



CLINICAL AND RADIOLOGICAL PROFILE OF PATIENTS WITH STROKE IN A TERTIARY CENTRE ON LUANDA, ANGOLA

PERFIL CLÍNICO Y RADIOLÓGICO DE LOS PACIENTES CON ACCIDENTE CEREBROVASCULAR EN UN CENTRO TERCARIO DE LUANDA, ANGOLA

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ORIGINAL PAPER

ABSTRACT

Introduction: Cerebral Vascular Accident (CVA) or Stroke is a sudden onset syndrome characterized by focal or global changes in the brain function as consequence of a disorder of vascular origin with a development longer than 24 hours. Depending on the nature of the injury, it can be Ischemic or Hemorrhagic. The latter may be intraparenchymal or subarachnoid. Stroke is the second leading cause of death adult disability in the world. There are several risk factors associated with the above mentioned disease, among them the hypertension. There is an exponential increase in cases of fore mentioned disease as well as in the prevalence of risk factors in population.

Objective: To know clinical and radiological profile of patients with CVA treated at Sagrada Esperança Clinic, from January to December 2018. **Methods:** The universe of study consisted of all the files of patients admitted from January one st to December 31 st, 2018, with the following release diagnostic codes: I60 (subarachnoid Hemorrhage), I61 (Intracerebral Hemorrhage), I62 (Other non-traumatic Subarachnoid Hemorrhage), I63 (Cerebral Infarction), I64 (not specified), G45 (Transient Ischemic Stroke and Correlated syndromes), making up a total a 312 listed patients, of which 211 were excluded by having a history of the disease being studied, 18 due to misdiagnosis in the process and eight cases were lost due to non exam or reports on the servers. There were 75 cases for the study. Results: from the total number of cases studied which is 75, the most prevalent age group was from 41-60 years old which makes up 45%, the average age was 58,8 ± 13 years old, the male gender represented 45 cases (60%); Blacks were predominant with 64 cases (89%). Ischemic stroke was the most frequent with 42 cases (56%), the average hospitalization was the most prevalent deficit in both Ischemic VCA, with 18 cases (9%), and four patients (5%) died. The middle cerebral artery area was the most affected in both Ischemic 23 cases (30,7%) and Intraparenchymal Hemorrhagic Strokes 17 cases (53,1%) and subarachnoid two cases (3,7%). Conclusion Most patients were 40-80 years old, male and black. Stroke was more frequent, and the most affected area was the middle cerebral artery, with the most frequent deficit being hemiparesis and facial paresis; The most common risk factor was Hypertension. In regards to the length of stay most of them were in the clinic from five to nine days and few of them died.

Keywords: Stroke; Clinical profile; Radiological profile. (Source: MeSH NLM)

RESUMEN

Introducción: Accidente cerebro vascular (ACV) o Ictus es un síndrome de inicio repentino caracterizado por cambios focales o globales en la función cerebral como consecuencia de un trastorno de origen vascular en un desarrollo superior a 24 horas. Dependiendo de la naturaleza de la lesión, puede ser isquémica o hemorrágica. Pudiendo ser la hemorrágica ser intraparenquimatoso o subaracnoideo. El ACV es la segunda causa principal de muerte adulta en el mundo. Existen varios hechos de riesgo asociados a la enfermedad, entre ellos la hipertensión, que es uno de los factores que ha incrementado exponencialmente los casos. Siendo este prevalente como factor de riesgo en la población. **Objetivo:** Conocer el perfil clínico y radiológico de los pacientes con evento cerebro vascular tratados en la Clínica Sagrada Esperanza de enero a diciembre de 2018. **Métodos:** La población de estudio estuvo conformada por todos los pacientes hospitalizados del uno de enero al 31 de diciembre de 2018, con los siguientes códigos diagnósticos de liberación: I60 (Hemorragia subaracnoidea), I61 (Hemorragia intracerebral), I62 (Otra Hemorragia Subaracnoidea no traumática), I63 (Infarto cerebral), I64 (ACV no especificado), G45 (Ictus Isquémico Transitorio y Síndromes Correlacionados), conformando un total de 312 pacientes, de los cuales 211 fueron excluidos por tener antecedentes de la enfermedad en estudio, 18 por diagnóstico erróneo en el proceso y ocho casos se perdieron debido a falta de informes de exámenes. Hubo 75 casos para el estudio. **Resultados:** Del total de casos estudiados, el grupo de edad más prevalente fue de 41-60 años que representa el 45%, la edad promedio fue de 58,8 ± 13 años, el género masculino representó 45 casos (60%); Predominaron la raza negra con 64 casos (89%). La hipertensión arterial fue el factor más evidente 48 (64%). El ictus isquémico fue el más frecuente con 42 casos (56%). El promedio de la estancia fue de 9,4±7,3 días, La hemiparesia fue el déficit más evidente tanto en el ictus isquémico 34 (18%) como en el ictus hemorrágico 18 (9%), como en el fallecimiento de cuatro pacientes (5%). La arteria cerebral media fue la región más afectada 43 (57.3%) tanto en el ictus isquémico 24 (32%) como en el ictus hemorrágico intraparenquimatosos 17 (53,1%) y subaracnoideos dos (3,7%). **Conclusión:** La mayoría de los pacientes tenían entre 40 y 80 años, sexo masculino y afro americanos. El ictus fue más frecuente, y la zona más afectada fue la arteria cerebral media, siendo el déficit más frecuente la hemiparesia y la paresia facial; El factor de riesgo más común fue la hipertensión. En lo que respecta a la duración de la estancia, la mayoría de ellos permanecieron de cinco a nueve días y pocos de ellos murieron.

