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Hemorrhagic Stroke of the Elderly Patient in the Department of Neurology, General Hospital of Loandjili, Pointe-Noire, Congo

Accident vasculaire cérébral hémorragique du sujet âgé dans le service de neurologie, de l'Hôpital Général de Loandjili, Pointe-Noire, Congo

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ABSTRACT

Introduction. Hemorrhagic stroke (HS) is a serious condition that seems more common, in black African. Little is known about its features in the elder Congolese patients. The objective of the study was to report the epidemiology, clinical features and outcome of this disease in our setting at Pointe-Noire. **Methodology.** This was a cross sectional retrospective and descriptive study from January 1, 2017 to December 31, 2017 involving patients aged 60 years and over who had HS confirmed by cerebral computed tomography. Sociodemographic data, medical antecedents, severity signs and clinical course were collected and analyzed on SPSS software version 16.0 with uni and multivariate tests. **Results:** We studied 93 patients (62.7% women). Their mean age was 72.5 years (\pm 8.5). The main risk factor found was high blood pressure (98.9%). On cerebral computed tomography, 73.6% of hematomas were located in the capsulolenticulo-thalamic compared to 15.1% of cortical localization. The average hospital stay was 15 days. The lethality rate was 36.5%. **Conclusion.** At Pointe Noire, HS is a public health problem because of its frequency and its high lethality. High blood pressure is the main risk factor. Urgent measures are necessary to prevent its occurrence and improve its management for a better prognosis.

RÉSUMÉ

Introduction. L'accident vasculaire cérébral hémorragique (AVCH) est une maladie grave, constituant 15 % des accidents vasculaires cérébraux (AVC). Il a une létalité élevée et donc un pronostic réservé, notamment chez le sujet âgé. L'objectif de cette étude était de décrire les aspects épidémiologiques, cliniques, paracliniques et évolutifs des AVCH du sujet âgé à Pointe-Noire. **Méthodologie.** Il s'agit d'une étude transversale retrospective et descriptive allant du 1^{er} janvier 2017 au 31 décembre 2017 portant sur des patients âgés de 60 ans et plus ayant présenté un AVCH confirmé par une tomodensitométrie cérébrale. Les données sociodémographiques, les antécédents médicaux, les signes de gravité associés au tableau neurologique et l'évolution clinique ont été collectés et analysés sur logiciel SPSS version 16.0 avec des tests uni et multivariés. **Résultats.** Nous avons colligé 93 dossiers des patients âgés atteints d'AVCH dont 62,7% de femmes. Leur âge moyen était de 72,5 ans (\pm 8,5). Le principal facteur de risque retrouvé était l'hypertension artérielle (98,9%). Au scanner cérébral, les hématomas étaient localisés en région capsulolenticulo-thalamique dans 73,6% des cas contre 15,1% de siège cortical. Le séjour hospitalier moyen était de 15 jours. L'évolution vers un décès a concerné 36,5% des cas. **Conclusion.** À Pointe Noire, l'AVCH du sujet âgé est un problème de santé publique du fait de sa fréquence et de sa létalité élevée. L'hypertension artérielle est le principal facteur de risque. Pour un meilleur pronostic, des mesures urgentes sont nécessaires pour prévenir sa survenue et améliorer sa prise en charge.

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INTRODUCTION

Stroke is a diagnostic and therapeutic emergency. Globally, it is a public health problem because of its frequency and severity. Stroke has moved from 3rd to 2nd cause of death worldwide after coronary events [1-2]. The incidence of this pathology increases significantly with age. Indeed, the number of people over 60 will triple in

the world, and the over 80 will quadruple [1-2]. This suggests a strong growth in the prevalence of stroke over the century. In Congo, stroke is the leading cause of hospitalization in neurology, because it constitutes more than 70% of inpatients. More over, it is responsible of 2/3 of the deaths in the Department of Neurology at the Hospital and University Center of Brazzaville [3]. Hemorrhagic stroke (HS) account for 15% of stroke [2].

They reflect the rupture of a blood vessel within the cerebral parenchyma, ventricles or subarachnoid spaces. Arterial hypertension is the most important risk factor and Cohort studies show that one in two stroke occurs in a previously hypertensive patient [1-3]. Strokes are associated with functional disability and significant mortality [3-4]. Little is known about this subject in Pointe Noire. Thus, the aim of our work was to describe some clinical features and the outcome of hemorrhagic stroke in a population of patients aged 60 or more, hospitalized in the neurology department of the General Hospital of Loandjili at Pointe-Noire (Congo).

