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EVALUATION OF THE MEDICAL MANAGEMENT OF STROKE BY CLINICAL EVOLUTION IN THE MEDICAL EMERGENCIES OF THE NIAMEY NATIONAL HOSPITAL

Garba AN*, Maman Bachir AM, Idrissa H, Kabaou S

Article Info

***Corresponding Author:**

Abdoul Nasser Garba Baoua

Abstract

Context and objective: The objective of this study is linked to the serious consequences of the stroke on the quality of life of patients was to assess the quality of the first treatment which they benefit in medical emergencies of the national hospital of Niamey.

Methods: This is a prospective study with a duration of nine (9) months from July 2019 to March 2020 in medical emergencies at Niamey National Hospital. Was eligible, any consenting patient having developed a stroke with a lesion objectified to the brain scan.

Results: The study had included a total of 100 subjects, 59 of whom had a cerebral infarction and the other 41 had a haemorrhagic stroke. The average age was 60.42±15.48 years and a sex ratio of 1. Housewives were the most represented (43%). Age was the most common risk factor with 64%. The right side was the most affected side. The carotid territory was the most involved in the accidents. The lesion of the left frontal lobe predominated at the level of the affected brain lobes (50%). At the level of treatment only the osmotic diuretics contributed to the improvement of the neuromuscular state (p=0.016) in haemorrhagic stroke on the contrary, antihypertensive drugs with p=0.33 in ischemic stroke and p=0.11 in haemorrhagic stroke did not contribute. Lipid-lowering drugs were also not associated with an improvement in the neuromuscular deficit with p=0.073.

Conclusion: In the course of this study, only osmotic diuretics had contributed to the improvement of the clinical condition of haemorrhagic stroke patients.

Keywords: Stroke, evolution, medication, treatment, Niger

Résumé

Contexte et objectif : L'objectif de cette étude est lié aux conséquences lourdes de l'accident vasculaire cérébral sur la qualité de vie des patients était d'évaluer la qualité de la première

prise en charge dont ces derniers bénéficient aux urgences médicales de l'Hôpital National de Niamey.

Méthodes : Il s'agit d'une étude prospective d'une durée de neuf (9) mois allant de juillet 2019 à mars 2020 aux urgences médicales de l'Hôpital National de Niamey. Était éligible, tout patient consentant ayant été victime d'un AVC avec une lésion objectivée au scanner cérébral.

Résultats : L'étude avait inclus au total 100 sujets dont 59 ayant présenté un infarctus cérébral et les 41 autres un AVC hémorragique. L'âge moyen était de 60,42±15,48 ans et un sex-ratio de 1. Les femmes au foyer étaient les plus représentées (43%) concernant la profession. L'âge était le facteur de risque le plus retrouvé avec 64%. L'hémicorps droit a été le côté le plus atteint. La lésion du lobe frontal gauche a prédominé au niveau des lobes du cerveau atteint (50%). Au niveau de traitement seul les diurétiques osmotiques ont contribué à l'amélioration clinique (p=0,016) dans les AVC hémorragiques à l'inverse, les anti-hypertenseurs avec p=0,33 dans l'AVC ischémique et p=0,11 dans l'AVC hémorragique n'y ont pas contribué. Les hypolipémiants n'ont également pas été associés à une amélioration clinique avec p=0,073.

Conclusion : Au décours de cette étude seul les diurétiques osmotiques avaient contribué à l'amélioration de l'état clinique des patients dans l'AVC hémorragiques.

Mots clés : AVC, évolution, médicamenteux, traitement, Niger

Introduction:

Stroke is the third leading cause of death in the world and in developing countries (developing countries), behind cardiovascular diseases, ahead of infectious diseases, especially pulmonary or diarrheal infections, tuberculosis, AIDS or malaria [1]. Worldwide, 16 million new cases are observed each year, responsible for 5.7 million deaths [2]. In France, the only population register available is that of Dijon (150,000 inhabitants), which has been studying the epidemiology of stroke since 1985. The incidence over the period 2000-2006 was 113/100 000 inhabitants/year [3]. In Ivory Coast it is estimated that 9.3% of deaths in public hospitals among people aged 45 to 69 are due to strokes which are a public health problem. [4]. Treatment depends on the type of stroke: ischemic or haemorrhagic [5]. For ischemic stroke, treatment consists of restoring blood flow to the affected area [5]. It is based on thrombolysis by administering a clot-dissolving drug called tissue plasminogen activator within a maximum of 4 hours and 30 minutes [5]. For haemorrhagic stroke, the management is based on the control of bleeding, intracranial pressure and constants in particular blood pressure [5]. The aim of the study was to assess the effectiveness of the treatment in relation to the evolution of the clinical condition

