

Characterization of cerebrovascular disease in patients admitted to the “Abel Santamaría Cuadrado” General Teaching Hospital

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ABSTRACT

Introduction: stroke is the most prevalent neurological disease and its repercussions expressed in incidence rates, mortality, residual disability, recurrence and demand for permanent care are such that it has been declared a socio-sanitary problem of the first order. **Objective:** to characterize the behavior of cerebrovascular disease in patients admitted to the “Abel Santamaría Cuadrado” General Teaching Hospital. **Method:** an observational, descriptive, cross-sectional study was carried out that included all patients diagnosed with cerebrovascular disease admitted to the Hospital. Teaching General “Abel Santamaría Cuadrado”, in the period from 2018 to 2019. The universe consisted of a total of 252 patients; the sample matched the universe. **Results:** there was a predominance of the male sex (56.3%) and the age group over 70 years with 186 patients. Arterial hypertension was found to be the predominant risk factor and patients with hemiplegia represented the majority with 42.6%. The predominant complications were of respiratory origin, 52 patients with tracheobronchitis for 20.6%. Of a total of 252 patients studied, 211 presented the ischemic type and 96 patients showed mild affectations. **Conclusions:** as age advances, the risk of suffering from this disease increases directly; the main risk factors were arterial hypertension and diabetes mellitus. The most frequent symptoms were hemiplegia and language disorders; tracheobronchitis and bronchopneumonia stood out as the main complications in these patients.

Keywords: Cerebrovascular accident; Cerebral haemorrhage; Cerebral stroke.

Cerebrovascular diseases comprise some of the most frequent and devastating disorders: ischemic or hemorrhagic strokes, cerebral vascular anomalies such as intracranial aneurysms and arteriovenous malformations (AVMs)¹.

The number of strokes is increasing in line with population aging; by the year 2030 the number of deaths due to stroke will double². Therefore cerebrovascular disease (CVD) represents a daily medical, social and economic problem, in addition to being an enormous burden for the patient and the family, as well as for society³.

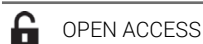
Stroke is the most prevalent neurological disease and its repercussions in terms of incidence rates, mortality, residual disability, recurrence and demand for permanent care are such that it has been declared a major socio-sanitary problem⁴.

CVD is linked to habits, lifestyles and susceptible risk factors that should be identified early, in order to intervene in its prevention and control^{3,5}.

While incidence rates continue to rise in relation to the chronological increase in age and show great variability in different countries, mortality rates show a decreasing trend, despite which this group of diseases continues to occupy second place as a cause of death in industrialized or high-income countries, and between third and fifth place in developing or low-income countries⁶.

The impact of the disease is much greater in the so-called low-resource countries. This group of countries not only contributes about 85 % of the total deaths attributable to stroke worldwide, but also reports rates of potentially lost years almost seven times higher than those reported by developed countries⁵.

In Cuba, cerebrovascular diseases have been the third direct cause of death for more than a few decades. They are also the most frequent cause of hospitalization for neurological disease, the first cause of chronic adult disability, the fourth cause of potentially lost years, and



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Conflict of interest

The authors declare no conflict of interest.

the second cause of dementia⁷.

For the aforementioned reasons, it was decided to conduct this study with the aim of characterizing the behavior of cerebrovascular disease in patients admitted to the "Abel Santamaría Cuadrado" General Teaching Hospital in the period from 2018 to 2019.

METHOD

Type of study: an observational, descriptive, cross-sectional study was conducted in patients diagnosed with cerebrovascular disease admitted to the "Abel Santamaría Cuadrado" General Teaching Hospital, in the period from 2018 to 2019.

Universe and sample: the universe consisted of a total of 252 patients admitted to the stroke unit of the hospital during the study period; the entire universe was studied.