PATIENTS AND METHODS

This was a retrospective and descriptive study covering the period from January 1, 2017 to December 31, 2017 and concerning all inpatients with proven HS and records of cerebral computed tomography. The diagnosis of HS was based on clinical criteria and computed tomography lesions. Briefly stated, any patient with signs and symptoms of focal neurological deficit that occurred suddenly and remained persistent for more than 24 hours was considered to have a stroke, the hemorrhagic nature of which was confirmed by a CT scan of the brain.

During the study period, 196 patients were hospitalized in the Neurology Department of Loandjili General Hospital. From this group, we extracted for the study only patients aged 60 and older who met the definition criteria for stroke. The age of 60 was selected according to the age of cessation of professional activity in the Congo, which is 60 years old. We excluded all patients without a definite result of cerebral computed tomography or with insufficient data mentioning the outcome. Our main variables of study were of order: sociodemographic (age, sex), clinical features (medical and surgical history: existence of arterial hypertension, diabetes, history of stroke, or other vascular risk factors), and outcome (favorable or unfavorable).

Statistical analyses (univariate analysis) was performed with SPSS software version 16.0 for Windows.

RESULTS

We collected 93 files of patients with HS (47.5% of inpatients) in our service. The age range was 60 to 85 years old with an average age of 72.5 years (± 8.5). Most patients were aged 60 to 69 years (62%) (Fig 1),

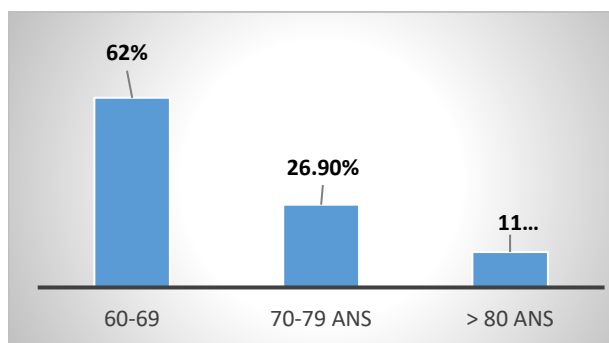


Figure 1: distribution according to age

62.7% of patients were women (sex ratio F/M= 1.68).

The main risk factors were: arterial hypertension 98.9%, diabetes 30.1% and history of stroke 23.6% (Table I).

Tableau I: risk factor distributions

| Risk factor | n | Parentage |
|---------------------|----|-----------|
| High blood pressure | 92 | 98,9 |
| Diabetes | 28 | 30,1 |
| Stroke | 22 | 23,6 |
| Tobacco | 16 | 17,2 |
| Others | 7 | 7,5 |

On physical examination, 79.7% of patients had a good general condition.

In the acute phase, blood pressure (BP) was high in the majority of patients, with systolic BP in between 160 and 250 mmHg in 71.2% of cases, and diastolic BP between 95 and 170 mm Hg in 83.1% of cases.

A hemibody motor deficit was found in 88.2% of patients, and in this group, and total hemiplegia was present in 39% of cases. Motor deficit was associated to coma in 47.5% of cases and to speech disorders in 53.9% of cases (aphasia, 43.7% and dysarthria 10.2%).

Seizures were reported in a quarter of patients on admission or during hospitalization. Cardiovascular examination was normal in all patients except in one case in whom cardiac arrhythmia was reported.

On brain CT, the hematomas were localized in the capsulo- thalamo-lenticular region in 67.8% of the cases, or in cortical in 15.3% of the cases. A tentorial location was found in 11.7% of cases.

The electrocardiogram was normal in 45.8% of cases and abnormal in 54.2 % of cases. Abnormal findings included left ventricular hypertrophy (3.4%), left atrial hypertrophy (2.7%) and ventricular extrasystole (1.7%). Cardiac ultrasound was performed in only 18 patients. It was usually normal (72.9%), but also showed hypertensive heart disease (27.1%).

