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Subarachnoid Hemorrhage in Pointe-Noire: Epidemiological, Diagnostic and Pronostic Aspects

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Abstract

Introduction: Subarachnoid hemorrhage (SAH) is a neurovascular emergency with high morbidity and mortality, with few data available in Congo. The objective was to determine the epidemiological, clinical, and pronostic aspects of SAH in Pointe-Noire. **Patients and Methods:** This is a descriptive study carried out in the neurology department of Loandjili General Hospital over the period from April 1, 2022 to December 31, 2024. The patients included were hospitalized for SAH confirmed by brain scan. **Results:** Twenty-nine patients were identified with a mean age of 57.3 ± 8.4 years with a *sex ratio* of 0.7. Headaches (51.7%) and impaired consciousness (27.6%) were the main reasons for admission. Hypertension was the most common risk factor (68.9%), and 27.6% consumed alcohol. On admission, 34.5% were at WFNS stage III and 41.4% had FISHER grade IV. Two cases of unruptured intracranial aneurysm were diagnosed. The mean hospital stay was 10.4 ± 5.7 days, and treatment was mainly symptomatic. Mortality was 27.6%. **Conclusion:** Although rare, SAH remains a serious condition; it is underdiagnosed in Pointe-Noire with a low proportion of intracranial aneurysms, the management of which poses a problem due to insufficient technical facilities.

Keywords

Subarachnoid Hemorrhage, Loandjili, Pointe-Noire, Congo

1. Introduction

Subarachnoid hemorrhage (SAH), also known as subarachnoid hemorrhage, is a rare form of cerebrovascular accident (CVA), accounting for approximately 5 to 10% of cases [1]. It is characterized by a massive accumulation of blood in the subarachnoid spaces, usually following the rupture of an aneurysm [1]. It is a serious neurovascular emergency, which can rapidly compromise life prognosis. Its incidence in sub-Saharan Africa varies between 1.3% and 6% of all strokes [2]-[4]. In Congo, little data exist on subarachnoid hemorrhage. It is in this context that we undertook this study, aimed at describing the epidemiological, diagnostic and evolutionary aspects of subarachnoid hemorrhage in the city of Pointe-Noire, Republic of Congo.

2. Patients and Method

This was a descriptive study with retrospective data collection carried out in the neurology department of the Loandjili General Hospital over the period from April 1, 2022 to December 31, 2024, a duration of 33 months. The Loandjili General Hospital is one of the major hospitals in the department of Pointe-Noire, an economic city in the Republic of Congo, located in district No. 4 of Loandjili. It receives patients from several departments and is recognized for its specialization in the management of neurological conditions due to the fact that it has the 2nd neurology department in the Republic of Congo after that of the Brazzaville University Hospital. Patients aged over 18 years hospitalized in the department for SAH confirmed by brain scan or after a lumbar puncture were included in the study. Patients hospitalized for post-traumatic brain injury subarachnoid hemorrhage, intracerebral hemorrhage, and those with prior disability secondary to a neurological pathology other than stroke were excluded from the study. Data were collected using patient records, including sociodemographic (age, sex, marital status), clinical (reason for consultation, vascular risk factors, WFNS score), and CT (Fischer score) variables. The study was conducted with respect to confidentiality, anonymity, and patient privacy. We report no conflict of interest.

Data processing was done on Excel 2019. Statistical analyses were performed using SPSS 27 software.

3. Results

A total of 1542 patients were hospitalized in the neurology department during the study period. Taking into account the inclusion and exclusion criteria, we retained 29 files relating to SAH, representing a hospital frequency of 1.9% of hospitalizations. One thousand one hundred and twenty-six (1126), representing 73% of stroke cases, were hospitalized, and SAH represented 2.6% of all strokes. The average age of the patients was 57.3 years ± 8.3, with extremes of 42 and 85 years, and a *sex ratio* of 0.7.

