

PREVALENCE OF CARDIOVASCULAR RISK FACTORS AMONG ELDERLY BRAZILIANS OVER EIGHTY WITH ISCHEMIC STROKE

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Abstract – Introduction: An ischemic stroke is usually a catastrophic event, mostly in the elderly. Cardiovascular involvement is the leading cause of ischemic stroke in this age population and hence the knowledge about its risk factors is important for the definition of specific policies of prevention. **Purpose:** To evaluate the prevalence of cardiovascular risk factors in patients with age equal to or above 80 in a hospital population with ischemic stroke. **Method:** Retrospective study of consecutive patients diagnosed with ischemic stroke admitted to a tertiary health facility. **Results:** From September 2004 to March 2006, 215 patients were studied. There was a female preponderance ($p < 0.01$). Among patients over eighty, 72% had hypertension and atrial fibrillation was more common among the oldest old ($p < 0.01$). **Conclusion:** Hypertension and atrial fibrillation should be treated aggressively in the elderly. Anticoagulants should be considered more often in these patients.

KEY WORDS: ischemic stroke, elderly over eighty, cardiovascular risk factors.

Prevalência de fatores de risco cardiovasculares em idosos brasileiros acima de 80 anos e com acidente cerebrovascular isquêmico

Resumo – Introdução: Acidente cerebrovascular (AVC) isquêmico é geralmente um evento catastrófico, particularmente em idosos. Envolvimento cardiovascular é a principal causa de AVC na população desta faixa etária; dessa forma, o conhecimento acerca de seus fatores de risco é importante para a definição de políticas específicas de prevenção. **Objetivo:** Avaliar a prevalência de fatores de risco cardiovasculares em pacientes com idade igual ou superior a 80 anos numa população hospitalar tendo AVC isquêmico. **Método:** Estudo retrospectivo de pacientes consecutivos diagnosticados como AVC admitidos em um centro de saúde terciário. **Resultados:** De setembro de 2004 a março de 2006, 215 pacientes foram estudados. Houve predomínio do sexo feminino ($p < 0,01$). Entre os pacientes com mais de 80 anos, 72% tinham hipertensão e fibrilação atrial foi mais comum entre os idosos em idade mais avançada ($p < 0,01$). **Conclusão:** Hipertensão e fibrilação atrial devem ser tratados agressivamente em idosos. Anticoagulantes devem ser considerados mais frequentemente nestes pacientes.

PALAVRAS-CHAVE: acidente cerebrovascular isquêmico, idosos acima de 80 anos, fatores de risco cardiovasculares.

Stroke is the leading cause of mortality in Brazil¹. The most common subtype is ischemic stroke, responsible for about 85% of the cases². The incidence and prevalence of ischemic stroke is closely related to cardiovascular risk factors³, which can be divided into modifiable and non-modifiable. Modifiable risk factors include hypertension, diabetes, dyslipidemia, smoking, coronary artery disease and atrial fibrillation. Age is the most common non-modifiable risk factor for stroke - after age 55, the risk of stroke doubles every decade⁴.

As the population ages worldwide, there has been an increasing number of patients over eighty diagnosed with stroke⁵. The prevalence of cardiovascular risk factors in this particular group can be different compared to other age ranges⁶. Primary and secondary prevention strategies in people over eighty depend on a better understanding of risk factors in this population.

This article discusses the prevalence of cardiovascular risk factors in hospitalized patients over eighty in São Paulo, Brazil.

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METHOD

This is a retrospective study of consecutive cases of stroke patients admitted to Albert Einstein Hospital in São Paulo, Brazil. Patient approach followed the Stroke Protocol of the hospital's Neurology Primary Stroke Center, which is certified by the Joint Commission International. All patients were admitted to the First Aid Unit of the hospital, where they were included in the protocol. Clinical questionnaires were filled, including data on major cardiovascular risk factors.