Blood analysis found 42.4% of cases with hyperglycemia, varying between 1.16 g/l and 4 g/l (mean: 2.58 g/l). Elevation of total cholesterol level involved 71.2% of patients, with an average of 1.8 g and a maximum value of 4 g / l. The average HDL level was 1.22 g while the LDL average level was 1.72 g/l (range: 0.98 to 3.97 g/l). Inflammation was present in half of the patients with an Elevation of sedimentation rate was found in 50.8% of patients while 49.1% of patients had elevated C-reactive protein (range: 24 mg/l - 96 mg/l).

The average hospital stay was 15 days with extremes of 1 to 29 days and a hospital stay of 10 days for 46.7% of patients.

34 patients died (fatality rate of 36.5%) and among them, 32.4% died during the first 10 days. The lethality rate was 82.4% for patients with a Glasgow score of less than 8.

DISCUSSION

In the literature, few epidemiological data specific to the elderly HS in Black African is found. In some series, the

mean age of patients with HS ranges from 49 to 56 years [2] and varies from one country to another. Our study found to an average age of 72.5 years. This average age is close to that found by some authors (67.9 years and 84.4 years) [1-5]. Others report a much lower age 62.7 years and 57 years [3-6]. In our series the female predominance was 62.7%. This female predominance is found in several studies 58.4% in Singapore [7], 54.8% in Dakar [1], and Madagascar with a sex ratio of 0.78 [8]. In France, too, he affects a lot more women [5]. Only this variability according to the sex remains a controversy; so for some authors, the male predominance is as in Congo [3]. , Mauritania [9] and Mali [10].

In our population, the risk factors were high blood pressure (HBP), history of stroke, and diabetes. Globally, in 80% of cases, hypertension is the main risk factor for HS in both the elderly and the young [11-6]. It concerned 98.9% of our patients. This rate is a little higher than that reported in the literature [1-5-6]. HBP leads to structural and functional hemodynamic changes in the cerebral arteries [10] and causes vascular degeneration responsible for the formation of microaneurysms, which can lead to the occurrence of cerebral hemorrhage [2, 10, 11]

High blood pressure is also the main risk factor in young subjects with stroke as reported by some authors in 62.3% and 84.9% [12-13]. Prevention should involve early diagnosis and good management of patients with hypertension.

We found diabetes in 30.1% of cases. Similar frequencies, 30 and 41.8% respectively, were found by Tchizinga and Bendriss [14-15]. Gnonlonfoun et al [16] in a study of the study of acute phase hyperglycemia of DALYs in 16649 patients aged 15 to 20 years, had established a relationship between the age of diabetes and stroke, The relative risk of stroke death was significantly higher in patients initially diabetic (known to have been on treatment for at least five years) than in patients who developed diabetes later.

History of stroke was found in 23.6% of cases. This finding is similar to that of Sautereau [5] which found 22% of cases. Anna Bass [6] and Kamadore [1] found respectively 12.9% and 10.7% of cases. This difference is explained by the fact that their studies were not specific to the elderly.

In the literature, tobacco and alcohol are among the toxic substances that promote the onset of HS. As far as tobacco is concerned, the risk depends on the number of cigarettes consumed and the duration of intake. In fact, tobacco is a major risk factor for atherosclerosis [11].

The relationship between daily alcohol consumption and the risk of stroke is complex. It is likely to increase blood pressure and triglycerides and is therefore considered a risk factor for the development of stroke. As with

REFERENCES

1. Toure K., Thiam A., Sene Diouf F., et al. Epidémiologie des accidents vasculaires cérébraux (AVC) à la Clinique Neurologique du CHU de Fann, Dakar-Sénégal. *Dakar Médical* 2008; 53(2):105-110.
2. WHO Task Force. Report of the WHO task force on stroke and other cerebrovascular disorders.

smoking, there is a dose-dependent effect. In our study, 8.5% of patients took tobacco and 3.5% took alcohol. Seizures, found in 20% of cases in the literature were present in 25.9% of patients. Seizures worsen the prognosis because they favor rebleeding in the brain [10-17].

The location of the hematoma was capsuloentorhical in 73.6% of cases, lobar in 15.1% of cases and infratentorial in 11.3% of cases. CT scan without injection of contrast medium, results similar to those of A sow [12]. found respectively 66%, 19% and 10% of cases. Schwartz [18] found that 40-70% of patients with capsulo lenticular and cerebellar hematoma were hypertensive. In the literature, the locations vary considerably according to the underlying series and etiologies [1-12]. The differences observed in the distribution of hematomas could be related to the high prevalence of hypertension in our series.