Headaches were the most common reason for consultation in 51.7% of patients, followed by impaired consciousness (27.6%) and motor deficit (27.6%) (**Figure**

1). The distribution of identified cardiovascular risk factors is presented in (Table 1). Other factors identified were chronic headaches (10.3%), dyslipidemia (10.3%) and HIV infection (6.9%). A history of stroke was found in 6 patients (20.7%).

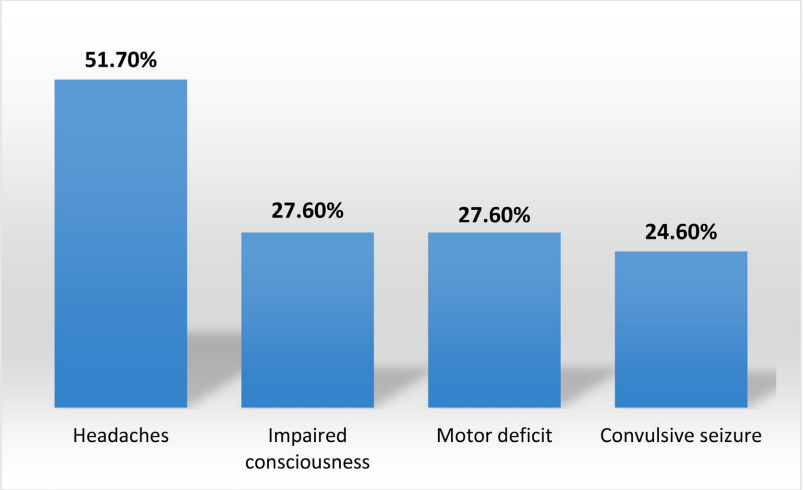


Figure 1. Distribution of patients according to the reason for consultation.

Table 1. Distribution of patients according to risk factors.

	Effective	Percentage
HTA	20	68.9
Alcohol	08	27.6
Diabetes	06	20.7
stroke	06	20.7
Tobacco	04	13.8
Others*	08	27.59

*Chronic headaches, dyslipidemia, HIV.

The WNFS score of the patients allowed 10 patients (34.5%) to be classified as grade III, while 20.7% of patients were classified as grades I and IV (Figure 2).

All patients had undergone a brain CT scan (see Image 1(a) and Image 1(b)), and lumbar puncture was performed on 1 patient (3.5%). The FISCHER CT scale allowed 12 patients (41.4%) to be classified as stage IV, 6 patients (20.7%) as stage III and 9 patients (31%) as stage II (Figure 3). Cerebral CT (see Image 2(a) and Image 2(b)) angiography was performed in 3 patients (10.3%), and 2 cases (6.8%) of intracerebral aneurysm were diagnosed (Figure 3).

The mean length of hospitalization was 10.4 ± 5.7 days, with a range of 1 - 25 days. All patients received symptomatic treatment, including: nimodipine (62.1%), antihypertensive treatment (100%), anticonvulsants (24.6%), and analgesics (100%). The outcome was marked by death in 8 patients (27.6%). Fourteen patients (66.7%) had a favorable outcome and were discharged without sequelae, while 7 patients (33.3%) left the hospital with sequelae (Figure 4).

