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Mortality from Stroke in Young People in Brazzaville

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Abstract

Introduction: Cerebrovascular accidents (CVA) are an absolute neurovascular emergency and the main cause of mortality and acquired disability in adults. In the Congo, stroke is the leading cause of mortality and the leading cardiovascular emergency, with a hospital frequency of between 49.74% and 56.2%. The aim of the study was to identify the mortality factors associated with stroke in young people in Brazzaville. **Patients and Methods**: This is a longitudinal analytical study conducted from February to period from February to September 2019 in the neurology, general intensive care and medical emergency departments of the Brazzaville University Hospital (CHUB). All subjects aged 18 - 55 years of completed age, admitted for arterial stroke confirmed by brain imaging, were included. Study variables were: age, gender, socioeconomic level, laterality, time to admission and CT scan, vascular risk factors, history of cardiomyopathy, atrial fibrillation, TIA (transient ischemic attack) or stroke, NIHSS (National Institutes of Health Stroke Scale) score, Glasgow score, blood pressure, temperature, heart rate, occurrence or non-occurrence of complications, blood glucose, creatinine, lipid profile and blood count. Data were analyzed using SPSS 21 software. Descriptive analyses were performed using SPSS 21 software. **Results:** 103 patients were included in the study, of whom 45 (43.7%) had ischemic stroke and 58 (56.3%) with hemorrhagic stroke. Mortality was high at 29.1% in our study, and mainly concerned hemorrhagic strokes (73.7%). Two-week mortality in our study accounted for 63.33% of total lethality. After simple logistic regression, the factors associated with death within two weeks were age between 40 - 44 years (OR (odds ratio) = 2.95; p = 0.01), hemorrhagic stroke (OR = 1.41; p = 0.07), mass effect (OR = 3.26; p < 0.01), ventricular flooding (OR = 2.86; p < 0.001),

Glasgow score (OR = 2.95 (0.92 - 9.43); p = 0.06), NIHSS score on admission > 15 (OR = 5.89 (2.90 - 11.95); p < 0.001) and bronchopulmonary infection (OR = 30, 95 (4.04 - 236.88), p < 0.001). From multivariate logistic regression, only NIHSS score on admission > 15 emerged as a predictor of death within two weeks (OR = 5.89 (2.90 - 11.95); p < 0.001). **Conclusion**: This study confirms the basic data of the African literature concerning stroke, as several factors were identified as independent factors associated with mortality.

Keywords

Brazzaville, Mortality, Stroke, Young Subjects

1. Introduction

Stroke is an absolute neurovascular emergency, and the second leading cause of death worldwide, particularly in developing countries [1]. The World Health Organization speaks of a pandemic and projects an increase in the number of strokes worldwide from 16 million in 2005 to 23 million in 2030 [2].

In Africa, the incidence of stroke is increasing as a result of the epidemiological transition, and is now between 26 and 30 per 100,000 inhabitants in sub-Saharan Africa, with a prevalence of between 58 and 243 per 100,000 inhabitants [3].

In the Congo, stroke is the leading cause of mortality and the leading cardiovascular emergency.

Cardiovascular emergency, with hospitalization rates ranging from 49.74% to 56.2% [4].

Initially associated with advanced age, the frequency of stroke is rising sharply in the younger population, where it increased from 9% between 1985 and 2002 to 11.8% between 2003 and 2011 [5].

In addition, the WHO [6] has noted that the number of deaths among young adults (aged 15 - 45) is relatively high in developing countries, constituting a serious public health problem. Hence the interest of this study, the main objective of which is to identify the mortality factors associated with stroke in young people in Brazzaville.

2. Patients and Methods

This is an analytical longitudinal study conducted over a seven-month period, in the period from period from February to September 2019 in the neurology, general intensive care and medical emergency departments of the Brazzaville University Hospital (CHUB). Included were all subjects aged 18 - 55 years, admitted for arterial stroke (first episode or recurrence) confirmed by brain imaging (cerebral computed tomography and/or encephalic magnetic resonance imaging).

Transient ischemic attacks, pure meningeal hemorrhage and cerebral throm-

bophlebitis were not included. Data were collected using a survey form containing sociodemographic, clinical and paraclinical variables, based on the medical record and an interview with the patient or an informant during hospitalization. The survey was conducted in three phases. The first phase consisted in informing the subject and/or the informing third party of the study on the basis of an information sheet, in order to obtain informed consent. Then, the second phase consisted of the initial assessment of the subject by recording sociodemographic, anamnestic and clinical data; vital and functional assessment (Glasgow, NIHSS "National Institute Heath Stroke Scale" and modified Rankin scores and Barthel index) and assessment of post-stroke depression (Beck depression scale). This phase was carried out within 48 h of the subject's admission. Finally, the third phase involved follow-up at two weeks and one month respectively. During this phase, hemodynamic parameters (blood pressure, pulse, respiratory rate, temperature), functional scores and indices were recorded. This evaluation was carried out in hospital.

The study variables were: age, gender, socioeconomic level, laterality, time to admission and time to CT scan, vascular risk factors, history of cardiomyopathy, atrial fibrillation, TIA (transient ischemic attack) or stroke, NIHSS score, Glasgow score, blood pressure, temperature, heart rate, occurrence or non-occurrence of complications, blood glucose, creatinine, lipid panel and blood count.