Palabras clave: Ictus; Perfil clínico; Perfil radiológico. (Fuente: DeCS BIREME)

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INTRODUCTION

Stroke is defined by the World Health Organization as a sudden-onset syndrome characterized by focal or global changes in brain function, secondary to a disorder of vascular origin with an evolution longer than 24 hours. In industrialized countries, stroke is the main cause of morbidity and is among the leading causes of death, although the African continent still lacks epidemiological information about the disease.

Actually, Africa bears the greatest burden of hypertension, the strongest and most common risk factor for stroke. In view of this, strokes are an increasingly public health issue. The incidence and prevalence of stroke at Africa was estimated in 316 e 981 casos por 100 000 habitantes, which is a high incidence, prevalence and consequently case fatality of stroke ⁽¹⁾.

The stroke surveillance is useful to determine the present and projected burden of the disease and monitoring the impact of future interventions. The development of new strategies, the efficient planning and delivery of stroke services, the effective application of current stroke prevention strategies are results of the rigorous stroke epidemiology and clinical data ⁽¹⁾.

The limitation of the epidemiological quality of this population prevents the making of statements about the impact of stroke and consequent interventions in Africa. So, the knowledge of epidemiology of stroke in African countries allows comparison of estimates across regions and nations without methodological bias.

This study aims to know and describe the clinical and the radiological profile of patients with stroke attended and treated at Sagrada Esperança Clinic in 2018. Thus, it will be possible to characterize clinical aspects, describe the risk factors, imaging exams and identify statistical data of the patients.

METHODS

Study design type and area

This is an observational, descriptive and retrospective study.

Study place

Imaging Service at the Sagrada Esperança Clinic. CSE is a tertiary-level health unit dedicated to providing health care and academic and scientific training, located at Avenida Mortala Mohammed nº 298, urban district of Ilha do Cabo, Luanda Province, Angola.

Sample

The universe consisted of all patient files admitted to the CSE from January one st to December 31st, 2018, with exit diagnosis codes I60 (Subarachnoid Hemorrhage), I61 (Intracerebral Hemorrhage), I62 (Other Non-traumatic Subarachnoid Hemorrhages) and I63 (Cerebral Infarction), I64 (Stroke not specified as hemorrhagic or ischemic), G45 (Transient ischemic stroke and related syndromes), making a total of 312 patients.

Inclusion criteria

All cases of patients older than 18 years who had an acute episode of stroke confirmed by Computed Tomography or Magnetic Resonance were included.

Exclusion criteria

The files of patients who had a history of previous stroke were excluded.

Data collection

Clinical and radiological data were collected from the patients' clinical files, stored in the physical files, in the Synapse program and in the TC and RM reports, using a data collection form that presented the following variables:

1. Operational variables and definitions



Sociodemographic Variables
age, sex and race

Clinical Variables

- Risk factors: Situation or condition that increases the probability of occurrence of stroke, described in the patients' clinical files. They can be: modifiable (HTA, Obesity, Diabetes, Hypercholesterolemia, Smoking, Alcoholism, Heart disease) and non-modifiable (race, sex, age and background family).