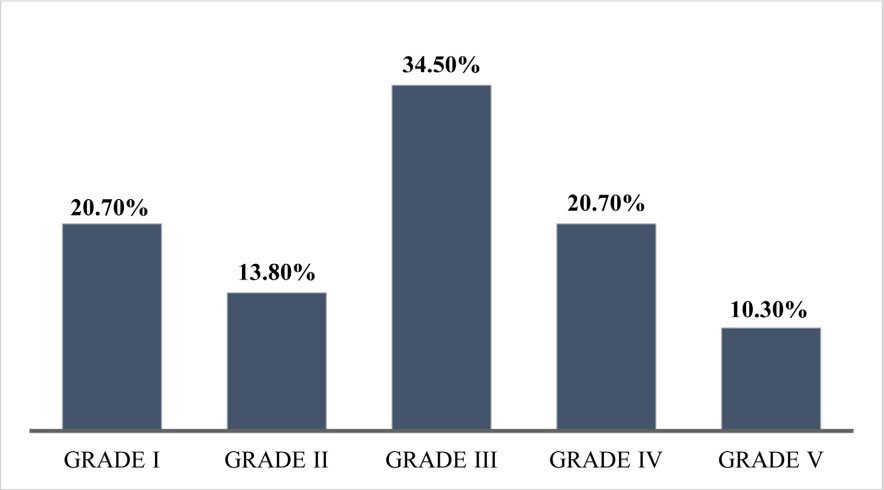


Figure 2. Distribution of patients according to the World Federation of Neurological Surgeons (WFNS) classification.

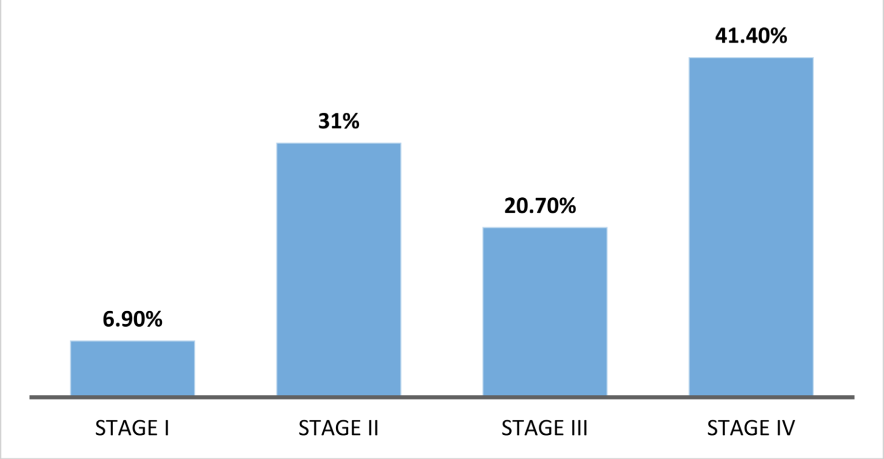


Figure 3. Distribution of patients according to the FISHER scan scale.