Methodology:

This is a prospective study lasting nine (9) months from July 2019 to March 2020 in the medical emergencies of the National Hospital of Niamey. All consenting patients who developed a stroke with a lesion objectified by brain scan were included. The medical management protocol was codified as such:

- Antihypertensive
  - Injectable in emergency: blood pressure ≥ 220/120 mmHg (ischemic stroke) et TA ≥ 180/120 mmHg (haemorrhagic stroke)
  - In ACE inhibitor for ischemic stroke and calcium channel blocker for haemorrhagic stroke
- Antiplatelet agent in ischemic stroke
- Osmotic diuretic in cases of haemorrhagic stroke or signs of mass effect in cases of ischemic stroke
- Anticoagulant for pre-existing emboligenic heart disease
- Lipid lowering: ischemic stroke

Patients without obvious lesion on a brain scan were excluded from the study.

The parameters studied were:

Anthropological: age, sex, profession, previous treatment that may influence the occurrence of a stroke, stroke risk factors and the time to admission.

Clinical: the reason for admission, blood pressure, presence of cardiac and carotid murmur, neurological examination (affected hemi-body, higher functions, reflexes, motor skills by muscle testing and the facial nerve).

Cerebral CT scan: Type of vascular accident (ischemic or haemorrhagic), the cerebral lobe

affected, the vascular territory and the vessel concerned.

Treatment: it is codified by the above protocol with an adaptation linked to the patient's condition.

Evolution: improvement of the clinical state, stationary state, deterioration of the clinical state and death.

The length of hospitalization: in number of days and also divided into sections (≤48 hours and > 48 hours).

SPSS 26 software was used for data analysis. Quantitative variables were expressed as mean±standard deviation. Qualitative variables were expressed as a percentage. In univariate analysis, the chi-square test was used for the crossing of qualitative variables, ANOVA for quantitative variables and logistic regression was used for multivariate analysis with a degree of significance ($p<0.05$).

Ethical Considerations: To carry out this investigation we obtained approval from the management of the NHN. Consent was obtained from each patient prior to inclusion. Confidentiality was guaranteed and respected during the presentation of results on all survey sheets.

Results:

During the study, we retained one hundred (100) patients with an equitable distribution for the sex whose ratio was 1. The mean age was 60.42±15.48 years without statistical difference between the two types stroke with 61.53±16.46 years for ischemic stroke and 58.83±13.99 years for haemorrhagic stroke, the p-value being 0.69. Patients over 60 years of age represented more than 50% of our sample (Fig. 1). Housewives were professionally the most represented with 43%. At the level of previous treatment, 30% of patients were on antihypertensive drugs and 11% exclusively of women were taking contraceptives at the time of the accident. Age was presented as a non-modifiable cardiovascular risk factor in 64% of patients. For modifiable cardiovascular risk factors, hypertension and sedentary lifestyle were the most represented with 60%.

Language disorders (aphasia or dysarthria) were the most reported reasons for admission, involving 96% of subjects and 54% of patients with motor deficit in the right half-body.

The time to admission reported mainly by family and friends was more than two (2) hours in 9 out of 10 patients. Systolic blood pressure of at least 180 mmHg was recorded in 24% of the patients in the study. For systolic blood pressure, 28% of subjects had a value of at least 110 mmHg. Cardiac auscultation revealed arrhythmia in 14% of patients and vascular, carotid murmur in 3 (3%) patients. On neurological examination of higher functions, coma, Broca-type aphasia and gait disturbances were noted in 3%, 63% and 96% of cases, respectively. On reflex examination, 90% of patients had a positive Babinski's sign. In muscle testing, a score less than or equal to 2 was obtained for the affected thoracic limb in 86% of patients and for the deficient pelvic limb in 82% of subjects. The facial nerve was the only cranial nerve examined and 80% of patients presented with central facial palsy.

