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Research Article

Epidemiology of Stroke in Young Patients at the University Hospital of Friendship Sino-Central in Bangui, Central African Republic-

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ABSTRACT

Introduction: Stroke is an even more dramatic major public health problem in young people.

Goal of the study: Contribute to the knowledge of strokes in young people.

Methodology: This was a retrospective study carried out over a period of 02 years (January 2017 to December 2018) including the files of patients aged 18 to 49 years hospitalized for any suspected case of stroke in the Neurology department of the University Hospital Center of the Sino-Central African Friendship (CHUSCA) of Bangui.

Results: During the study, 225 cases of stroke were recorded, including 26 cases in young subjects, representing a hospital frequency of 10.32%. The average age was 42.5 years with extremes ranging from 24 to 49 years. The most represented age group was 45 and 49 with a sex ratio (M/F) of 1.36. The average age for men was 41.93 years compared to 39.27 years for women. Civil servants were in the majority in 50% of the cases. Alcohol was the main risk factor (80.77%) followed by hypertension (61.5%) and tobacco (50%). The tients (57.70%) were admitted to neurology after the first 24 hours. Ischemic stroke represented 73.08% compared to 26.92% of hemorrhagic stroke. The lethality was 20.08%. The sequelae were found in 69.20% of cases. The cardiac exploration had found 57.10% of Left Ventricular Hypertrophy (LVH).

Conclusion: This study confirms a high frequency of stroke in young people. The predominance of modifiable cardiovascular risk factors requires the implementation of a specific strategy based on awareness, early detection and effective and adequate management.

Keywords: Stroke epidemiology; Young subject; Bangui Central African Republic

INTRODUCTION

Stroke is a real public health problem. Each year, around fifteen million people suffer from it worldwide, of which five million die and another five million remain permanently disabled [1,2]. In developing countries (PVD), they represent the second leading cause of death, behind cardiovascular diseases, ahead of infectious diseases, in particular pulmonary or diarrheal infections, tuberculosis, AIDS or malaria. More than 80% of the deaths caused by these affections concern these countries. It is also the primary cause of physical disability [3].

In sub-Saharan Africa, the incidence is between 26 and 30 per 100,000 population. The prevalence is around 58 to 243 per 100,000 inhabitants [4]. In the Central African Republic (CAR), strokes represented 8.8% of patients hospitalized in the Bangui neurology department in 2004 with a one-month mortality rate of 33% [5]. Stroke is still the disease of the elderly. Although the overall incidence of stroke is declining and the rates seen in young adults are increasing, suggesting a need for strategies to improve the situation through prevention [6]. However, in the Central African Republic no specific study has been carried out on stroke in young people. For this, it seemed appropriate to do this work, the general objective of which is to make our contribution to the knowledge of this pathology in young people.

METHODOLOGY

It was a retrospective study with descriptive and analytical aims which took place over a period of two (02) years going from January 2017 to December 2018. All patients aged 18 to 49 years, from two sexes hospitalized in the neurology department of the CHU of the Sino-Central African Friendship of Bangui for stroke whose records were usable. Not included were any subjects with stroke under the age of 18 or over 49, and those with incomplete and unusable records.

The data were collected from the patient's paper files on pre-established survey sheets and containing socio-demographic information (gender, marital status, profession, provenance); history (hypertension, diabetes, sickle cell anemia, HIV/AIDS, oral contraception, tobacco); clinical signs (general condition of patients, data from the neurological clinical examination, data from the cardiovascular clinical examination); paraclinical signs (renal check-up, lipid check-ups, morphological examinations in cardiology) and the evolution. These data were entered with Word and Excel software and analyzed with the Epi Info 3.5.2 software. The chi-square test was used to compare the proportions with a significance level of 5%.

RESULTS

During this study, 225 cases of stroke were hospitalized, including 26 young subjects, representing a hospital frequency of 10.20%. The average age was 42.5 years with extremes of 24 and 49 years. The most represented age group was 45 to 49 years old with a sex ratio of 1.36 (H/F) (see Table 1). The study population was dominated by civil servants (50%) followed by traders 19.20%. Singles represented 61.50% followed by widowers and married people (15.40%).