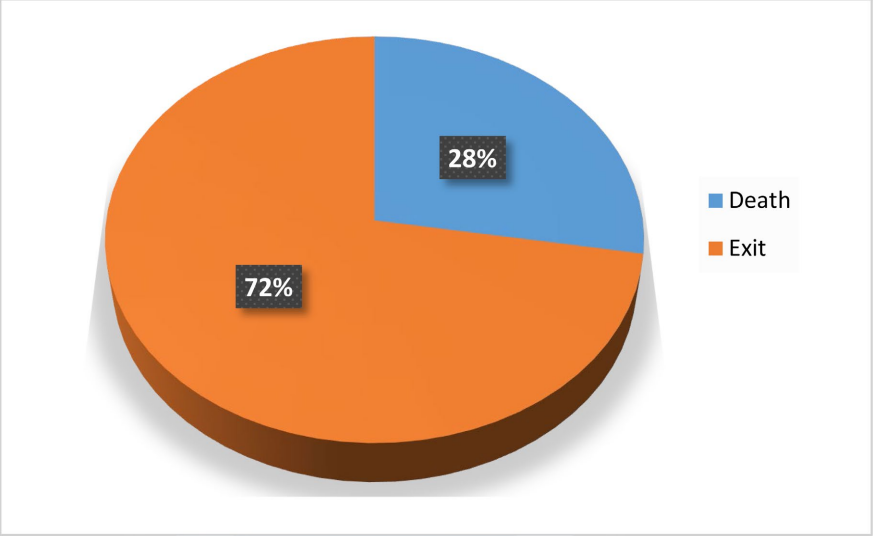
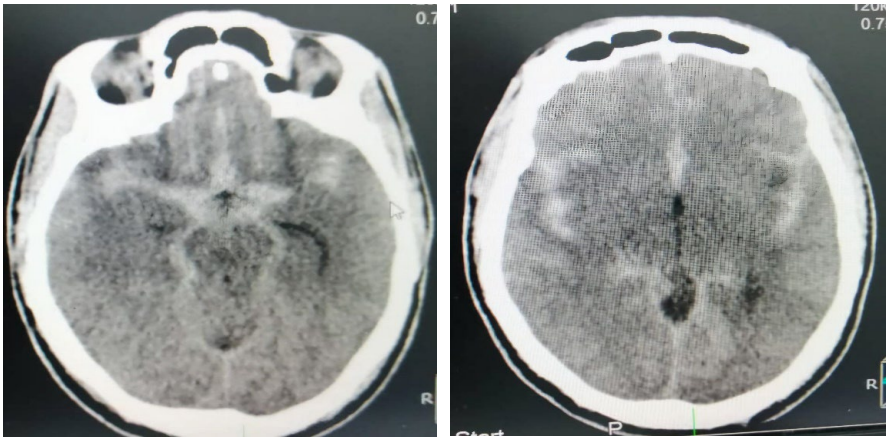
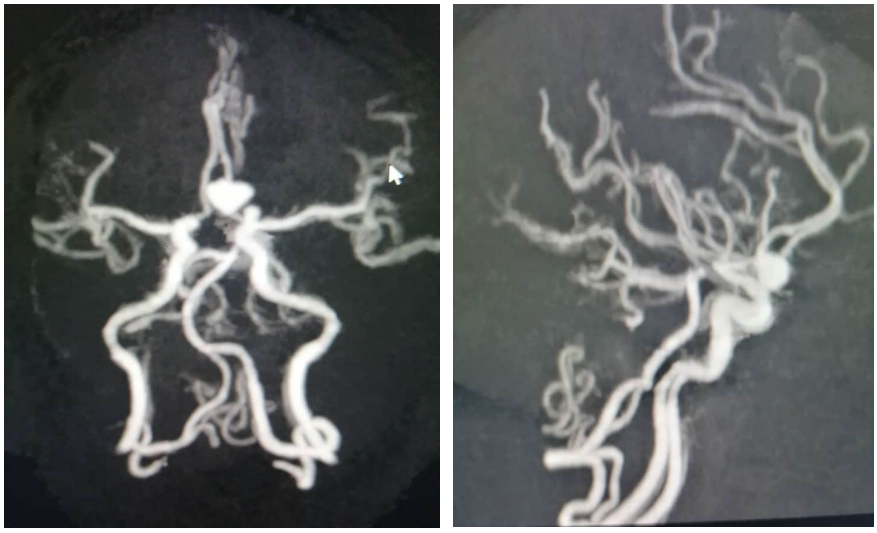


Figure 4. Distribution of patients according to evolution.



(a) (b)

Image 1. Brain CT scan without injection of contrast agent in axial section which highlights spontaneous hyperdensity of the basal cisterns, the Sylvian valleys and the cerebral hemispheric convexities related to a meningeal hemorrhage.



(a) (b)

Image 2. Cerebral CT angiography which reveals an aneurysm at the level of the unruptured anterior communicating artery.

4. Discussion

4.1. Epidemiological Aspects

The hospital frequency of SAH in our study was 1.9% of all hospitalizations and 2.57% of stroke cases. This result is similar to those reported in the literature [5] [6]. This frequency, although low in our resource-limited countries, remains underestimated due to its urgent nature; many patients are referred to intensive care units. However, this frequency is higher in developed countries, where the incidence varies between 5% and 10%. This difference can be explained by the low development of medical imaging, its accessibility and its high cost in low-income countries, which leads to diagnostic delays and contributes to early mortality re-

lated to SAH complications. Indeed, at least 10% of patients suffering from SAH die before reaching the hospital, and 25% succumb within 24 hours of the stroke [7] [8]. The mean age in our study was 57.3 years, with a female predominance similar to data from African and European literature, which places the peak incidence between 40 and 60 years [6] [7] [9] [10].

