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 19.0. The level of significance was set at 5%.

RESULTS

A total of 446 patients were included in the analysis. Of these, 56.4% were from the city of Porto Alegre, 34.6% from cities within the metropolitan area of Porto Alegre, and 9% from other localities in the state of Rio Grande do Sul or from other states.

The characteristics of patients classified according to stroke subtype are described in Table 1. Overall, 66% of cases were ischemic strokes, 12% were hemorrhagic strokes, 18% were not classified, and only 4% were TIA. Of 367 stroke patients who were classified into a subtype, 296 (81%) had ischemic stroke, 19 (14%) had hemorrhagic stroke, and 79 (5%) had TIA. Within all ischemic cerebrovascular diseases (n = 315), TIA accounted for 6% of cases. Of 95 cases of ischemic stroke classified according to the TOAST criteria, 31,6% were classified as large-artery atherosclerosis, 18.9% as cardioembolism, 13.7% as lacunar, 14.7% as stroke of rare causes, and 21.1% as stroke of undetermined etiology.

Table 1 also shows sociodemographic data and information on the presence of risk factors and medication used prior to stroke (TIA) for the total sample and by type of stroke. Age ranged from 21 to 99 years, and mean age for the total sample was 60.4 (±12.44) years. There was

TABLE 1 – Sociodemographic characteristics and stroke-related variables of the total sample classified according to stroke subtype.

	Ischemic stroke	Hemorrhagic stroke	TIA	Not classified	Total
Age, years (mean ± SD)	61.01 (±12.62)	55.53 (±12.61)	63.56 (±11.6)	60.61 (±11.14)	60.4 (±12.4)
Sex (%)					
Male	55.7	65.4	42.1	46.8	54.7
Risk factors (%)					
Hypertension	82.9	90.0	66.7	84.2	83.3
Diabetes mellitus	28.6	23.9	31.6	29.2	28.3
Smoking	26.0	18.0	44.4	27.0	26.0
Alcohol use	4.8	14.0	5.9	5.7	6.1
Family history of arterial vascular disease	10.7	12.2	11.1	15.5	11.7
Dyslipidemia	28.4	16.7	44.4	32.4	28.4
Obesity	6.8	8.5	5.9	15.2	8.4
Past medical history (%)					
Ischemic heart disease	18.7	9.8	17.6	26.8	18.9
Chronic atrial fibrillation	14.7	4.9	6.7	9.3	12.5
Previous ischemic stroke	27.9	31.7	7.1	34.5	28.5
Previous hemorrhagic stroke	1.5	11.9	0.0	0.0	2.4
Previous TIA	7.1	4.8	18.8	7.4	7.4
Medication prior to stroke (%)					
Antiplatelet agents	36.6	25.8	25.0	25.0	65.6
Anticoagulant agents	9.1	6.5	11.1	2.8	7.9
Antihypertensive medication	55.0	41.9	37.5	45.9	51.6
Antidiabetic medication	16.2	9.4	0.0	18.9	15.2

SD = standard deviation; TIA = transient ischemic attack.

a significant association between the type of stroke (ischemic vs. hemorrhagic) and patient age group ($p < 0.05$). As for ischemic strokes, patients over 60 years of age accounted for 57.8% of cases. Conversely, 53.8% of patients with hemorrhagic stroke were adults aged 40 to 59 years. Similar to ischemic strokes, TIAs were more frequently observed in older patients (62.7% of cases).

There was no significant association between the type of stroke (ischemic vs. hemorrhagic) and sex in the study sample. Men were more frequently affected by both types of the disease. Regardless of the type of stroke, the most common risk factor was hypertension (83.3% of total sample), followed by diabetes mellitus, smoking, and dyslipidemia; however, only 51.6% of patients were using antihypertensive medication. There was no significant association between the type of stroke and risk factors.