The average length of stay was 15 days as found in the literature [6-12], compared with 7 days for some authors [19]. Balogou and Sautereau found respectively 23.1 and 23 days [5-13]. This difference is due to selection bias because these are subjects who survived the acute phase but had a stroke that was severe enough to require rehabilitation.

Mortality was 36.5% in our study and was higher in patients with a Glasgow score of <10, which has been reported by other African authors [6-19]. The evolution was uncertain when the Glasgow score was ≥10. Mapoure [20] reported a high mortality of 82.25% in HS associated with coma. The death rate at 32.4% reflects the severity of this condition. This high mortality by HS has been found in several studies [21-22]. It was 51.1% in Mali [10] and 56% in Senegal in the Sagui series [23]. Predictors of death vary with level of consciousness, size of hematoma, and presence of intraventricular hemorrhage [24-25]. This study presents some limitations related to inaccessibility to examinations (biology and MRI) and treatment. Some patients died before lab tests. This higher mortality rate in African series than in Europe [26-27] reflects the failings of management, and the difficulty of managing comorbidities (disorders of consciousness, glycemic abnormalities, renal failure).

CONCLUSION

At Pointe Noire, HS is a public health problem because of its frequency and its high lethality. High blood pressure is the main risk factor. Urgent measures are necessary to prevent its occurrence and improve its management for a better prognosis.

Recommendations on stroke prevention, diagnosis and therapy. *Stroke*. 1989; 20:1407-1431.

3. Ossou-Nguet PM, Gombet T, Ossil Ampion M, Ellenga-Mbolla BF, Otiobanda GF, Mahoungou-Guimbi KC, Bandzouzi-Ndamba B, Matali E, IbaraOkemba A. Facteurs de mortalité des AVC au CHU de Brazzaville. *Revue Africaine d'Anesthésiologie et de Médecine d'Urgence*. 2013;18(1):15-9.