Table 1: Distribution of patients and age according to sex and age.

Age Group	Sex	
	Male	Female
24 - 29	0	2
30 - 34	1	1
35 - 39	3	2
40 - 44	7	1
45 - 49	4	5
Total	15	11

In our series, almost half (46.2%) of the patients came from their home, 42.3% from the Urban Health Center/Clinic, 11.5% from neurological consultations while 53.8% arrived in a clinic. care within the first three hours. The majority of patients (57.7%) were admitted to the neurology department 24 hours after the first signs appeared. The main risk factor was alcohol (80.8%), followed by hypertension (61.5%) and tobacco (50%) (Table 2). The main functional signs were motor deficit (100%), headache (65.4%) and language impairment (34.6%), these signs appeared in 38.46% of cases upon waking. Physical signs were dominated by hemiplegia/hemiparesis (100%), aphasia (62.9%) and impaired consciousness (19.2%).

Paraclinically, we recorded 73.08% of DALYs, 57.7% of cases of LVH, hyperglycemia in 35.3% of cases, cases of anemia (29.4%) and an inflammatory syndrome organic in 25% of cases. On the

evolutionary level, the lethality was 20.08% of the cases. The sequelae were observed in 69.20% of cases and consisted of hemiparesis and 92.3% of cases spent less than 20 days in hospital. During this study, we found that a vigilance disorder ($p < 0.01$) or even a coma ($p < 0.01$) significantly oriented towards AVCH. Patients admitted to hospital beyond 6 a.m. and those with high initial Blood Pressure (BP) had a higher risk of death. (Table 3)

Table 2 : Distribution of the number of patients according to cardiovascular risk factors.

Antecedents	Effective	(%)
HTA	16	61.5%
Diabetes	4	15.4%
Heart disease	4	15.4%
AVC	3	11.5%
Alcohol	21	80.8%
Tobacco	13	50.0%
Estrogen plus progestin	3	11.5%

Table 3: Analysis of predictive functional signs of stroke type.

Of Terminants	DALY	AVCH	RC and IC	*p*
Motor Deficit				0.09
Yes	14	7	undetermined	
No	5	0	1	
Cephalalgia				0.11
Yes	11	6	0.24 [0.01-2.08]	
No	8	1	1	
Language Disorder				0.31
Yes	6	3	0.24 [0.10-4.32]	
No	13	4	1	
Consciousness Disorder				0.01
Yes	3	5	0.09 [0.01-0.64]	
No	16	2	1	
Vomitting				0.06
Yes	2	3	0.17 [0.02-1.50]	
No	17	4	1	
Behavior Disorder				0.26
Yes	3	2	0.48 [0.06-5.05]	
No	16	5	1	

DISCUSSION

The prevalence of stroke in the young subject during our study was 10.32%. This result is similar to that reported in Lome 10.8%) in Togo [7]. However, our result is lower than that reported in Douala, Cameroon (15.26%) in a prospective study conducted over a period of 05 years in subjects aged 15 to 45 years [8]. Likewise Brett, et al. found in a study carried out in Kentucky (Eastern USA) that the proportion of strokes increased from 12.9% in 1993/1994 to 18.6% in 2005 in subjects aged 20 to 54 years [9]. This difference could be explained by better detection of strokes thanks to the generalization of MRI in the USA, and the contribution of CT in the diagnosis of strokes in Cameroon; whereas in our context, given the inadequacy of the technical platform (lack of brain imaging), some cases of stroke would be taken for other pathologies. Furthermore, this discrepancy is also linked to the fact that racial and ethnic composition is a widely recognized component in the variability of the incidence of stroke, especially in the young population [10]. In the Central African Republic, we do not have previous data on the prevalence of stroke in young people in order to describe the progression of this pathology. Although the prevalence found during our study is low compared to the data in the literature, we can evoke the epidemiological transition in which the stroke is no longer the preserve of old age. This corroborates the data of Bejot, et al. who have shown that the incidence of stroke in the young population increases over time [11].