On CT examination, 59% of patients had a cerebral infarction and the remainder (41%) had developed a haemorrhagic stroke (Tab. II). Carotid territory involvement was the most responsible for the strokes, affecting 94% of study subjects. The left middle cerebral artery belonging to the carotid territory was the vascular involvement most responsible for the cerebral lesions and it involved 56% of cases. Half of the patients (50%) in the study had left frontal lobe involvement.

During the study, no patient was able to benefit from antithrombotic therapy (thrombolysis). All patients (59%) diagnosed with ischemic stroke benefited from antiplatelet therapy. During the study approximately 3/10th (31%) of patients received antihypertensive medication. Lipid-lowering statins were prescribed for 16% of patients, all of whom had a cerebral infarction. All of the patients with haemorrhagic stroke (41%) and only one (1%) of the patients with cerebral infarction had received parenteral osmotic diuretics. No patient received rehabilitation.

At the end of their hospitalizations 44% of the subjects saw their clinical state improve compared to admission (Fig. 2).

The mean length of hospital stay was 4.81±3.56 days. The length of hospital stay was not influenced by the type of stroke, the mean duration was 4.83±3.52 days for ischemic stroke

and 4.78±3.66 days for haemorrhagic stroke (p=0.945). Only 23% of patients did not go beyond 48 hours of hospitalisation in the emergency room.

In univariate analysis, the clinical evolution was not influenced by the type of stroke (p = 0.2). In haemorrhagic stroke, administration of antihypertensive drugs did not improve the clinical condition of patients (p=0.337), unlike osmotic diuretics (p=0.016) (Tab. III). None of the products that patients with ischemic stroke benefited from contributed to clinical improvement, with significance levels greater than 0.05 (Tab IV).

In multivariate analysis, antiplatelet agents adjusted with antihypertensive drugs did not improve the clinical state (p=0.377). Antiplatelet drugs adjusted with lipid-lowering statins also did not improve clinical status (p=0.511). Antihypertensive drugs adjusted with osmotic diuretics also did not help improve the clinical condition presented on admission (p=0.567).

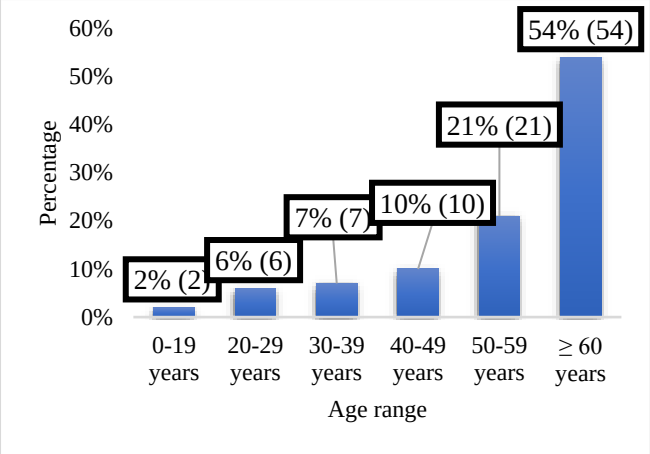

Fig 1. Distribution of patients by age

Table I. Distribution of patients according to the affected hemi body

Hemi-body reaches	Frequency	Percentage
Right hemi-body	54	54
Left hemi-body	41	41

Table II. Distribution of patients by type of stroke

Type of stroke	Frequency	Percentage
Ischemic	59	59
Haemorrhagic	41	41

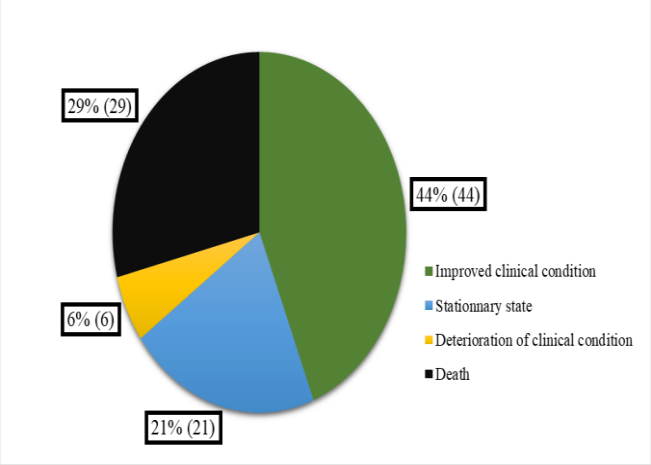

Fig 2. Distribution of patients according to evolution

Table III: Distribution of patients according to treatment and improvement in clinical condition in haemorrhagic stroke