3. Statistical Analysis

Data were analyzed using SPSS 21 software. Descriptive analyses were carried out for all variables collected, and point estimates with 95% confidence intervals were performed for qualitative and quantitative variables.

For a significance level set at 5%, Pearson's or Fisher's chi-square and Student's t-tests respectively to measure the association between categorical variables and the comparison of means between groups. The Kaplan-Meier model was used to determine the three-month survival of subjects, and the logrank statistical test was used to compare survival in the two types of stroke.

Factors influencing the occurrence of death were studied using logistic regression models.

4. Results

During the study period, 632 patients were admitted to the aforementioned departments in Brazzaville. Three hundred and fifty-one (55.5%) cases of stroke were recorded, including 115 (32.8%) in young adults. Of these, 104 met the inclusion criteria. One patient was lost to follow-up after discharge. A total of 103 patients were included in the study, of whom 45 (43.7%) had ischemic stroke and 58 (56.3%) had a hemorrhagic stroke.

The mean age of patients was 46.5 ± 5.9 years [26 to 55 years].

The sex ratio of all patients was 1.5, with 63 (61%) males and 40 (39%) women. The admission time was 16.4 ± 23.7 hours [1 to 96 hours].

The type of stroke on imaging was ischemic in 45 (43.7%) subjects and hemorrhagic in 58 (56.3%). The left hemisphere was affected in 61 (59.2%) subjects and the right hemisphere in 39 (37.9%) subjects. Three (2.9%) subjects had bilateral involvement. A mass effect was present in 32 (31.1%) subjects and ventricular flooding in 27 (26.2%).

From admission to the end of follow-up, 30 (29.1%) subjects died, including 13 (43.3%) at admission, six (20%) at two weeks and 11 (36.7%) at one month. Among the subjects who died, ten (33.3%) had an ischemic stroke and 20 (66.7%) a hemorrhagic stroke. According to the Kaplan-Meier survival curve model, 50% of subjects with ischemic stroke had a survival time of at least 17 days, and those with hemorrhagic stroke, at least 14 days. The logrank statistical test comparing survival between the two types of stroke showed no significant difference ($p = 0.70$) (Figure 1).

5. Factors Associated with and Predictive of Death

5.1. Relationships between Sociodemographic Characteristics, Risk Factors, Paraclinical Characteristics and Death

Tables 1-3 show the relationships between socio-demographic characteristics, risk factors, paraclinical characteristics and death within two weeks of stroke.