Patients were considered hypertensive when there was previous history of systemic hypertension and/or current use of antihypertensive drugs⁷. Occurrence of diabetes was considered in patients whose fasting glucose was equal to or higher than 126 mg/dL and/or who were currently taking oral hypoglycemic agents or insulin⁸. Dyslipidemia was specified by total cholesterol higher than 200 mg/dL in previous exams and/or current use of hypolipidemic agents⁹. Smoking was determined by patients who were currently smoking or had refrained from smoking up to five years before the stroke¹⁰. Atrial fibrillation was defined by a previous ECG or ambulatory electrocardiography device and/or detection of the arrhythmia during inpatient stay¹¹. Patients who were diagnosed with atrial fibrillation according to admission ECG were also enrolled. Coronary artery disease was determined by a suggestive clinical picture and/or confirmatory diagnostic exams¹².

All patients with stroke were included and the prevalence of cardiovascular risk factors was compared among those younger than 65, between 65 and 79 and over 80 years old. Univariate statistical analysis was performed to compare the information obtained in each group, using Fisher exact test or chi square, with a level of significance of 5% ($p < 0.05$).

RESULTS

From September 2004 to March 2006, 215 patients diagnosed with stroke were enrolled in the study. From these, 78 (36.3%) were eighty years old or over, 95 were between 65 and 79 (44.2%) and 42 were younger than 65 (19.5%).

Sex

Among patients younger than 65, 28 (67%) were male. A higher percentage of men – 61% – was also observed in the group of patients between 65 and 79 years old. In the group over 80, however, only 21 (27%) were male, with a predominance of women in this age range. When compared to the age subgroups, there was a statistically significant preponderance of women in patients over 80 ($p < 0.001$).

Hypertension

Among all patients, 152 (71%) were hypertensive. Among patients younger than 65, 24 (57%) had hypertension, which was detected in 72 (76%) of patients between 65 and 79 years old. 56 (72%) of patients over eighty had this diagnosis. There was an increased proportion of hy-

pertensive patients after 65, but no significant difference comparing patients over 80 and those between 65 and 79 ($p = 0.08$).

Diabetes

Diabetes was found in 53 patients (25%) of the entire group with stroke. There was a 17% rate among patients younger than 65 and 32% in those between 65 and 79. Among patients over 80, 16 (20%) had diabetes. There was no statistically significant difference concerning the prevalence of diabetes among the subgroups ($p = 0.09$).

Dyslipidemia

Dyslipidemia was determined in 31 (14.4%) of the patients: 17% in patients younger than 65, 7% in those between 65 and 79 and 7% in those over eighty. There was no statistically significant difference considering the prevalence of dyslipidemia between patients over and younger than 80 ($p = 0.18$).

Smoking

Among the total number of patients, 35 (16.3%) were smokers – 8 (19%) in the group younger than 65, 10 (11%) between 65 and 79 and only 4 (5%) in the group over 80. There was a trend toward a smaller percentage of smokers among the oldest when compared to patients younger than 80 ($p = 0.05$).

Coronary artery disease

Previous coronary artery disease was detected in 76 (35%) of all patients. There were 6 (14%) patients younger than 65, 34 (36%) between 65 and 79 and 28 (36%) over 80 with such diagnosis. There was a significant increase in the prevalence of coronary artery disease from 65 years old on ($p = 0.02$), but no difference considering patients younger than and over 80.

Atrial fibrillation

The diagnosis of atrial fibrillation was demonstrated in 35 (16.3%) of the patients: 5% in those younger than 65, 12% in the group between 65 and 79 and 26% over 80. There was a statistically significant increase of atrial fibrillation in the latter group ($p < 0.01$).

DISCUSSION

There are few reports describing the relationship between cardiovascular risk factors and stroke which focus specifically on an older population; particularly patients over eighty^{6,13}. Our hospital covers a segment of the population, with a higher life expectancy. When evaluating all patients enrolled in the study, we noticed that 80% were elderly and 36% were 80 years old or over. Stroke in such patients is frequent in our hospital.

Stroke is classically considered a disease with a higher prevalence in men, though there appears to be a higher prevalence in women after 80¹³. In our study among those older than 80 there was a predominance of females diagnosed with stroke. This is probably related to a higher life expectancy of women when compared to men. This female predominance is important when we consider that acute therapy for stroke, drugs used for primary and secondary prevention and invasive procedures may have a different profile of risks and benefits in men and women¹⁴⁻¹⁶. Our findings emphasize the need of further studies to assess in detail elderly women with stroke.