-Length of stay: Period from the beginning of the service to the exit from the clinic. Measured in days.

-Deficit: physical or mental change secondary to the stroke episode, grouped into motor, sensory, behavioral, perceptive and language.

-Outcome: State of the individual when leaving the clinic. Categorized into discharge and death.

Radiological Variables

-Type of stroke: Characterization of stroke according to radiological changes, in ischemic and hemorrhagic. The hemorrhagic stroke will be subcategorized into intraparenchymal and subarachnoid.

-Site of injury: Vascular territory of the brain affected by stroke. Anterior Cerebral Artery (ACA), Middle Cerebral Artery (MCA), Posterior Cerebral Artery (ACP), Internal Carotid Artery (ACI), Basilar Artery (AB) and Vertebrobasilar Artery (AVB).

Data analysis and processing

Data were stored, processed and analyzed using SPSS for Windows version 23.0, which were treated using descriptive statistics, calculating mean and standard deviation for quantitative variables such as age and length of stay, which were later presented in frequency tables.

Ethical aspects

It was previously authorized by the Department of Teaching and Research in Radiology of the Faculty of Medicine of Universidade Agostinho Neto, together with the Board of CSE-IIha. The research results were simply used for study purposes, reserving the integrity and anonymity of patients.

RESULTS

Of a total of 312 cases listed with a diagnosis of stroke, 211 were excluded for having a history of the disease, 18 for divergent diagnosis in the process, eight cases for lack of exams or reports from the servers. 75 cases were included.

Of the 75 processes observed, it was found that the most frequent age group was 41-60 years old with 34 (45%), followed by 61-80 with 31 (41%), the average age was 58.8 and ± 13 standard deviation. Males were the most frequent with 45 (60%), and females with 30 (40%). There was a predominance of black patients 67 (89%) (Table 1).

Table 1. Distribution of patients with stroke attended on the clinic according to the age, sex and race, of January 1 until 31 December 2018.

Variable		N=75 (100%)	Media (DP)
Age	<40	5 (7%)	
	41-60	34 (45%)	
	61-80	31 (41%)	58.8 (13)
	>80	5 (7%)	
Sex	Feminine	30 (40%)	
	Masculine	45 (60%)	
Breed	black	67 (89%)	
	Caucasian	8 (11%)	

There was a predominance of ischemic stroke with 42 (56%), compared to hemorrhagic stroke 32 (44%). According to the location of the lesion, the middle cerebral artery was the most affected 43 (57.3%), followed by the posterior cerebral artery with 20 (26.7%). As for the length of stay, most 37 (49.3%)

remained for five to nine days and 18 (24%) were hospitalized for less than 4 days, the average length of stay was 9.4 ± 7.3 days. Most patients had a favorable outcome for discharge, representing 71 (95%), and four (5%) progressed to death (Table 2).

Table 2. Distribution of patients according to stroke characteristics.

Variable		N=75 (100%)	Average (SD)
Stroke	Ischemic	42 (56%)	
	Subarachnoid hemorrhagic	3 (4%)	
	Intraparenchymal hemorrhagic	30 (40%)	
Location of Injury	Middle Cerebral artery	43 (57.3%)	
	Posterior Cerebral artery	20 (26.7%)	
	Anterior Cerebral artery	7 (9.3%)	
	basilar artery	5 (6.6%)	
Time in Internment (days)	0-4	13 (17.3%)	
	5-9	37 (49.3%)	
	10-14	18 (24%)	
	15-19	1 (1.3%)	9.4(7.3)
	20-24	2 (2.7%)	
	25-29	1 (1.3%)	
Outcome	>30	2 (2.7%)	
	High	71 (94.7%)	
	Death	4 (5.3%)	

The clinical picture of the patients was quite varied, and hemiparesis was the most evident deficit in both ischemic stroke 34 (18%) and hemorrhagic stroke 18 (9%),

followed by lip deviation with 28 (14%) present in ischemic stroke and nine (59%) present in hemorrhagic stroke (Table 3).

Table 3. Distribution of deficits responsible for patients according to the type of stroke.