Concerning risk factors, 68.9% were hypertensive, 27.6% consumed alcohol, and 21% were diabetic. About 14% consumed tobacco. Hypertension remains the first vascular risk factor, as shown by several African studies, and is the first cause of the occurrence of hemorrhagic strokes in Congo [10]-[13]. This strong trend of high blood pressure could be explained by poor therapeutic compliance, difficult access to effective therapies given their cost and also lack of awareness of the status. The consumption of alcohol and tobacco is becoming increasingly important in our countries due to difficulties in accessing jobs, with a high unemployment rate responsible for stress that exposes patients to risky behaviors. A meta-analysis carried out in developed countries concluded that the risk of SAH was multiplied by 2.5 in the case of HBP, by 3 in the case of smoking and by 1.5 in the case of excessive alcohol consumption [10]. The risk factors found in this study are superimposable with the data in the literature [6] [11] [14] [15].

4.2. Diagnostic Aspects

The clinical presentation of subarachnoid hemorrhages is heterogeneous, ranging from unusual "thunderclap" headaches to coma. In our study, sudden onset and initially maximal intensity thunderclap headaches were found in 51.7% of patients. Ahanobe *et al.* reported headaches in 42.8% during SAH [11]. Headaches are often poorly characterized and treated symptomatically (analgesics, NSAIDs, antimalarials) with consultations in integrated health centers where generally antimalarial treatment is systematically administered due to the high malaria endemicity, without in-depth etiological research, constituting a cause of diagnostic delay. When an unusual headache of sudden onset is the only clinical sign, the question of brain imaging arises in our context due to its high cost and accessibility [12] [14], justifying diagnostic delays. In our study, most patients had stage III of WFNS, explaining their severity.

Brain CT is the first-line examination [16]-[18]. It was performed in all patients and allowed the diagnosis of meningeal hemorrhage to be made in 96.55% (n = 28). The majority of patients had a Fisher CT scale grade IV, as shown by the literature data [6] [11]. One patient (3.45%) had a normal CT scan, which required a lumbar puncture with three-tube test, revealing an incoagulable pink liquid, confirming the diagnosis of meningeal hemorrhage. On the etiological level, CT angiography remains the fundamental examination, allowing appropriate management [11] [16] [19] [20]. It was performed on 3 patients, and 2 cases of unruptured intracerebral aneurysm were diagnosed, not explaining the patients' symptoms. This etiological research remains difficult in our practice due to a poorly developed technical platform and financial problems linked to the cost of these explo-

rations. This observation is made in several sub-Saharan African countries [6] [11].

4.3. Evolutionary Aspects

The mortality rate in our study was 27.6%. This rate is close to that of Ahanogbe *et al.* in Togo [11]. Sissoko *et al.* [6] in Mali found a much lower mortality rate of 14.3%. This low mortality rate can be explained by the fact that more than half of their patients were at stage I of WNFS while in our study they were at stage III of WNFS and had a Fisher CT scale of grade IV. Moreover, Danière *et al.* states that the risk of complications is correlated with the importance of bleeding [14]. This may also explain our high mortality rate. All our patients received symptomatic treatment with prevention of complications. Sixty-two patients received nimodipine. None of our patients received neurosurgical treatment, because the neurosurgery department was not operational during the study period. Although it is a serious disease with a poor prognosis, the improvement of the technical platform in sub-Saharan Africa will allow better care with a reduction in the mortality rate in specialized structures.

5. Conclusion

Although rare, subarachnoid hemorrhage remains a serious condition associated with a high risk of life-threatening complications. In Pointe-Noire, its mortality rate is 27.6%. Access to etiological examinations remains limited in this city, making diagnosis and management more complex. Improved diagnostic methods, combined with multidisciplinary care involving neurosurgery and interventional neuroradiology, would significantly reduce the mortality rate of patients with subarachnoid hemorrhage.

Conflicts of Interest

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

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