Variables and data collection: the studied variables were: sex, age, symptoms and signs (hemiplegia, language disorders, deviation of the labial commissure, loss of consciousness, paresthesia, headache and vomiting, hemiparesis, disorientation, motor aphasia), risk factors (arterial hypertension, diabetes mellitus, dyslipidemia, previous strokes, obesity, smoking, alcohol intake), complications (tracheobronchitis, bronchopneumonia, bedsores, urinary tract infection, endocranial hypertension, without complications), type of stroke and anatomical location of the lesion [ischemic (atherothrombotic, transient ischemic infarction, lacunar infarction, cardioembolic, without lesion) and hemorrhagic (subarachnoid, intraparenchymal, subdural, epidural, cerebro-meningeal, and intraventricular)] and degree of neurological involvement assessed with a functionality scale (mild, moderate, severe, very severe). The information was obtained from the patients' medical records.

Statistical processing: for the processing and analysis of the information, a database was created in the Statistical Package for the Social Sciences (SPSS) version 21.0, which allowed the calculation of absolute and relative percentage frequencies. Descriptive statistics were used.

Ethical standards: the study was approved by the Scientific Council and Ethics Committee of the "Abel Santamaría Cuadrado" General Teaching Hospital. No therapeutic intervention was performed during the study and the confidentiality of the obtained data was respected. The bioethical principles of the studies with human beings, established in the II Declaration of Helsinki and in the Cuban ethical norms, were kept as a premise.

RESULTS

There was a predominance of the male sex (56,3%) and of the age group over 70 years old with 186 patients (Table 1).

Table 1. Distribution of stroke patients according to age group and sex. "Abel Santamaría Cuadrado" General Teaching Hospital, 2018-2019.

| Age groups | Male | | Female | | Total | |
|------------|------|------|--------|------|-------|------|
| | No. | % | No. | % | No. | % |
| 19-40 | 10 | 3,9 | 8 | 3,2 | 18 | 7,1 |
| 41-60 | 4 | 1,6 | 2 | 0,8 | 6 | 2,4 |
| 61-70 | 30 | 11,9 | 12 | 4,8 | 42 | 16,7 |
| >70 | 98 | 38,9 | 88 | 34,9 | 186 | 73,8 |
| Total | 142 | 56,3 | 110 | 43,7 | 252 | 100 |

Source: medical records

Among the risk factors found, arterial hypertension was the predominant factor (22%), followed by diabetes mellitus (18%), dyslipidemia (17%), previous strokes (14%), obesity (13%), smoking (9%) and alcohol intake (7%).

It was evident that patients with hemiplegia were the majority with 42,6% (Table 2).

Table 2. Distribution of stroke patients according to symptoms and signs.

| Symptoms and signs | No. | % |
|------------------------------------|-----|------|
| Hemiplegia | 106 | 42,6 |
| Language disorders | 98 | 38,8 |
| Deviation of the labial commissure | 97 | 38,4 |
| Loss of consciousness | 76 | 30,1 |
| Paresthesia | 62 | 24,6 |
| Headache and vomiting | 53 | 21 |
| Hemiparesis | 36 | 14,2 |
| Disorientation | 35 | 13,8 |
| Motor aphasia | 26 | 10,3 |

The main complications in patients with stroke were of respiratory origin, 52 patients with tracheobronchitis for 20,6%. However, the vast majority (127 patients, 50,3%) did not present any type of complication (Figure 1).

Of a total of 252 studied patients, 211 presented ischemic strokes. Atherothrombotic strokes predominated (57,8%) and in 15 patients the site of the lesion could not be determined. In the case of patients with hemorrhagic stroke, subarachnoid and intraparenchymal lesions predominated, representing 29,2% and 19,5% respectively (Table 3). Forty-five percent of the patients presented slight impairment, taking into account when evaluating them that many of these patients already

had impairments and disabilities prior to the cerebrovascular event with satisfactory recovery according to their age characteristics (Figure 2).