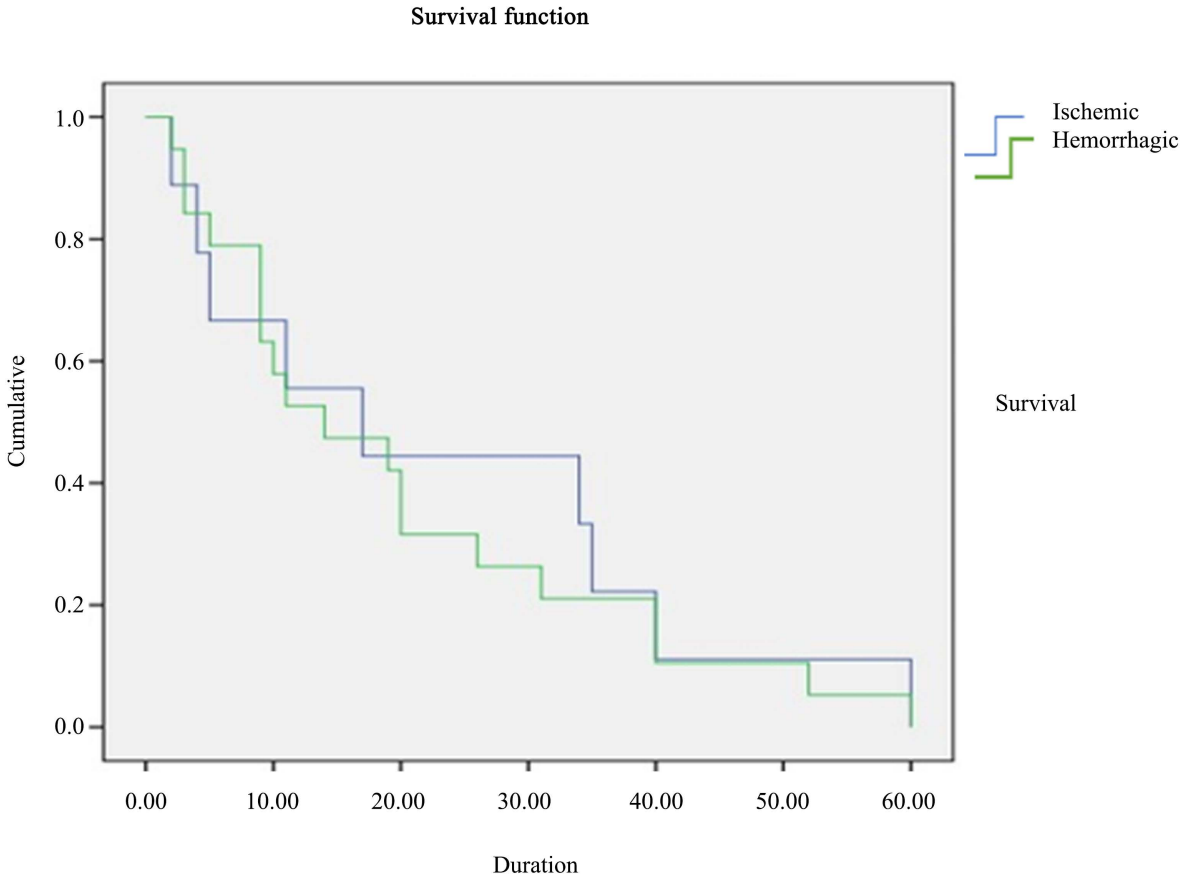

Figure 1. Subject survival by stroke type.

Table 1. Association between sociodemographic characteristics and mortality within two weeks.

	Deceased		Survivors		p-value
	not	%	not	%	
Sex					0.22
Man	14	73.7	49	58.3	
Women	05	26.3	35	41.7	
Age (years)					0.03
Below 40	03	15.8	09	10.7	
40 - 44	08	42.1	12	14.3	
45 - 49	05	26.3	32	38.1	
50 - 55	03	15.8	31	36.9	
Marital status					0.81
Married/In a relationship	12	63.2	56	66.7	
Bachelor	07	36.8	25	29.8	
Divorced	-	-	01	01.2	
Widower	-	-	02	02.4	
Professional status (previous)					0.70
Pupil/student or in professional training	01	05.3	01	01.2	
Employee)	09	47.4	37	44.0	
Independent	06	31.6	31	36.9	
Unemployed	03	15.8	15	17.9	
Type of employment					0.16
Administrative activity (white collar)	01	05.3	21	25.0	
Manual activity (blue collar)	14	73.7	48	57.1	
Socio-economic level					0.57
Down	02	10.5	14	16.7	
AVERAGE	16	84.2	61	72.6	
Pupil	01	05.3	09	10.7	

Table 2. Relationship between risk factors and death within two weeks.

	Deceased		Survivors		p-value
	not	%	not	%	
HT	15	78.9	61	72.6	0.57
Diabetes	01	05.3	07	08.3	0.65
Sedentary lifestyle	09	47.4	60	71.4	0.04

Continued

Alcoholism	06	31.6	35	41.7	0.42
Smoking	01	05.3	12	14.3	0.29
Obesity	01	05.3	07	08.3	0.65
Abdominal obesity	01	05.3	26	31.0	0.02
Heart disease (family)	03	15.8	24	28.6	0.25
Dyslipidemia	01	05.3	02	02.4	0.50
Personal history of stroke	03	02.9%	08	07.8%	0.43

Stroke: cerebrovascular accident, hypertension: high blood pressure.

Table 3. Relationship between paraclinical characteristics (brain imaging) and death within two weeks.

	Deceased		Survivors		p-value
	not	%	not	%	
Type of stroke					0.09
Ischemic	05	26.3	40	47.6	
Hemorrhagic	14	73.7	44	52.4	
Mass Effect					<0.00
Yes	14	73.7	19	22.6	
No	05	26.3	65	77.4	
Ventricular flooding					0.00
Yes	11	57.9	17	20.2	
No	08	42.1	67	79.8	
AVCI territory					0.03
MCA	02	40.0	28	70.0	
ACA	-	-	04	10.0	
PCA	-	-	03	07.5	
VB	-	-	02	05.0	
Multiples	03	60.0	03	07.5	

Stroke: cerebrovascular accident, AVCI: ischemic stroke, MCA: middle cerebral artery, ACA: anterior cerebral artery, PCA: posterior cerebral artery, VB: vertebrobasilar.

5.2. Relationship between Glasgow and NIHSS Scores, Complications and Death

Tables 4-6 show, respectively, the relationships between Glasgow and NIHSS scores on admission and death within two weeks of stroke, complications and death. Glasgow and NIHSS scores at admission and death within two weeks of stroke, the mean Glasgow and NIHSS scores at two weeks and death within two weeks, and the relationship the relationship between complications and death within two weeks.

Table 4. Relationship between Glasgow and NIHSS scores at admission and death within two weeks.

	Death within two weeks				OR (95% CI)	p-value
	Deceased		Survivors			
	not	%	not	%		
Glasgow admission						0.06
≥9	15	78.9	78	92.9	0.85 (0.67 - 1.08)	
<9	04	21.1	06	07.1	2.95 (0.92 - 9.43)	
NIHSS admission						0.00
≤15	07	36.8	75	89.3	0.41 (0.23 - 0.75)	
>15	12	63.2	09	10.7	5.89 (2.90 - 11.95)	

OR: Odds Ratio, CI: Confidence Interval, NIHSS: National Institute Heath Stroke Scale.

Table 5. Relationship between average Glasgow and NIHSS scores at 2 weeks and death within 2 weeks.