DEFICIT	ischemic n(%)	hemorrhagic n(%)	Total n(%)
hemiparesis	34 (18)	18 (9)	52 (27)
lip deviation	28 (14)	9 (59)	37 (19)
dysarthria	15 (8)	7 (4)	22 (11)
headache	8 (4)	10 (5)	18 (9)
difficulty in walking	13 (7)	3 (2)	16 (8)
Aphasia	10 (5)	4 (2)	14 (7)
Mental confusion	5 (3)	5 (3)	10 (5)
Dizziness	3 (2)	3 (2)	6 (3)
Syncope	1 (1)	4 (2)	5 (3)
Decrease in visual acuity	3 (2)	1 (1)	4 (2)
Others*	5 (4)	5 (4)	10 (6)
Total	125 (64)	69 (36)	194 (100)

*Others: Photophobia, convulsions, dysphagia and neck stiffness.

Among the different risk factors that patients with stroke presented, it was observed that hypertension was the most evident factor, present 48 (64%), followed by heart disease 17 (22.7%) and diabetes mellitus 16 (21.3%). About the relationship between the type of stroke and the site of the lesion, the middle cerebral artery

was the most affected region in both ischemic stroke 24 (32%) and hemorrhagic stroke, both intraparenchymal 17 (53.1%) and subarachnoid two (2.7%), followed by the posterior cerebral artery nine (12%) in ischemic stroke and 11 (34.4%) in hemorrhagic stroke (Table 4).

Table 4. Distribution of the patients according to the type of stroke and injury site

LOCATION OF INJURY	ischemic n(%)	hemorrhagic subarachnoid n(%)	hemorrhagic intraparenchymal n(%)	Total n(%)
Middle Cerebral Artery	24 (32)	2 (2.7)	17 (53.1)	43 (57.3)
Posterior Cerebral Artery	9 (12)	-	11 (34.4)	20 (26.7)
Anterior Cerebral Artery	4 (5.3)	1 (1.3)	2 (6.3)	7 (9.3)
Basilar Artery	5 (6.6)	-	-	5 (6.6)
Total	42 (56)	3 (4)	30 (40)	75 (100)

DISCUSSION

Our main finding is the clinical characteristics and imaging profile of patients with cerebrovascular disease treated at the CSE from January one to December 31, 2018. We found the black race obtained 89% of superiority in patients seen at the clinic with a diagnosis of stroke in the period under study. One explanation is the demographic component of the region. This is consistent with previous data showing a higher incidence of stroke in the black race, especially the ischemic event.

In the sociodemographic data, there was a mean age of 58.8 with a standard deviation of ± 13 , which corroborates with some retrospective studies, such as Goulart et al em 2016⁽²⁾ on the characterization of stroke focusing on oral communication disorders in patients at a regional hospital in Brazil, in which the reported mean age was 59.8 with a standard deviation of 13.9. Cantarellas & Pinto em 2016⁽³⁾ in the study on the clinical and sociodemographic profile of patients hospitalized with stroke at the São Francisco University Hospital in Brazil, they also found a mean age of 63.9 years with a standard deviation of ± 11.7 . Our results also corroborate the study of Leite, Nunes, & Corrêa em 2009⁽⁴⁾ on the epidemiological profile of patients affected by

stroke, registered in the Family Health Strategy in Diamantina, a Brazilian city, in which they identified a mean age of 67.8 and $sd \pm 13.6$. These data suggest the fact that although stroke is not a pathology exclusive to old age five⁽⁵⁾, there is an increased incidence of stroke cases from 55 years of age onwards, and most cases occur at 66 years of age^(6,9).

Male patients tend to have a increased incidence of stroke⁽¹⁰⁾. This aspect was also observed in our study, in which, of the 75 patients, 60% were male. This data corroborates what was found by⁽⁸⁾ in the study on clinical characteristics and treatment measures in stroke patients admitted to the Nekemte referral hospital in Western Ethiopia in which males accounted for 57.1%⁽¹¹⁾. Cantarellas e Pinto em 2016⁽³⁾ had an incidence of 61% in males, and in a study on stroke in young people, which assessed the frequency and imaging alterations of affected patients, carried out at the Sagrada Esperança Clinic in Luanda, found results in which men represented 52.8%⁽⁵⁾. A plausible explanation for this increased incidence in mens is the fact that men are more prone to cardiovascular risk factors, since women have a hormonal protection that protects them until menopause⁽⁶⁾.