Treatment	p-value
Antihypertensive	0,337
Osmotic diuretic	0,016

Tableau IV: Distribution of patients according to treatment and improvement in clinical condition in ischemic stroke

Traitement	p-value
Antihypertensive	0,11
Osmotic diuretic	0,8
Lipid-lowering statins	0,073

Discussion :

To our knowledge, this study is the first on the evaluation of medical treatment in relation to the evolution of the clinical state of patients in the medical emergency department of the Niamey National Hospital who are victims of stroke. The average age in our study was 60.42 ± 15.48 years, a similar average to that of Amadou Arbi D who was 61.4 years old [6] and Kouakou with 60 years old [4]. In our study, we found a sex ratio of 1, the predominance was female in Kouakou's study with a ratio of 0.77 [4] and the opposite in the study of Amadou Arbi D with 1.62 [6]. The identical gender distribution in our study could be explained by the number of women on contraceptives (11%). Housewives were the most represented in the profession with 43%, the same observation was made in the Amadou Arbi D study with 32.8% [6].

Hypertension was the most reported modifiable risk factor in our subjects (60%), it was also the same in the literature [6–10].

A large number of our patients (96%) had a language disorder on admission, a value much higher than that found in other series with 63.3% for Amadou Arbi D [6], 24% for Coulibaly M [9] and only 12.69% in that of Sonfo B [11]. A motor deficit was noted in a hemibody (plegia or paresis) in 95% of our patients, a result above that found by Amadou Arbi D with 68.5% [6] whose result is close to that of Sonfo B with 64.92%[11]. Our result is slightly lower than that of Diarra E which had 100% [10].

On the cerebral scan, cerebral infarction was the predominant lesion with 59%, a result similar to that of Diarra E (56-59%)[10] and that of Sonfo B who had had 55,22% [11] but lower than Amadou Arbi D with 69% [6]. The vascular involvement was localized in the carotid territory in the majority of our subjects (94%), it was the same in the study by Amadou Arbi D with 85.72% [6] and the series of Gnonlonfoun D who had had75% [12].

In terms of treatment, none of our patients had benefited from thrombolysis, as in the study by Amadou Arbi D [6], which is mainly linked to the unavailability of the molecules used in the medical emergency department of our common center. Nevertheless thrombolysis could have been useful, data in the literature having demonstrated its effectiveness in reducing death and post-stroke dependence if it is carried out within six hours of the appearance of the first signs [13]. All the patients who had an ischemic stroke benefited from an antiplatelet agent as well as those of Amadou Arbi D [6] against 87.05% of patients with cerebral infarction in the Coulibaly M series [9].

In our study, only osmotic diuretics helped improve the clinical status of patients in cases of hemorrhagic stroke ($p = 0.016$). This link could be due to the anti-edematous properties of these molecules, thus helping to reduce the mass effect linked to peri-lesional edema and therefore intracranial hypertension. During our study, none of our patients were able to benefit from rehabilitation compared to 26.86% in the subjects of the Sonfo B study [11]. A difference that may be linked to the particularity of our service (medical emergencies) compared to his (internal medicine) which is more of an inpatient service while ours is more stabilizing. The progression was towards death in 29% of our patients, death affected 17% of subjects in the Kouakou study [4], 24.6% of Amadou Arbi D's series [6], 38% of that of Coulibaly M [9] and 17% of Sonfo B's patients [11]. The average length of hospital stay in our study was 4.81 days, it was lower than that of Coulibaly M, whose average was 8.2 days [9].

Strengths and weaknesses of the study

The weaknesses of the study are mainly related to the absence of rehabilitation and thrombolysis in our study. The association of the latter could have improved our medical care thus contributing to the improvement of the clinical and psychological state of the patients who once were pillars of society and now rather burdens for it. The lack of an emergency NIHSS score assessment would have identified patients who may benefit from thrombolysis. However, the study allowed us to assess the strengths and weaknesses of our protocol, which will help us optimize it and be more useful to patients.

Conclusion :

The evaluation of our medical management on the clinical course of patients with stroke has only demonstrated the effectiveness of osmotic diuretics in improving the clinical condition. The study also highlighted the usefulness of starting rehabilitation in the emergency department before transferring patients to the section.

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Conflicts of Interest: None

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