	Deaths in both Deceased	Weeks Survivors	p-value
	Mean ± Standard deviation	Mean ± Standard deviation	
02 weeks Glasgow	**11.5 ± 3.7**	**14.3 ± 1.7**	**0.01**
NIHSS	**13.9 ± 7.8**	**06.8 ± 4.9**	**0.00**

NIHSS: National Institute Heath Stroke Scale.

Table 6. Relationship between complications and death within two weeks.

	Death within two weeks				OR (95% CI)	p-value
	Yes		No			
	not	%	not	%		
Urinary infection	3	15.8	6	7.1	2.21 (0.61 - 8.06)	0.23
Bronchopulmonary infection	7	36.8	1	1.2	30.94 (4.04 - 236.88)	0.00
Pulmonary embolism	1	05.3	-	-	-	0.18
Recurrent stroke	1	05.3	-	-	-	0.18
Sepsis	8	42.1	-	-	-	0.00
Brain engagement	5	38.5	1	20	1.92 (0.29 - 12.64)	0.62

OR: Odds Ratio, CI: Confidence Interval, CVA: cerebrovascular accident.

After multivariate logistic regression, only the NIHSS score on admission > 15 appeared emerged as a predictor of death within two weeks (OR = 5.89; p < 0.00).

6. Discussion

Stroke is a public health problem, as it is a source of mortality and disability in young adults.

In our study, mortality was high (29.1%) and mainly concerned haemorrhagic strokes (73.7%), with a male predominance due to the preponderance of vascular risk factors in this segment of the population, as reported in African and European literature [7] [8].

50% of patients with haemorrhagic stroke in our series had a short survival time (mean 14 days). This could be explained both by the preponderance of hemorrhagic stroke cases in our study and by the early and high mortality attributable to this type of stroke, as reported in the literature. Thus, our results are superposable with those of Mapoure *et al.* [9] in Cameroon in 2016; Balogou *et al.* [10] in Togo in 2008 and two Nigerian series [11] [12]; although the latter did not include strokes admitted to the intensive care unit.

European studies have reported lower death rates than those reported in African series [13] [14], probably due to better management conditions and possibilities. Indeed, Guilloteau *et al.* [15] in India in 2016 demonstrated that precariousness is a risk factor for stroke severity and death. These findings corroborate those of our work, in which patients with an average socio-economic level were the most represented in the study population (75.9%).

The absence of a social healthcare coverage system increases the economic burden on patients in the long term, and prevents optimal management of hypertension and other chronic risk factors.

Two-week mortality in our study accounted for 63.33% of total case fatality. After simple logistic regression, the factors associated with death within two weeks were age between 40 - 44 y (OR = 2.95; p = 0.01), hemorrhagic stroke (OR = 1.41; p = 0.07), mass effect (OR = 3.26; p < 0.01), ventricular flooding (OR = 2.86; p < 0.001), Glasgow score (OR = 2.95 (0.90 - 9.43); p = 0.06), NIHSS score on admission > 15 (OR = 5.89 (2.90 - 11.95); p < 0.001) and bronchopulmonary infection (OR = 30, 95 (4.04 - 236.88), p < 0.001). These results are close to those of Mapoure *et al.* [9] in Cameroon in 2016.

The mean age in our study (46.5 ± 5.9 years) is close to that reported by some authors, ranging from 35.3 to 43.4 years [16] [17] [18]. The observation of two age peaks in our patients, 45 - 49 and 50 - 55 years, can be explained by the high prevalence of hypertension in this age group, which is associated with a higher incidence of hemorrhagic stroke, and by the proximity of this age group to the older age group, where risk factors for ischemic stroke are most prevalent. This explains the higher incidence of ischemic stroke in these subjects. The incidence of stroke is known to increase with age [19]. Older age is a risk factor for poor prognosis in both hemorrhagic and ischemic stroke [20] [21].

The high frequency of arterial hypertension (73.78%) would explain the deep location of the cerebral hemorrhage in 81% of cases in our study. Arterial hypertension remains the most common vascular risk factor and is a frequent cause of mortality [22]. From multivariate logistic regression, only NIHSS score on admission > 15 emerged as a predictive factor for death within two weeks (OR = 5.89; $p < 0.001$). Mapoure *et al.* [9] in Cameroon in 2016 reported Glasgow score < 9 as the only independent predictor of in-hospital death. Other studies on stroke in young adults do not mention associated factors that predict death [15] [23] [24]. On the other hand, the literature on stroke in all age groups mentions the following factors in addition to NIHSS score: previous stroke, hyperglycemia, hemorrhagic stroke, diabetes, hyperleukocytosis, pulmonary infection, Rankin score > 5 [25] [26] [27] [28].

In our study, 17.5% and 15.54% of subjects had complications at admission and two weeks, respectively, with a predominance of infectious complications, particularly bronchopulmonary and urinary, as reported elsewhere [25] [26].

Urinary catheterization, lack of asepsis and prolonged bed rest are thought to be the main causes of these infections. Pulmonary and urinary tract infections are the most common infectious complications of stroke [29] [30].

Sellars *et al.* [31] reported that the occurrence of pulmonary infection is not only related to age and NIHSS score, but is also a factor associated with mortality. Of the 66 deaths recorded in their study, 54 (81.8%) had a confirmed or suspected pulmonary infection.