Among the cardiovascular risk factors presented by the patients in this study, AHT was the most frequent, being present in 64% of patients, even before the occurrence of a stroke, followed by heart disease 22.7% and diabetes mellitus 21.3%. Our finding is in line with the current literature, in which ⁽⁹⁾ evaluated the clinical findings and the main complications of stroke, carried out in Brazil, in which hypertension was also the most frequent risk factor among study participants with 74%, heart disease and diabetes mellitus were 15% and 25%, respectively.

Fekadu, Adola, Mosisa, Shibiru, & Chelmeba⁽¹¹⁾, in 2019 also found HTA as the main factor being present in 63.2% of patients. It appears HTA is the main risk factor associated with stroke, both ischemic and hemorrhagic, and diabetes mellitus has gained an influential role in this process as a result of the current lifestyle adopted by populations^(6,10).

Obesity (10.7%), smoking (5.3%), dyslipidemia (4%) and alcoholism (2.7%) were risk factors that do not present great representation in comparison with other studies ⁽¹²⁾, in which smoking was present in 22% and dyslipidemia in 11% of those studied. The data found by Gp Cantarellas ⁽³⁾ also diverge from ours, in which smoking was present in 33%, alcohol consumption in 22% and dyslipidemia in 11%. This difference in risk factors can be explained by the different eating habits between the populations studied, without forgetting the genetic and environmental component^(5,13).

There was a higher incidence of IS in relation to HCV, 56% and 44% respectively, data that corroborate with the current literature in which AVCI represented 55.6% while AVCH 45.4%⁽⁵⁾. Our results differ from those found by Alvares ⁽¹⁴⁾ in his study on the clinical and epidemiological profile of patients hospitalized for stroke, according to the area covered by the family health strategy, in the municipality of Cáceres, Mato Grosso in Brazil, in which stroke accounted for 80.1%. A study⁽¹⁵⁾ obtained the profile of patients hospitalized for CVA in a hospital in Vale do Taquari in Brazil, in which CVA represented 84.8% of the cases studied. One explanation is by the fact that, although in high-income countries there is a significant incidence of stroke in

relation to HCV, in African countries, HCV varies in a proportion from 29% to 57%, justified by a higher burden of uncontrolled HTA in the continent, since AVCH is related to uncontrolled hypertensive pathology ⁽¹⁶⁾.

Among the types of HCV, intraparenchymal was the most frequent, representing 40% of the 75 patients in the study. Stroke is currently the main cause of physical disability in Europe, being responsible for a great financial burden on families ⁽¹⁷⁾. The most frequent deficit was hemiparesis, present in 27% of patients, followed by lip deviation, present in 19% of them, both in stroke and stroke. This is consistent with 11, on 2014 and Cantarellas & Pinto, em 2016 ⁽³⁾, in which hemiparesis was also the most identified deficit followed by facial paresis. 11% of our patients had dysarthria and 7% aphasia, data that contrasts with those found by a study ^(3,18) in which patients with aphasia corresponded to 39% of the sample. A plausible explanation is the fact that the same study presents a large number of patients with a previous history of stroke, some of which already had previous deficits.

The arterial territory most affected by stroke was the ACM (57.3%) followed by the ACP territory (26.7%). This is consistent with previous data showing the place with the highest incidence of stroke is the territory of the ACM, preferentially related to HTA and diabetes mellitus, risk factors that were shown to be very prevalent in this study ⁽¹⁹⁻²⁰⁾.

Of the 75 patients, 49.3% remained hospitalized for five to nine days, with a mean hospital stay of 9.4 and ± 7.3 SD. The average hospital stay was 11 days and $SD \pm 7.8$ ⁽¹²⁾. In this study, 5.3% of patients died, diverging from a study⁽³⁾, in which deaths accounted for 11%. Our data also contrast with those found ⁽¹⁴⁾, in which deaths corresponded to 33.3% and 24%, respectively, in the two communities studied. This contrast is justified by the difference in sample size of the different studies.

Our study has some limitations. First, there was the absence of some processes listed with the diagnosis of stroke, the absence of sociodemographic and clinical data, and absence of some exams and reports in the computer database and Synapse.