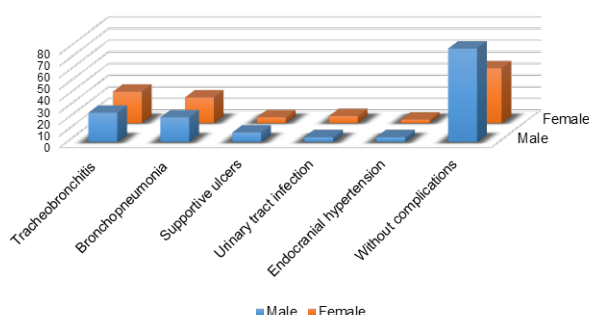


Figure 1. Distribution of stroke patients according to complications and sex .

| Type of stroke and anatomical location of the lesion | | | | | |
|--|-----|------|-------------------|-----|------|
| Ischemic | No. | % | Hemorrhagic | No. | % |
| Atherothrombotic | 122 | 57,8 | Subarachnoid | 12 | 29,2 |
| Transient ischemic infarction | 30 | 14,2 | Intraparenchymal | 8 | 19,5 |
| Lacunar infarction | 26 | 12,3 | Subdural | 7 | 17 |
| Cardioembolic | 18 | 8,5 | Epidural | 6 | 14,6 |
| Without lesion | 15 | 7,1 | Cerebro-meningeal | 6 | 14,6 |
| | | | Intraventricular | 2 | 4,8 |

Forty-five percent of the patients presented slight impairment, taking into account when evaluating them that many of these patients already had impairments and disabilities prior to the cerebrovascular event with satisfactory recovery according to their age characteristics (Figure 2).

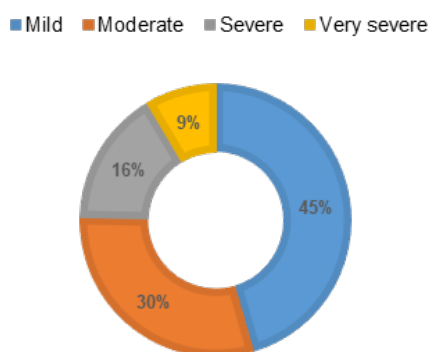


Figure 2. Distribution of patients with ischemic stroke according to degree of neurological impairment assessed with the functionality scale.

DISCUSSION

Several consulted authors state that the occurrence of stroke increases in direct proportion to the increase of chronological age^{6,8,9}. The results of the present study coincide with the studied statistics, where the highest incidence and prevalence of cerebrovascular infarction is recorded from the eighth decade of life onwards, due to the progression of atheromatous plaque, the triggering of inflammatory processes by the action of harmful environmental or exogenous factors, the destabilization of atherogenesis and consequently the clinical expression of major atherosclerotic crises¹⁰.

People over 60 years of age have a seven times higher risk of dying from a stroke than population in general, so it should be expected that with the increase in the average age of our population the number of stroke patients will increase⁹. A predominance of men over women was observed; these results are in agreement with those of other authors^{11,12} although it should be pointed out that for Perdomo *et al.*¹² the number of men was much higher than that of women.

Arterial hypertension (AHT) is the most important risk factor for both cerebral ischemia and cerebral hemorrhage, found in almost 70 % of stroke patients. The risk of stroke increases proportionally with blood pressure in both men and women, and in all age groups¹³. The risk doubles for every 7,5 mm Hg increase in diastolic pressure. Treatment of systolic and diastolic hypertension is associated with a 42 % reduction in the risk of stroke. In the elderly, treatment for isolated systolic hypertension reduces the risk of stroke by 36 %¹².

Most of the admitted patients have comorbidities that have a negative impact on the instability of the atheroma plaque, and a history of previous total stroke was also of particular importance, which means that another stroke is triggered more frequently in the subsequent period of six months to a year than in patients who have not had a previous stroke¹⁴. These data coincide with worldwide statistics where arterial hypertension and diabetes mellitus represent the highest prevalence among the non-communicable nosological entities (although they have an important genetic basis) and even more so if they coexist in a patient, they carry a higher risk of developing an atherosclerotic crisis due to a complicated atheromatous plaque¹².