However, it should be noted that the main limitation of this study was the short follow-up time for mortality assessment.

7. Conclusions

Stroke remains a real public health problem, especially in young people. Early mortality remains very high. This study confirms the basic data in the African literature on stroke, as several factors have been identified that are independently associated with mortality. These facts reflect deficiencies in management.

Therefore, it is important to optimize management to reduce mortality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

Survey form

N.B: The information contained in this document is confidential and may under no circumstances be used for legal proceedings, tax audits or economic repression.

CARD NUMBER .../__/__/__/

I-Identity

Q101. Last name(s) & first name(s): (optional) _____

Q102. Date of birth: /__/__/ /__/__/ /__/__/__/__/__/

Q102.1. Age (years) /__/__/

Q103. Gender: 0. Male 1. Female /__/

Q105. Laterality: 0. Right 1. Left /__/

Q106. Adresse:_____

Q107. Téléphone:_____/_____

Q108. Marital status: /__/

0. Single 1. Married/coupled 2. Divorced 3. Widowed

Q109. Professional status (previous): /__/

0. Pupil/student or in vocational training 1. Employee

2. Self-employed 3. Unemployed 4. Retired

Q110. Employment: 0. Administrative activity 1. Manual activity /__/

Q111. Working hours per day (hours): /__/__/

II-Clinical and paraclinical data

Q201. Motif d'admission:_____

Q202. Date of admission: /___/___/___/___/___/___/

Q203. Admission time (hours): /__/__/

History

Q204. HTA 0. Yes 1. No /__/

Q205. Diabetes 0. Yes 1. No /__/

Q206. Alcoholism 0. Yes 1. No /__/

Q207. Smoking 0. Yes 1. No /__/

Q208. Stroke 0. Yes 1. No /__/

Q209. Sedentary lifestyle 0. Yes 1. No /__/

Questions Q210 to Q215 are reserved for patients with known hypertension.

Q210. Follow-up: 0. Yes 1. No if no go to Q213 /__/

Q211. How many years have ..... /__/

Q212. Regular: 0. Yes 1. No /__/

Q213. Treatment: 0. yes 1. No if no go to /__/

Q214. Regular 0. Yes 1. No /__/

Q215. Molecules:

- Inhibitors 0. Yes 1. No /__/
- Calcium 0. Yes 1. No /__/
- Diuretics 0. Yes 1. No /__/

- Beta-blockers 0. Yes 1. No /__/
- IEC. 0. Yes 1. No /__/
- ARA 2 0. Yes 1. No /__/
- Central antihypertensive 0. Yes 1. No /__/
- Other ..... *

Questions Q216 to Q220 are reserved for patients with known diabetes.

Q216. Follow-up: 0. Yes 1. No if no go to Q219. /__/

Q217. How many years have ..... /__/__/

Q218. Regular: 0. Yes 1. No /__/

Q219. Treatment: 0. yes 1. No if no go to /__/

Q220. Molecules:

- Insulin 0. Yes 1. No /__/
- Oral antidiabetics: 0. Yes 1. No /__/
- Hypoglycemic sulfonamides 0. Yes 1. No /__/
- Biguanides 0. Yes 1. No /__/
- Others:.....

Q221. Cardiovascular disease (family):

0. yes Specify: _____ 1. No /__/

Q222. Pathology:

- Infectious 0. yes 1. no /__/
- Inflammatory 0. yes 1. no /__/
- Haematological 0. Yes 1. No /__/
- Carcinological 0. Yes 1. No /__/
- Emboligenic heart disease 0. Yes 1. No /__/
- Genetic 0. Yes 1. No /__/
- Other to be specified:_____

Q223. Surgery: 0. Yes, please specify: _____1. No /__/

Q224. Cervical manipulation or trauma: 0. Yes 1. No /__/

Q225. TTT in progress:

- AAP 0. Yes 1. No /__/
- AC 0. Yes 1. No /__/
- AD 0. Yes 1. No /__/
- ARV 0. yes 1. No /__/
- Others to be specified _____

Q226. Contraception: 0. Yes, please specify: _____1. No /__/

Clinic

Q227. a) Weight (Kg): /__/__/___/, /__/__/ b) Height (m): /__/__/, /__/__/ c) PABD (cm): /__/__/___/, /__/__/ d) BMI (Kg/m^2): /__/__/, /__/__/

Q228. Blood pressure: a) PAS (mmHg): /__/__/__/ b) PAD (mmHg): /__/__/__/

Q229. a) HR (bpm): /__/__/__/ b) FR (c/min): /__/__/ c) Temperature (˚C): /__/__/__/, /__/__/__/

Q230. Score: a) Glasgow: /__/__/ b) NIHSS: /__/__/ c) Modified Rankin: /__/__/ d) Barthel: /__/__/__/ e) Beck: /__/__/

Types of neurological damage:

Q231. Motor: 0. Yes 1. No go to Q233 /__/

Q232. Laterality: 0. Right 1. Left /__/

Q233. Sensitive: 0. Yes 1. No go to Q235 /__/

Q234. Laterality: 0.Right 1.Left /__/

Q235. Dysarthria 0. Yes 1. No go to Q237 /__/

Q236. Type: 0. Paralytic 1. Spastic, /__/

3. Hyperkinétique(préciser)_____

Q237. Swallowing disorder: 0. Yes 1. No /__/

Q238. Sd Alternate: 0. Yes 1. No /__/

Q239. Aphasia: 0. Yes 1. No go to Q241 /__/

Q240. Type: 0. Broca 1. Wernicke /__/

2. Globale, préciser_____

Q241. Cognitive: 0. Yes 1. No go to Q243 /__/

Q242. Type: 0. Mnesia 1. SdF 2. RPM (2) /__/

Q243. Visual: 0. Yes 1. No go to Q245 /__/

Q244. Type: 0. HLH 1. Oculomotricity /__/

Q245. Epilepsy: 0. Yes 1. No go to Q247 /__/

Q246. Type: 0. Driving 1. Non-driving /__/

Q247. Carotid murmur: 0. Yes 1. No /__/

Q248. Heart rhythm disorder: 0. Yes 1. No go /__/

Biology

Q249. a) WBC (10^9 /L): /__/__/, /__/__/ b) Hemoglobin (g/dL): /__/__/, /__/__/ c) Platelets (10^9 /L): /__/__/__/, /___/

Q250. a) CRP (mg/L): /__/__/__/, /__/__/ b) SV (mm at H1): /__/__/__/ c) Blood glucose (g/L): /__/__/, /__/__/

Q251. a) Creatinemia (mg/L): /__/__/__/, /__/__/ b) Clearance (mL/min): /__/__/__/, /__/ /__/

Q252. a) Na (mmol/L): /__/__/__/, /__/___/ b) K (mmol/L): /__/__/, /__/ c) Cl (mmol/L): /__/__/__/, /__/

Q253. a) Urea (g/L): /__/__/, /__/__/ b) Uricemia (mg/L): /__/__/__/, /__/ c) HbA1C (%): /__/__/, /__/__/

Q254. Transaminases (UI/L): a) AST: /__/__/__/, /__/__/ b) ALAT: /__/__/__/, /__/__/

Q255. a) TC (g/l): /__/, /__/__/ b) LDL (g/l): /__/, /__/__/ c) HDL (g/l): /__/, /__/__/ d) TG (g/l): /__/, /__/__/

Q256. Serology:

- HIV 0. Yes 1. No /__/
- TPHA/VDRL 0. Yes 1. No /__/
- Hepatitis B 0. Yes 1. No /__/
- Hepatitis C 0. Yes 1. No /__/

Q257. Haemostasis: a) TP (%) /__/__/, /__/ b) TCA (sec) /__/__/, /__/

Morphology

Brain CT/MRI

Q258. Type of stroke: 0.Ischemic 1.Hemorrhagic /__/

Q259. Location:

0. left hemisphere 1. right hemisphere 2. Bilateral 3. Posterior fossa /__/

Q260 Territory (AVCH): 0. Lobar 1. Deep 2. TC 3. Cerebellum /__/

Q261. Territory (DALY): 0. ACM 1. ACA 2. ACP 3. VB 4. Multiples /__/

Q262. Mass effect: 0. yes 1. no /__/

Q263. Ventricular flooding: 0. yes 1. no /__/

Q264. Transthoracic echocardiography

- Thrombus 0. Yes 1. No /__/
- Recent MI 0. Yes 1. No /__/
- CMH 0. Yes 1. No /__/
- CMD 0. Yes 1. No /__/
- FOP/ASIA 0. Yes 1. No /__/
- Valvulopathy 0. Yes 1. No /__/
- Normal 0. yes 1. no /__/

Q265. If valvulopathy, Type:_____

Q266. LVEF (%): /__/__/

Doppler ultrasound of the supra-aortic trunks

Q267. Intimo-medial thickness: /__/__/__/

Q268. Atherosclerotic plaque: /__/__/__/

Q269. Arterial dissection:

0. Yes, Location: _____ 1. No /__/

Q270 Arterial stenosis (%): /__/__/__/

Q271. Localisation:_____

Q272. Electrocardiogram and/or Holter ECG /__/

0. Normal 1. IDM 2. FA 3. Pericarditis 4. Other: _____

Q273. Intercurrent complications: 0. Yes 1. No If no go to Q286 /__/

Q274. Urinary tract infection 0. Yes 1. No /__/

Q275. Bronchopulmonary infection 0. Yes 1. No /__/

Q276. Pulmonary embolism 0. Yes 1. No /__/

Q277. Thrombosis of pelvic limbs 0. Yes 1. No /__/

Q278. Dysphagia 0. yes 1. no /__/

Q279. Pressure sores (6) 0. Yes 1. No /__/

Q280. Recurrent stroke 0. Yes 1. No /__/

Q281. Seizures (8) 0. Yes 1. No /__/

Q282. Sepsis 0. Yes 1. No /__/

Q283. Other (9): _____ /__/

Q284. Death 0. Yes 1. No go to Q289 /__/

Q285. Cause of death: _____

Q286. Delay /__/__/

Q287. Length of hospital stay (days): /__/__/

III-Evolution and prognosis - At 2 weeks

Q301. PAS (mmHg): /__/__/__/ PAD (mmHg): /__/__/__/

Q302. FC (bpm): /__/__/__/ FR (c/min): /__/__/ Temperature (˚C): /__/__/__/, /__/__/