4. Ossou-Nguet PM, Otiobanda GF, Bandzouzi-Ndamba B, Ellenga-Mbolla BF, Mahoungou-Guimbi KC, Gnonlonfoun D, Odzebe A, Matali E. Devenir des patients après une hémorragie cérébrale au CHU de Brazzaville. *Revue Africaine d'Anesthésiologie et de Médecine d'Urgence* 2011; 16(2):37-43.
5. Sauterau : Accident Vasculaire Cérébral De La Personne Âgée Particularités Et Facteurs Pronostiques. Thèse médecine Université Pierre Et Marie Curie – Paris VI. 2009, N°2009PA06G048.
6. Basse Anna Modji, Touré Kamadore, Boubacar Soumaila et al. Hemorrhagic Stroke at the Department of Neurology, Fann National Teaching Hospital in Dakar, Senegal. *JaccrAfrica* 2017; 1(2): 63-67.
7. Ong TZ, Raymond AA. Risk factors for stroke and predictors of one-month mortality. *Singapore Med J.* 2002; 43(10):517-521.
8. N.E Raveloson , N Zodaly, S.T Rakotoarivony, R.L Mbolamena, J.M Randriamiarana :Aspects épidémiocliniques, évolutifs et tomodensitométriques des accidents vasculaires cérébraux hémorragiques (34 cas). *Revue d'Anesthésie-Réanimation et de Médecine d'Urgence* 2011; 3(1): 15-19.
9. Diagana M, Traoré H, Bassima A, Druet-Cabanac M, Preux PM, Dumas M. Apport de la tomodensitométrie dans le diagnostic des accidents vasculaires cérébraux à Nouakchott, Mauritanie. *Med Trop.* 2002; 62 (2):145-149.
10. Keita Ad, Toure M, Diawara A, Et Al – Aspects Epidémiologiques Des Accidents Vasculaires Cerebraux Dans Le Service De Tomodensitometrie A L'hospital Du Point G A Bamako, Mali. *Med Trop* 2005 ; 65 : 453-457.
11. Diagne NS. Etiologies des accidents vasculaires cérébraux du sujet jeune : à propos de 40 cas. Thèse médecine Dakar 2010, n°6.
12. A. Sow, S.M.L dadah, K. Toure, A.M. basse, M. Ndiaye, N. Ndoye, M.S.D. Sene, M Ba, N. Gaye, MMNdiaye. Profil épidémiologique des hémorragies cérébrales spontanées du sujet jeune dans un pays ouest Africain : Le Sénégal à propos de 53 Cas. *Journal de Neurochirurgie Mai* 2014 N°19.
13. Balogou A., Tossa Kr., Kowu A. Et Al. Accidents Vasculaires Cerebraux Chez Le Sujet Jeune (15 A 45 Ans) Dans Le Service De Neurologie Du Chu Campus De Lome : *Ajns* 2008 ; 27(2).
14. Tchizinga Rachna : Profil cardiovasculaire des patients admis pour la prise en charge d'un AVCI à l'unité neurovasculaire du CHUB [mémoire de DES de Cardiologie]. Congo, Université Marien Ngouabi, Brazzaville Mars 2016.
15. Bendriss L, Khatouri A. Les accidents vasculaires cérébraux ischémiques. Fréquence des étiologies cardiovasculaires documentées par un bilan cardiovasculaire approfondi. À propos de 110 cas. *Ann de Cardiol et d'angéiol* 2012 ; 61 : 252 – 6.
16. Gnonlonfoun D, Adjien C, Kerekou A et al. Hyperglycémie à la phase aiguë des accidents vasculaires cérébraux au CNHU-HKM de Cotonou. *Rev CAMES – Série* 2012 ; 13: 59 – 62.
17. Ohwaki K, Yano E, Nagashima H, Hirata M, Nakagomi T, Tamura A. Blood pressure management in acute intracerebral haemorrhage: relationship between elevated blood pressure and hematoma enlargement. *Stroke* 2004; 35: 1364-7.
18. Schwartz P. Apoplectic Lesions Of The Brain In Adults. In: Vinken P Bruyn G Eds. *Hand Book Of Clinical Neurology.* New York American Elsevier Publishing Co 1972; 11: 578- 659.
19. Mahoungou-Guimbi KC, EllengaMbolla BF, DambaBanzouzi BY, et al. Les accidents vasculaires cérébraux hémorragiques en réanimation. *RevAfrAnesthMédUrg.* 2012; 17: 51-55.
20. N.Y. Mapoure, F. SèneDiouf, M. Ndiaye, H.B. MbatchouNgahane, J. Doumbe, K. Toure, B. Mboup, A. Thiam, A.G. Diop et M.M. Ndiaye, A prospective study on coma in neurology in the African setting : case of Dakar, Senegal *Rev Med Brux* 2009 ; 30 : 163-9.
21. Vemmos KN, Takis CE, Georgilis K, Zakopoulos NA, Lekakis JP, Papamichael CM, Zis VP, Stamatelopoulos S. The Athens Stroke registry: results of a five-year hospital based study. *Cerebrovasc Dis.* 2000; 10(2):133-141.
22. Honnart D., Fournier C. AVC hémorragique : Étiologies, critères de gravité et pronostic. *Urgences* 2007; 267-78.
23. Sagui E., M'baye Ps., Dubecq C., Et Al - Ischemic And Hemorrhagic Strokes In Dakar, Senegal: A Hospital-Based Study. *Stroke* 2005; 36: 1844-1847.
24. Dzielwas R, Kremer M, Lüdemann P, Nabavi DG, Dräger B, Ringelstein B. The prognostic impact of clinical and CT parameters in patients with pontine hemorrhage. *Cerebrovascular. Dis.* 2003; 16: 224–229.
25. Murai Y, Takaji R (1999). Three-dimensional computerized tomography angiography in patients with hyper-acute intracerebral hemorrhage. *J. Neurosurg.* 91:424-431.
26. Davis SM, Broderick J, Hennerici M, Brun NC, Diringer MN, Mayer SA et al. Hematoma growth is a determinant of mortality and poor outcome after intracerebral hemorrhage. *Neurology* 2006; 66(8): 1175 - 81.
27. Gill JS, Shipley MJ, Tsementzis SA, Hornby RS, Gill SK, Hitchcock ER et al. Alcohol consumption-a risk factor for hemorrhagic and non-hemorrhagic stroke. *Am J Med.* 1991; 90: 489-97.