Patients with various associated symptoms were the majority, whose symptoms depend on the area in which the dysfunction is suffered, with subsequent tomographic corroboration, although hemiplegia is one of the most common and evident in affected individuals. Symptoms appear within seconds due to neuronal glucose deprivation and, consequently, energy deficiency is very rapid^{15,16}.

The fact that complications such as tracheobronchitis and bronchopneumonia are the most frequent in patients admitted with stroke is not

new, data that agree with Lescaj *et al.*¹³, since the most part of the studied sample are elderly patients where tracheobronchitis is one of the most frequent respiratory infections, as it is bronchopneumonia. These two conditions are caused mainly by the age of the patients, by the degree of disability that leads to a syndrome of immobility where opportunistic germs appear due to the immunosuppression characteristic of the elderly, these statistics show that the complications presented are secondary to the cerebrovascular event and at the same time constitute the main causes of death in these patients, with most of the isolated germs being of nosocomial origin^{14,15}.

The data obtained on the location of the stroke coincide with other studies carried out worldwide^{12,14} since it has been proven that many of the patients who arrive at the institutions presenting stroke symptoms, the type of cerebrovascular event they present is transient ischaemic attack (TIA), where in the study only sites of cerebral atrophy are evidenced, which corresponds to the age of patients. The most frequently affected territory belongs to the anterior circulation, specifically the middle cerebral artery¹¹, whereas in most patients with hemorrhages, these are located in the subarachnoid region¹⁴.

It was possible to determine the mild damage taking into account, when evaluating it, that many of these patients had already been affected and had disabilities prior to the cerebrovascular event with satisfactory

recovery according to their age characteristics, and regarding the very severe damage, they were elderly with comorbidities associated with a history of old strokes.

CONCLUSIONS

As age increases, the risk of developing this disease increases directly; the main risk factors were arterial hypertension and diabetes mellitus. The most frequent symptoms were hemiplegia and language disorders; tracheobronchitis and bronchopneumonia stood out as the main complications in these patients.

AUTHORSHIP

Eduardo Enrique Cecilia-Paredes: conceptualization, data curation, formal data analysis, research, methodology, original draft-writing, project management and validation.

Ángel Echevarría-Cruz and Elizabeth Cecilia-Paredes: conceptualization, data curation, formal data analysis, research, methodology, original draft-writing.

Mónica de la Caridad Cruz-Labrador, Daviel Izquierdo-Leiro and Yelina Morales-Valdés: conceptualization, data curation, formal data analysis, research, methodology.