In this study, the average age was 42.5 years with extremes ranging from 24 to 49 years. This result can be superimposed on the data of certain authors in Africa [7,8,12], on the other hand lower than that reported in Tunisia [13]. This difference is related to the difference in population size and to the fact that their studies focused only on DALYs. The most represented age group was 45 to 49 years old. Our finding is in line with what he reported by Balogou, et al. in Lome, Togo and these various results corroborate the data in the literature which affirm that although the average age of strokes is gradually getting younger, the frequency of strokes continues to increase with age [14]. A male predominance with an M/F sex ratio of 1.36 was found during this study. Our finding is comparable with the various data in the literature [8,11,15], but contrary to it found in Tunisia [12]. This discrepancy could arise from the fact that women, in our context, seem to be subject to almost the same risk factors as men. This corroborates certain data from the literature which affirm that the stroke no longer remains the prerogative of the male subject due to the adoption of lifestyle for 30 years by women of the same risky behaviors as men [16,17]. Beyond the unfavorable development of their lifestyle, women also experience exposure to hormonal factors throughout their lives [18]. Les officials were majority 50%, followed by traders 19.20%. Similar result to that reported in Douala, Cameroon [8]. This strong representation of officials would be linked to the fact that they consult more easily structures care because of their level of education and income.

Alcohol was the main risk factor (80%) followed by hypertension (61.5%) and tobacco (50%). This high prevalence of alcoholism and smoking could be explained by the change in behavior of the population during the various military-political crises and requires the implementation of awareness-raising strategies and assistance with withdrawal. Our result for alcohol is lower than that reported by Onwuchekwa, et al. (27.8%) Nigeria [19] and Mapoure, et al (38.46%) in Cameroon [8]. This discrepancy could be explained by the size of the sample and the duration of the study. In this that respect, our results corroborate the data studies by Shinton, et al. [20] and a Nigerian series which estimated the proportion of smoking at 50.4% in the northwest of the country [21]. These studies show that smoking increases the risk of having a stroke, probably in the short term, through prothrombotic effects. Low exposures to tobacco are likely to activate platelet aggregation and cause acute and longer-term hemodynamic changes by promoting the development of atherosclerosis [15]. While hypertension remains the major FDR for strokes with more than 80% of cases worldwide [8,21]. In our series, the majority of our patients (57.70%) arrive at the neurology department after the first 24 hours following the appearance of the first signs. This result is lower than that reported in Togo (70%) [7]. This difference could be explained by ignorance or even ignorance of the pathology resulting from a delay in orientation in a specialized structure.

Hyperglycemia was found in 35.3% of cases. This result is almost superimposable on that found in Abidjan [22]. In our series, ischemic stroke represented 73.08% of the cases. This result is identical to the data in the literature [7,23], however the prevalence of AVCI compared to AVCH tends to decrease more and more or even to reverse since the advent of imaging by CT scan. Africa [8,23].