Q303 Glasgow Coma Score: /__/__/ - RM /__/ RV /__/ RO /__/

Q304. NIHSS: /__/__/ Rankin modified: /__/__/ Barthel: /__/__/__/ Beck: /__/__/

Q305. Intercurrent complications: 0. Yes 1. No /__/

Q306. Urinary tract infection 0. Yes 1. No /__/

Q307. Bronchopulmonary infection 0. Yes 1. No /__/

Q308. Pulmonary embolism 0. Yes 1. No /__/

Q309. Thrombosis of pelvic limbs 0. Yes 1. No /__/

Q310. dysphagia 0. Yes 1. No /__/

Q311. Pressure sores (6) 0. Yes 1. No /__/

Q312. Recurrent stroke 0. Yes 1. No /__/

Q313. Comital seizures (8) 0. Yes 1. No /__/

Q314. Sepsis 0. Yes 1. No /__/

Q315. Other (9): _____ /__/

Q316. Death (10) 0. Yes 1. No /__/

Q317. Cause of death: _____

Q318. Time (days): /__/__/

Q319. Functional rehabilitation: 0. Yes 1. No /__/

Q320. If yes, Number of sessions/week: 0. ≥3 1. <3 /__/

Q321. If <3, specify cause: _____ /__/

Q322. Technician: 0. physiotherapist 1. other: /__/

Q323. If no, please specify the cause: _____

Socio-professional reintegration

Questions Q324 to Q332 are reserved for patients who are pupils, students or in vocational training.

Q324. Back to school: 0. Yes 1. No 2. Not concerned If not go to Q330 /__/

Q325. Trade-in date: /__/__/ /__/__/ /__/__/

Q326. Environmental adjustments: 0. Same class 1. Change of class /__/

Q327. Schedule adjustments: 0. Full-time 1. Part-time /__/

Q328. Permanent change of class/training: 0. Yes 1. No /__/

Q329. Permanent change of teachers or trainers: 0. Yes 1. No /__/

Q330. If course not resumed, new status:

0. Disability 1. Sick leave 2. Training or retraining 3. None /__/

Q331. Medical reasons preventing resumption of course/training: _____

Q332. Official approval as a disabled pupil/student: 0. Yes 1. No /__/

Questions Q333 to Q342 are reserved exclusively for employed patients.

Q333. Return to work: 0. Yes 1. No 2. Concerned If no go to Q337 /__/

Q334. If resuming work Date of resumption: /__/__/ /__/__/ /__/__/

Q335. Environmental adjustments: 0. Same position 1. Change of position /__/

Q336. Schedule adjustments: 0. Full-time 1. Part-time /__/

Q337. Permanent change of job or employer: 0. Yes 1. No /__/

If no return to work

Q338. New status:

0. Disabled 1. Retired 2. Sick leave 3. In training or retraining 4. None /__/

Q339. Medical reasons preventing you from returning to work:_____

Q340. Official certification as a disabled worker: 0. Yes 1. No /__/

Q341. Support / Organization specializing in work reintegration: /__/

0. Yes 1. No

Q342. Consultation with the occupational physician before returning to work: /__/

0. Yes 1. No

IV-Evolution and prognosis - At 1 month

Q401. PAS (mmHg): /__/__/__/ PAD (mmHg): /__/__/__/

Q402. FC (bpm): /__/__/__/ FR (c/min): /__/__/ Temperature (˚C): /__/__/__/, /__/__//

Q403. Glasgow Coma Score: /__/__/ - RM /__/ RV /__/ RO /__/

Q404. NIHSS: /__/__/ Rankin modified: /__/__/ Barthel: /__/__/__/ Beck: /__/__/

Q405. Intercurrent complications: 0. Yes 1. No /__/

Q406. Urinary tract infection 0. Yes 1. No /__/

Q407. Bronchopulmonary infection 0. Yes 1. No /__/

Q408. Pulmonary embolism 0. Yes 1. No /__/

Q409. Thrombosis of pelvic limbs 0. Yes 1. No /__/

Q410. dysphagia 0. Yes 1. No /__/

Q411. Pressure sores (6) 0. Yes 1. No /__/

Q412. Recurrent stroke 0. Yes 1. No /__/

Q413. Comital seizures (8) 0. Yes 1. No /__/

Q414. Sepsis 0. Yes 1. No /__/

Q415. Other (9): _____ /__/

Q416. Death (10) 0. Yes 1. No /__/

Q417. Cause of death: _____

Q418. Time (days): /__/__/

Q419. Functional rehabilitation: 0. yes 1. no /__/

Q420. If yes, Number of sessions/week: 0. ≥3 1. <3 /__/

Q421. If <3, specify cause: _____ /__/

Q422. Technician: 0. Physiotherapist 1. Other: /__/

Q423. If no, please specify the cause: _____

Socio-professional reintegration

Questions Q424 to Q432 are reserved for patients who are pupils, students or in vocational training.