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BIBLIOGRAPHIC REFERENCES

- García Ezequiel B, Cabarcas Andrés M, Castilla Abigail M, Quintana Loraine P, Florez William P, Moscote SL. Profilaxis farmacológica para la prevención de la enfermedad tromboembólica en paciente con enfermedad cerebrovascular. *Rev. chil. neuro-psiquiatr* [Internet]. 2021 [citado 14/01/2022]; 59(3):218-224. Disponible en: http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0717-92272021000300218&lng=es
- Jiménez-Ruiz A, García-Grimshaw M, Ruiz-Sandoval JL. Cerebrovascular disease: Collaboration between neurologists and vascular surgeons in Mexico. *Rev. mex. angiología* [Internet]. 2021 [citado 14/01/2022]; 49(2):43-44. Disponible en: http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S2696-130X2021000200043&lng=es
- Santamaría Ávila LA, González Arteaga JJ, Pedraza Linares OL, Sierra Matamoros FA, Arcadio Piñeros C. Diabetes mellitus e hipertensión arterial en la progresión a deterioro cognitivo leve y demencia: una revisión de la literatura. *Acta Neurol Colomb* [Internet]. 2021 [citado 14/01/2022]; 37(2):80-90. Disponible en: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-87482021000300080&lng=en
- Rosales Julieta S, Rodríguez-Perez MS, Ameriso Sebastián F. Efecto de la pandemia COVID-19 y la cuarentena en el número de consultas, subtipos y tratamiento del accidente cerebrovascular en un centro neurológico de argentina. *Medicina (B. Aires)* [Internet]. 2020 [citado 14/01/2022]; 80(Suppl 6):65-70. Disponible en: http://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S0025-76802020001000065&lng=es
- Rodríguez-Pino A, Álvarez-Guerra-González E, Muñoz-Casas IC, Montesinos-Rodríguez R, Gutiérrez-Escarrás Y, Echegoyen-López O. Influencia de los factores pronósticos en la rehabilitación de pacientes geriátricos con ictus isquémico. *AMC* [Internet]. 2021 [citado 14/01/2022]; 25(1):e7491. Disponible en: <http://revistaamc.sld.cu/index.php/amc/article/view/7491>
- Hernández-Ruiz A, Le'Clerc-Nicolás J, González-González M, Poyo-Indra JD, Viñas-Rodríguez D. Factores pronósticos de mortalidad en pacientes graves con enfermedades neurológicas agudas no traumáticas. *AMC* [Internet]. 2020 [citado 14/01/2022]; 24(6):e7570. Disponible en: <http://revistaamc.sld.cu/index.php/amc/article/view/7570>
- Vargas-Murcia JD, Isaza-Jaramillo SP, Uribe-Uribe CS. Factores de riesgo y causas de ACV isquémico en pacientes jóvenes (18-49 años) en Colombia. Una revisión sistemática. *Rev. chil. neuro-psiquiatr* [Internet]. 2021 [ci-

tado 14/01/2022]; 59(2):113-124. Disponible en: http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0717-92272021000200113&lng=es

8. Ruiz Mariño RA, Campos Muñoz M, Rodríguez Campos DC, Chacón Reyes OD. Características clínicas y tomográficas de pacientes con enfermedad cerebrovascular isquémica. MEDISAN [Internet]. 2021 [citado 14/01/2022]; 25(3):624-636. Disponible en: <http://www.medisana.sld.cu/index.php/san/article/view/3335>

9. Piloto Cruz A, Suarez Rivero B, Belaunde Clausell A, Castro JM. La enfermedad cerebrovascular y sus factores de riesgo. Rev Cub Med Mil [Internet]. 2020 [citado 14/01/2022]; 49(3):e568. Disponible en: <https://pesquisa.bvsalud.org/portal/resource/pt/biblio-1144478>

10. Bayona H, Valencia María C, Peña A, Ramírez N, Martínez C. Vasoconstricción cerebral fatal, presentación inusual de una enfermedad inusual. Biomed. [Internet]. 2021 [citado 14/01/2022]; 41(2):225-233. Disponible en: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-41572021000200225&lng=en

11. Venegas Rodríguez R,

Hernández Pedroso W, Chacón Montano D, González Mesana R, Santana Sánchez R, Chibás Ponce E. Ictus en pacientes geriátricos ingresados en una sala de cuidados intermedios de medicina. Rev Cub Med Mil [Internet]. 2020 [citado 14/01/2022]; 49(3):e580. Disponible en: <http://www.revmedmilitar.sld.cu/index.php/mil/article/view/580>

12. Perdomo Borges B, Rodríguez Rodríguez T, Fonseca Fernández M, Urquiza Pozo I, Martínez Serrano IL, Bilaboy Pérez BR. Caracterización de pacientes con enfermedad cerebrovascular isquémica y deterioro cognitivo. Cienfuegos, 2018. MediSur [Internet]. 2020 [citado 14/01/2022]; 18(3):333-344. Disponible en: <https://www.medi-graphic.com/cgi-bin/new/resumen.cgi?IDARTICULO=99173>