Regarding past medical history, 18% of patients with ischemic stroke had a history of ischemic heart disease, 27.9% had an episode of previous ischemic stroke, and 14.7% had chronic atrial fibrillation. As for TIAs, 18.8% of cases had previous TIA and 17.6% had ischemic heart disease. Among patients with hemorrhagic stroke, 31.7% had an episode of previous ischemic stroke and 11.9% of previous hemorrhagic stroke. There was no significant association between the type of stroke and past medical history.

Taking into account only those stroke patients who had previous stroke episodes (n = 108). Among patients with a previous ischemic stroke, 68% were receiving antiplatelet or anticoagulant agents for secondary prevention. Although 88% of these patients had hypertension, only 67.3% were using antihypertensive medication and only 36.2% were on statin therapy.

Table 2 shows the characteristics of only those patients with a history of atrial fibrillation (n = 47). Of these, 95.24% were seeking medical care for ischemic stroke (only 2 patients had hemorrhagic stroke), 71.4% were using antihypertensive medication, 44% were receiving antiplatelet agents, and only 41.7% were receiving anticoagulant agents.

Among those patients who received anticoagulant therapy before attending the CVD outpatient clinic (4.26% of total sample), 10.5% were seeking care for hemorrhagic stroke and 88.9% for ischemic stroke or TIA. Among anticoagulated patients seeking care for ischemic stroke, 42.1% had a history of previous ischemic stroke.

DISCUSSION

The CVD outpatient clinic where this study was conducted is located in Porto Alegre, city capital of Rio Grande do Sul, the southernmost state of Brazil. Although this clinic was originally built to provide health care services through the Brazilian Public Health System primarily for the residents of the city, only 56% of patients were from Porto Alegre. The organizational structure of health care delivery in Brazil often leads to service overload in the city capital of states, which ultimately neither at the local nor at the state level can cope with all this demand. Theoretically, the number of outpatient appointments available for patients referred to a specialized vascular neurology center is enough to meet the current demand of the city of Porto Alegre. This information is important because it indicates the need for improved organization of local health care delivery, which should involve a joint effort by cities within the metropolitan area of Porto Alegre and the State Department of Health, considering that 9% of patients were from other localities in the state of Rio Grande do Sul.

The distribution of stroke subtypes in this study is consistent with the international literature reporting 86% of ischemic stroke + TIA and 14% of hemorrhagic stroke (6). However, the low rate of patients with TIA observed in the present study (only 4%) demonstrates the unavailability of appointments with specialists for these patients, who are usually seen at a primary health care unit or are not taken to a hospital for specialized care after provision of initial care by paramedics at the patient's home. This low incidence has also been found in other localities (14), which

TABLE 2 – Sociodemographic characteristics and stroke-related variables of patients with a history of atrial fibrillation.

	Ischemic stroke (+1 TIA)	Hemorrhagic stroke	Not classified	Total
N (%)	40 (83.0)	2 (4.3)	5 (10.6)	47 (100)
Age, years (mean ± SD)	68.30 (±11.28)	58.5 (±0.7)	65.2 (±9.2)	67.55 (±10.94)
Sex (%)				
Male	62.5	0.0	20.0	55.3
Past medical history (%)				
Previous ischemic stroke	17.5	0.0	40.0	19.1
Previous hemorrhagic stroke	0.0	0.0	0.0	0.0
Previous TIA	7.9	0.0	0.0	6.8
Medication prior to stroke (%)				
Anticoagulant agents	41.7	50.0	0.0	39.3
Antihypertensive medication	71.4	0.0	0.0	60.4
Antidiabetic medication	20.0	0.0	0.0	17.1

SD = standard deviation; TIA = transient ischemic attack.

demonstrates a lack of knowledge, both by the general population and primary care teams, about TIA symptoms and also highlights the importance of providing appropriate care for these patients. The EXPRESS study showed that treatment of patients with TIA by a neurologist, including preventive treatment within the first 24 hours, even outside the hospital (TIA outpatient clinics), can reduce 30-day stroke risks by 80% (15). Hospital de Clínicas de Porto Alegre, together with the Department of Health of the city of Porto Alegre, is currently developing a 'TIA clinics' program to provide specialized care via telemedicine and treatment within the first 24 hours for these patients.