Hypertension is the main risk factor for stroke and its prevalence rises with age^{7,17}. We showed an increased number of hypertensive patients with aging when we compared the groups younger than 65 and between 65 and 79 year old, but on the other side, there was no difference in the percentage of hypertensive patients when comparing patients between 65 and 79 and those over 80. Our sample does not allow further conclusions, but hypertension may have a less direct effect in stroke patients over 80.

Diabetes is considered an independent risk factor for stroke recurrence and affects approximately 8% of the adult population⁸. Among stroke patients, the prevalence of diabetics ranged from 15 to 33% in previous studies^{18,19}. In our study, one fourth of the patients had diabetes. There was a higher percentage in the group between 65 and 79, followed by a reduction in those over 80. The morbidity and mortality associated with diabetes may partially explain such smaller percentage.

The impact of dyslipidemia as a risk factor for stroke seems to be less than for cardiac disease²⁰. A recent clinical trial demonstrated a reduction in stroke recurrence with the use of statins in high doses²¹. In our analysis we observed a low incidence of dyslipidemia, particularly in patients aged 65 or over.

There is strong and convincing evidence that smoking is one of the most important independent risk factors for stroke^{10,22}. Previous studies demonstrated that the increase in the risk of stroke related to smoking does not depend on age, sex or ethnical group^{10,22,23}. In our study there was a trend towards a smaller prevalence of smokers in patients over 80. The association of smoking with severe respiratory diseases and cancer may explain, in part, such finding.

Coronary artery disease shares cardiovascular risk factors with atherosclerotic disease of large cerebral arteries. The coexistence of coronary artery disease, peripheral artery disease and stroke in the same patient has been described increasingly more frequently²⁴. Coronary artery disease is the main cause of heart failure, which, when se-

vere, constitutes an important cardiac source of cerebral emboli²⁵. Heart failure raises in 2 to 3 times the risk of ischemic stroke recurrence, being responsible for up to 10% of those in the USA^{25,26}. Age is a well known non-modifiable risk factor for coronary artery disease. Our study showed a statistically significant increase in the prevalence of coronary artery disease in patients between 65 and 79 years old, when compared to those younger than 65. There was no difference when comparing the group between 65 and 79 and that over 80. In our study 36% of ischemic stroke patients and age higher than 65 had concomitant coronary artery disease. Preventive health measures should aim to reduce the incidence of both conditions.

Persistent and paroxysmal atrial fibrillation represent important ischemic stroke predictors²⁷. There are estimates that over 2 million people have atrial fibrillation in the USA. Aging is directly associated with an increased number of cases of atrial fibrillation, which constitutes the most common arrhythmia in the elderly²⁷. Atrial fibrillation was the most important risk factor for cardioembolic ischemic stroke in a study of octogenarians¹³. Our study shows a higher percentage of atrial fibrillation in the group of patients between 65 and 79, when compared to those younger than 65. There was also a statistically significant difference in the percentage of patients over 80 with atrial fibrillation when compared to those between 65 and 79 ($p < 0.01$). Our results show an increase percentage of atrial fibrillation patients with aging, as we have previously described. Patients over 80 had twice the chance of atrial fibrillation when compared to those between 65 and 79 years old. This finding suggests a strong impact of atrial fibrillation in patients over 80. After a first stroke, the use of oral anticoagulants leads to a 68% reduction of the relative risk of recurrence^{28,29}. On the other hand, advanced age is a predictor of cerebral hemorrhage secondary to the use of oral anticoagulants³⁰. Studies evaluating predisposing risk factors for hemorrhage in patients under oral anticoagulants may help identify a safer therapeutic indication in the elderly with atrial fibrillation⁶.

In conclusion, the high prevalence of cardiovascular risk factors in our patients over eighty emphasizes the requirement of effective preventive actions in this population. The high prevalence of atrial fibrillation suggests that the administration of oral anticoagulants should be considered more frequently.

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