Q424. Back to school: 0. Yes 1. No 2. Not concerned If not go to Q430 /__/

Q425. Trade-in date: /__/__/ /__/__/ /__/__/

Q426. Environmental adjustments: 0. Same class 1. Change of class /__/

Q427. Schedule adjustments: 0. Full-time 1. Part-time /__/

Q428. Permanent change of class/training: 0. Yes 1. No /__/

Q429. Permanent change of teachers or trainers: 0. Yes 1. No /__/

Q430. If course not resumed, new status:

0. Disability 1. Sick leave 2. Training or retraining 3. None /__/

Q431. Medical reasons preventing resumption of course/training: _____

Q432. Official accreditation as a disabled pupil/student: 0. Yes 1. No /__/

Questions Q433 to Q442 are reserved exclusively for employed patients.

Q433. Return to work: 0. Yes 1. No 2. Not concerned If not go to Q437 /__/

Q434. If return to work Date of return: /__/__/ /__/__/ /__/__/

Q435. Environmental adjustments: 0. Same position 1. Change of position /__/

Q436. Schedule adjustments: 0. Full-time 1. Part-time /__/

Q437. Permanent change of job or employer: 0. Yes 1. No /__/

If no return to work

Q438. New status:

0. Disabled 1. Retired 2. Sick leave 3. In training or retraining 4. No /__/

Q439. Medical reasons preventing you from returning to work:_____

Q440. Official certification as a disabled worker: 0. Yes 1. No /__/

Q441. Support/Organization specializing in work reintegration: /__/

0. Yes 1. No

Q442. Consultation with the occupational physician before returning to work: /__/

0. Yes 1. No

V-Evolution and prognosis - At 3 months

Q501. PAS (mmHg): /__/__/__/ PAD (mmHg): /__/__/__/

Q502. FC (bpm): /__/__/__/ FR (c/min): /__/__/ Temperature (˚C): /__/__/__/, /__/__//

Q503. Glasgow Coma Score: /__/__/ - RM /__/ RV /__/ RO /__/

Q504. NIHSS: /__/__/ Rankin modified: /__/__/ Barthel: /__/__/__/ Beck: /__/__/

Q505. Intercurrent complications: 0. Yes 1. No /__/

Q506. Urinary tract infection 0. Yes 1. No /__/

Q507. Bronchopulmonary infection 0. Yes 1. No /__/

Q508. Pulmonary embolism 0. Yes 1. No /__/

Q509. Thrombosis of pelvic limbs 0. Yes 1. No /__/

Q510. dysphagia 0. Yes 1. No /__/

Q511. Pressure sores (6) 0. Yes 1. No /__/

Q512. Recurrent stroke 0. Yes 1. No /__/

Q513. Comital seizures (8) 0. Yes 1. No /__/

Q514. Sepsis 0. Yes 1. No /__/

Q515. other (9): _____/__/

Q516. Death (10) 0. Yes 1. No /__/

Q517. Cause of death: _____

Q518. Time (days): /__/__/

Q519. Functional rehabilitation: 0. Yes 1. No /__/

Q520. If yes, Number of sessions/week: 0. ≥3 1. <3 /__/

Q521. If <3, specify cause: _____/__/

Q522. Technician: 0. physiotherapist 1. other: /__/

Q523. If no, please specify the cause: _____

Socio-professional reintegration

Questions Q524 to Q532 are reserved for patients who are pupils, students or in vocational training.

Q524. Back to school: 0. Yes 1. No 2. Not concerned If not go to Q530 /__/

Q525. Trade-in date: /__/__/ /__/__/ /__/__/

Q526. Environmental adjustments: 0. Same class 1. Change of class /__/

Q527. Schedule adjustments: 0. Full-time 1. Part-time /__/

Q528. Permanent change of class/training: 0. Yes 1. No /__/

Q529. Permanent change of teachers or trainers: 0. Yes 1. No /__/

Q530. If not resuming course, new status:

0. Disability 1. Sick leave 2. Training or retraining 3. None /__/

Q531. Medical reasons preventing resumption of course/training: _____

Q532. Official approval as a disabled pupil/student: 0. Yes 1. No /__/

Questions Q533 to Q542 are reserved exclusively for employed patients.

Q533. Return to work: 0. Yes 1. No Not concerned If no go to Q537 /__/

Q534. If resuming work Date of resumption: /__/__/ /__/__/ /__/__/

Q535. Environmental adjustments: /__/

0. Same position 1. Change of position

Q536. Schedule adjustments: 0. Full-time 1. Part-time /__/

Q537. Permanent change of job or employer: 0. Yes 1. No /__/

If no return to work

Q538. New status: 0. Disabled 1. Retired 2. Sick leave /__/

3. In training or retraining 4. None

Q539. Medical reasons preventing you from returning to work:_____

Q540. Official certification as a disabled worker: 0. Yes 1. No /__/

Q541. Support / Organization specializing in work reintegration: /__/

0. Yes 1. No

Q542. Consultation with the occupational physician before returning to work: /__/

0. Yes 1. No