13. Lescay Balanquet D, Téllez Gamayo G, Fong Osejo M, Flores Bolívar F, Guerra Cepena E. Caracterización de pacientes con accidente cerebrovascular en un servicio de emergencias de Santiago de Cuba. MEDISAN [Internet]. 2020 [citado 14/01/2022]; 24(3):420-430. Disponible en: <http://www.medisana.sld.cu/index.php/san/article/view/2748>

14. Cabrera Rodríguez E, Santamarina Fernández A, González González A, Garcés Camejo M, Fonseca Viltres Y. Características de los pacientes con enfermedad cerebrovascular. Consultorios Médicos 9, 10,11. Policlínico 13 de Marzo. Bayamo. Enero-Julio 2019. Multimed [Internet]. 2020 [citado 14/01/2022]; 24(2):352-369. Disponible en: <https://www.medi-graphic.com/cgi-bin/new/resumen.cgi?IDARTICULO=99236>

15. Cecilia Paredes EE, Echevarría Cruz A, Cecilia Paredes E, García Peña EA, Santaya Labrador JM. Comportamiento de algunos marcadores indirectos de disfunción endotelial en pacientes con ICTUS isquémico aterotrombótico. Revdosdic [Internet]. 2021 [citado 14/01/2022]; 4(3):e196. Disponible en: <http://www.revdosdic.sld.cu/index.php/revdosdic/article/view/196>

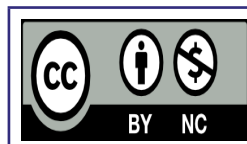
16. Sánchez Pando Y, Sánchez Nuñez R, Lugo Bencomo Y. Mortalidad por accidentes cerebrovasculares en el Hospital General Docente Abel Santamaría Cuadrado de Pinar del Río. Rev. cienc. méd. Pinar del Río. [Internet]. 2020 [citado 14/01/2022]; 24(1):67-77. Disponible en: <http://www.revcompinar.sld.cu/index.php/publicaciones/article/view/418>

Caracterización de la enfermedad cerebrovascular en pacientes ingresados en el Hospital General Docente "Abel Santamaría Cuadrado"

RESUMEN

Introducción: el ictus es la enfermedad neurológica más prevalente y sus repercusiones expresadas en tasas de incidencia, mortalidad, discapacidad residual, recurrencia y demanda de cuidados permanentes son tales que ha sido declarado como un problema sociosanitario de primer orden. **Objetivo:** caracterizar el comportamiento de la enfermedad cerebrovascular en pacientes ingresados en el Hospital General Docente "Abel Santamaría Cuadrado". **Método:** se realizó un estudio observacional, descriptivo, de corte transversal que incluyó a todos los pacientes diagnosticados con enfermedad cerebrovascular ingresados en el Hospital General Docente "Abel Santamaría Cuadrado", en el periodo de 2018 a 2019. El universo estuvo constituido por un total de 252 pacientes; la muestra coincidió con el universo. **Resultados:** existió predominio del sexo masculino (56,3 %) y del grupo etario de más de 70 años con 186 pacientes. Se encontró a la hipertensión arterial como el factor de riesgo predominante y los pacientes con hemiplejías representaron la mayoría con un 42,6 %. Las complicaciones predominantes fueron de origen respiratorio, 52 pacientes con traqueobronquitis para un 20,6 %. De un total de 252 pacientes estudiados 211 presentaron el tipo isquémico y 96 pacientes mostraron afectaciones ligeras. **Conclusiones:** a medida que avanza la edad se incrementa de forma directa el riesgo de padecer esta enfermedad; los principales factores de riesgo fueron la hipertensión arterial y la diabetes mellitus. Los síntomas más frecuentes fueron las hemiplejías y los trastornos del lenguaje; la traqueobronquitis y las bronconeumonías resaltaron como las principales complicaciones en estos pacientes.

Palabras clave: Accidente cerebrovascular; Hemorragia cerebral; Infarto cerebral.



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