Lethality was 20.08% of cases. This result is similar to the data reported in Togo [7], which can be superimposed on that reported (23.9%) in Nigeria [21]. On the other hand, it is lower than the data from Cameroon and Nigeria. Furthermore, in the United States, 30-day mortality is low and estimated at 17% [8]. This difference is linked to the quality of care in the acute phase of the brain attack and better organization of the health system, unlike Africa. In our series, 69.20% of patients left with sequelae dominated by hemiparesis (72.20%) followed by a dysarthria-type language disorder in 22.20%. Our result corroborates certain data from the literature which affirm that 30 to 50% of young patients, victims of stroke, cannot resume their professional activity and nearly 10% remain dependent for at least one activity of daily life [24,25]. This study allowed us to identify a link between the type of stroke and the state of consciousness on admission or physical examination. Patients admitted with consciousness disorder are more likely to have a stroke than a stroke. Our finding is consistent with the literature which states that in AVCH the disorder of consciousness is early [26]. It emerges from this study that the delay in admission to the first structure of care and BP have a positive influence on intra-hospital mortality. This finding partly overlaps with what had been reported in Cameroon [8] that hypertension was among the predictive factors associated with intra hospital death whereas the time for admission was not . Could this discrepancy on the time of admission be linked to the initial PEC or to a difficulty in the patient referral system? Because the management of stroke in the acute phase remains codified, its ignorance could have repercussions on the life prognosis of patients. Thus, the quality of the initial PEC in non-specialized structures would have a negative impact on the evolutionary prognosis of our patients, especially by the fact that in stroke, the increase in BP is physiological and contributes to lengthening the period of penumbra ischemic [27,28]. Besides the difficulty on the question of referral of patients, some authors in the Central African Republic had reported that the reason for the lengthening of the admission period is also explained by the mentality of our community, which first seeks to link the phenomena of sudden appearance to a supernatural cause. This may testify to the ignorance of the population regarding this condition. This calls into question the need to carry out awareness-raising activities in order to enlighten the population in order to reduce the harmful consequences that may result from it [29].

CONCLUSION

Stroke is a non-communicable disease that poses a public health problem with dramatic consequences both functionally and life-threatening. Long considered the disease of the elderly, its incidence is increasing sharply in the young population in both sexes due to the risky behaviors such as alcohol and tobacco consumption observed in this population group. Improving the treatment of young people's stroke in the Central African Republic involves, on the one hand, the participation of health professionals in the quality of adequate and appropriate care and of the political and health authorities in raising the technical diagnostic platform, and secondly responsible behavior for patients and their carers.

REFERENCES

1. Bouleti C, Mathivet T, Lapergue B, Monnot C, Germain S. Cerebrovascular accident: protection of vascular integrity during reperfusion. Medsci. 2014; 30 : 609-608. https://bit.ly/2OILVYb
2. Strong K, Mathers C, Bonita R. Preventing stroke: saving lives around the world. Lancet Neurol. 2007; 6: 182-187. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/17239805
3. Yves N da Kouakou N goran, Fatou Traore, Micesse Tano, Kouadio Euloge Kramoh, Jean Baptiste Anzouan Kako, Christophe Konin, et al. Epidemiological aspects of cerebrovascular accidents in the emergency room of the Abidjan Heart Institute. Pan Afr Med J. 2015; 21: 160. https://bit.ly/2RXx1PG
4. Belo M, Balogou AAK, Goeh Akue E. Peculiarities of strokes in Togo and black Africa. 2007; 9: 125-129.
5. Mbelesso P, Tabo A, Seboulo PC, Yangatimbi A, Kette CG, Senekian VP. Epidemiological aspects of strokes at the Bangui hospital in the Central African Republic. Benin Medical. 2007; 37: 44-46.
6. Bejot Y, Bailly H, Durier J, Giroud M. Epidemiology of stroke in Europe and trends for the 21st century. Presse Med. 2016; 45: 391-398. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/27816343
7. K Balogou, EG Grunitzky K, Assogba, Kossivi Apetse. Stroke in young subjects (15-45 years old) in the neurology department of the Lome campus hospital. African Journal of Neurological Sciences. 2010; 27.
8. Yacouba Njankouo Mapoure, Marc Foe Essissima, Hamadou Ba, Bertrand Hugo Mbatchou Ngahane, Gerard Beyiha, Henry Namme Luma, et al. Spectrum of cerebrovascular diseases in young subjects in Douala. The Pan African Medical Journal. 2016; 23: 250. https://bit.ly/2GUBpIL
9. Kissela B M, Khoury J C, Alwell K, Moomaw CJ, Woo D, Adeoye O, et al. Age at stroke: temporal trends in stroke incidence in a large, biracial population. Neurology. 2012; 79: 1781-1787. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/23054237
10. Smajlovic D. Stroke in young adults : epidemiology and prevention. Vasc Health Risk Manag. 2015; 11: 157-164. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/25750539
11. Bejot Y, Legris N, Daumas A, et al. Stroke in the young person: an emerging pathology in women as in men. Contributions from the Dijon registry of strokes. Bull Epidemiol Hebd. 2016; 7: 118-125.
12. Zakhama L, Ksontini I, Boussabah E, Bechichi W, Benyoussef S. Strokes in the young subject. The internal medicine journal. 2008; 29: 77.
13. Khammassi N, Sassi YB, Aloui A, Kort Y, Abdelhedi H, Cherif O. Ischemic stroke in young people: about 6 cases. Pan African Med J. 2015; 22: 142. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/26889323
14. WHO. Task force on stroke and other cerebrovascular disorders. Geneva WHO 1989: p.53
15. Bejot Y, Touze E, Jacquin A, Giroud M, Mas JL. Epidemiology of stroke. Med Sci (Paris). 2009; 25: 727-732. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/19765387
16. Mosca L, Benjamin E J, Berra K, Bezanson J L, Dolor R J, L loyd Jones D M, et al. Effectiveness-based guidelines for the prevention of cardiovascular disease in women - 2011 update: a guideline from the American Heart Association. Circulation. 2011; 123: 1243-1262. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/21325087
17. Aouba A, Eb M, Rey G, Pavillon G, Jougla E. Data on mortality in France: main causes of death in 2008 and trends since 2000. Bull Epidemiol Hebd. 2011; 22: 249-255.
18. Bushnell C, McCullough L D, Awad I A, Chireau M V, Fedder WN, Furie K L, et al. Guidelines for the prevention of stroke in women: a statement for healthcare professionals from the American Heart Association/American Stroke Association. Stroke. 2014; 45: 1545-1588. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/24503673