Regarding the subtypes of ischemic stroke, 31,6% were classified as large-artery atherosclerosis, 19% as cardioembolism, and 14% as lacunar. Recognition of these different subtypes is crucial, because they show differences in the profile of risk factors, pathogenesis, acute-phase resources, preventive treatment, and prognosis (16).

Regarding patient mean age, our sample consisted of patients younger than the average of stroke patients treated in developed countries (17). It is known that 87% of stroke deaths worldwide occur in low and medium income countries, demonstrating the relationship of the disease with poor quality of life in these countries compared to high income countries. Bassanesi and Achutti (18) showed that even in a city such as Porto Alegre, with a relatively high human development index (HDI), almost 50% of early deaths from CVD could be avoided if all city districts had economic conditions similar to that of more developed districts.

Hypertension, diabetes mellitus, smoking, and dyslipidemia were the risk factors most commonly found in this study. These four factors have been shown to account for 88% of all causes of stroke, and all of them are modifiable risk factors(19, 20). Systemic hypertension is the major risk factor to predict CVD, being present in 70% of individuals who have this disease. In this study, 83% of patients had hypertension as a risk factor, a rate close to that found by Pires et al. (7) in a study conducted in the state of São Paulo, Southeastern Brazil, with elderly patients who had experienced an ischemic stroke. In that study, systemic hypertension was the most common risk factor, present in 87.8% of patients. A study conducted in the state of Paraná, Southern Brazil, investigating young patients with stroke, also revealed hypertension as the most prevalent risk factor, present in 63.8% of cases (21).

Heart diseases are also considered important risk factors, especially atrial fibrillation, which is a potentially treatable factor, and for which anticoagulant therapy may reduce by 66% the risk of a stroke (22). These strokes are usually larger and more severe, being associated with higher mortality and greater likelihood of severe disability (22). In this study, 13% of patients had atrial fibrillation and 19% had ischemic heart disease, accounting for 19% of all causes of ischemic stroke of cardioembolic etiology.

Patients with previous strokes have a nine times higher risk of a new stroke episode. However, prevention is highly effective and may prevent most cases of recurrence. In our study, only 69% of patients with previous stroke were receiving antiplatelet or anticoagulant agents for secondary prevention, 68% of patients with hypertension were using hypertensive medication, and only 36% were on statin therapy, another drug considered effective in the prevention of stroke(23, 24).

Among patients with atrial fibrillation, only 42% were on oral anticoagulant therapy, which is admittedly the best treatment to prevent new strokes. This low treatment rate is due to the difficulty in adjusting anticoagulation with warfarin, because of the need for frequent tests, the interaction of the anticoagulant agent with other drugs and foods, and the difficulty in monitoring this treatment in the public health care sector. After the approval of new anticoagulant agents (Dabigatran and Rivaroxaban) by the Brazilian National Health Surveillance Agency (ANVISA), there is great hope for improved adherence to anticoagulant therapy both in the public and private sectors in the near future. These treatments, in addition to posing lower risk for symptomatic intracerebral hemorrhage, use fixed doses, do not depend on laboratory tests for monitoring, and do not interact with other drugs or foods (25).

CONCLUSION

These results suggest that stroke remains a neglected disease in Brazil, despite of its worldwide impact and the fact that it is a leading cause of death in the country (26). Based on these results, we may develop, along with health care managers, new strategies for public policies, reorganize the health care system at the state level, and also develop strategies to better educate the population on risk factors and to engage patients in behaviors that will encourage treatment compliance. As a result, we should expect to see significant progress in actions aimed at the general health of patients and of their families/caregivers, which should facilitate the successful family and social reintegration of these patients, thus improving their quality of life.

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