19. Onwuchekwa AC, Onwuchekwa RC, Asekomeh AG. Stroke in young Nigerian adults. J Vasc Nurs. 2009; 27: 98-102. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/19914570

20. Shinton R, Beevers G. Meta analysis of relation between cigarette smoking and stroke. BMJ. 1989; 298: 789-794. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/2496858

21. Owolabi LF, Ibrahim A. Stroke in the young adult: a prospective study from Northwestern Nigeria. ISRN Neurol. 2012; 2012: 468706. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/22474601

22. Assi B Kouame Assouan, AE Doumbia, Ouattara million Abodo JR, Sunan Douayoua T. Particularities of strokes in diabetics. Literature paper. AJNS. 2015; 34.

23. Toure K, Kane M, Kane A, Tal DA, Ndiaye MM, Ndiaye IP. Contribution of computed tomography in the epidemiology of cerebrovascular accidents at the Grand Yoff General Hospital. Black African Medicine. 2010; 57: 455-460.

24. Varona JF. Long-term prognosis of ischemic stroke in young adults. Stroke Res Treat. 2010; 879817. **PubMed :** https://www.ncbi.nlm.nih.gov/pubmed/21197408

25. Schnitzler A, Woimant F, Tuppin P, de Peretti C. Prevalence of self-reported stroke and disability in the French adult population: a transversal study. Plos One. 2014; 9: 115375. **PubMed:** https://www.ncbi.nlm.nih.gov/pubmed/25521057

26. Community immersion. Strokes 2009; p.70

27. Goupil A, Bourghol B, Derouet N, Savio C, Bourrier P. Management of ischemic stroke in young people in emergency: etiological and therapeutic aspects. Scientific and medical editions Elsevier SAS. 2002; 11: 502-508.

28. Milhaud D, Blard JM, Pages M. Neurological emergencies. Masson Paris. 2001: p.395

29. Mbelesso P, Yangatimbi E, Senekian VP. Prognostic factor associated with mortality related to stroke in Bangui (Central African Republic). Neuroscience & Medicine. 2018; 9: 198-208. https://bit.ly/382T0KK