

## Epidemio-Clinical Profile of Spontaneous Subarachnoid Hemorrhage in Antananarivo

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### Abstract

**Introduction:** Subarachnoid haemorrhage (SAH) or spontaneous meningeal haemorrhage accounts for 1 - 7% of all strokes. It is a serious pathology with a high mortality rate. The objective of this study is to describe the epidemiological-clinical profile of patients who presented with SAH in Antananarivo.

**Materials and Methods:** This is a multicenter retrospective study of a series of 62 cases of SAH over a four-year period in two neurosurgery centers in Antananarivo.

**Results:** Sixty-two patients recruited accounted for 0.79% of hospitalizations, with an annual frequency of 15.5 cases per year. The average age was 49.29 years with extremes of 25 and 77 years. We observed a predominance of the female gender is 50 women (80.65%) against 12 men (19.35%) with a sex ratio of 0.24. High blood pressure was the most important risk factor (40.32%). The most common reasons for admission were: nausea and vomiting (59.67%) followed by severe headache (41.40%) and knowledge loss (27.41%). Clinically, we found a meningeal syndrome in 88.70% of patients and an intracranial hypertension syndrome (IC-HTN) in 61.29%. The majority of our patients (51.62% of cases) were admitted with a WFNS 2 grade (World Federation of Neurological Surgeons).

**Conclusion:** SAH is a rare disease in Antananarivo. The clinical diagnosis is difficult.

**Keywords:** Antananarivo; Epidemiology; Clinical; Subarachnoid Hemorrhage; Spontaneous

### Introduction

Subarachnoid haemorrhage (SAH) or spontaneous meningeal hemorrhage accounts for 1 to 7% of all strokes and 50% of strokes in subjects under 35 years of age [1]. It is 75% to 81.4% of cases due to intracranial aneurysm rupture [2,3]. The prevalence of intracranial aneurysms varies between 0.8 and 4.6% of the general population [2]. They are often small and rupture occurs only in 20 to

50% of cases [4]. The SAH is a serious pathology with a high mortality rate (42% at 28 days) whose main prognosis factor is abundance of bleeding [5]. Through this study, our main objective is to describe the epidemiological-clinical profile of patients who had presented an SAH in Antananarivo.

## Materials and Methods

We conducted a multicenter retrospective study in the two Neurosurgery Services supporting vascular neurosurgery in Antananarivo: the Neurosurgery Department of the Joseph Ravoahangy Andrianavalona University Hospital (CHU-JRA) and the Polyclinic Saint François d'Assise. Over a period of 04 years from 01 January 2015 to 31 December 2018, sixty-two cases of SAH were collected. For this, we included all hospitalized patients for an SAH. Epidemiological parameters such as frequency, age, gender, risk factors as well as clinical parameters such as admission patterns and physical signs presented by patients were analyzed. The different parameters were taken into account during the first admission of patients to the service. All data were collected in the consultation registers, the medical files and the operating protocol book of the two services.

## Results

### Epidemiological profile

Of the 7828 hospitalizations during the study period, the 62 cases reported represented 7.92 cases per 1000 hospitalizations. SAH accounted for 0.79% of hospitalizations with an annual frequency of 15.5 cases per year. The average age was 49.29 years with extremes of 25 and 77 years. The majority of patients (74.19%) were in the age group between 40 and 59 years old. We observed a predominance of the female gender is 50 women (80.65%) against 12 men (19.35%) with a sex ratio of 0.24. The Risk factors that we had recorded were in order of decreasing frequency high blood pressure, smoking, excessive intake of alcoholic beverages (Table 1). Hypertension was the predominant risk factor (40.32%). Patients who had a predisposition to intracranial aneurysm accounted for only 6.45%.

Risk Factor for Subarachnoid Hemorrhage	Numbers n = 62	Percentage %
Hypertension	25	40,32
Smoking	5	08,06
Ethylism (more than 150 g/week)	5	08,06
<b>Predisposition:</b>		
• Family history of aneurysm	01	1,61
• Polycystic kidney disease	01	1,61
• Sudden death by non-traumatic intracranial hemorrhage	02	3,22
Dyslipidemia	04	6,45
Diabetes	03	4,83

**Table 1:** Distribution of patients by major risk factors for SAH.

### Clinical profile

The reasons for admission were dominated by nausea and vomiting (59.67% of cases) followed by sudden headache (41.40% of cases), knowledge loss (27.41% of cases) and the motor deficit. type of hemiplegia or hemiparesis (4.19%) (Table 2).

Reason for admission	Numbers n = 62	Percentage %
Nausea and vomiting	37	59,67
Brutal headaches	26	41,40
Loss of consciousness	17	27,41
Motor deficiency	15	24,19
Brief loss of consciousness	09	14,51
Seizures	09	14,51

**Table 2:** Distribution of patients by reason for admission

Clinically, we found a syndrome of intracranial hypertension (IC-HTN) in 61.29% of patients; a meningeal syndrome in 88.70%, a focal deficit syndrome in 24.19% and a confusional syndrome in 8.06% of patients (Table 3).

Physical signs at admission	Numbers n = 62	Percentage %
Intracranial hypertension syndrome	38	61,29
Meningeal syndrome	55	88,70
Deficit syndrome	15	24,19
Confusional syndrome	05	8,06

**Table 3:** Distribution of patients by physical signs at admission.

The majority of our patients (51.62% of cases) were admitted with a World Federation of Neurological Surgeons WFNS grade 2. None had a WFNS grade 5 (Table 4). The delay was 7.16 days.

Grade WFNS	Score de Glasgow GCS	Neurological deficit	Numbers n = 62	Percentage %
0	15			
1	15	Absent	15	21,19
2	13-14	Absent	32	51,62
3	13-14	Présent	06	9,68
4	7-12	Absent/present	09	14,51
5	3-6	Absent /present		

**Table 4:** Distribution of patients according to the classification of the World Federation of Neurological Surgeons (WFNS).

## Discussion

Our study found an annual frequency of 15.5 cases of HSA per year, equivalent to 0.79% of hospitalizations in each of the two Neurosurgical Services. Our results do not differ from the literature because in 2016, Ahanogbe KMH., *et al.* in an African series (Togolese) reported 35 cases of HSA on 17470 hospitalizations for a period of 5 years, which represents 0.2% of hospitalizations and an average of 7 cases per year [6]. According to a Chinese epidemiological study in 2017 on SAH [7], the average age of patients who had spontaneous SAH secondary to aneurysm rupture was 51.8 years and that of patients who had spontaneous non-aneurysmal SAH was 49.5 years old; with an extreme age of 18 to 80 years. In Togo in 2016 [6], the average age found was 48 years, with an extreme age between 22 and 78

years. The average age of 49.29 years with 25- and 77-year extremes that we observed is consistent with the literature data. Regarding gender, the clear predominance of women (80.65% of patients) was also found in the Togolese series [6] and in the study by Brisman JL, *et al.* The female gender is a risk factor for the onset of an SAH [8]. In contrast, the Chinese epidemiological study reported a male predominance of 51.3% for aneurysmal HSA and 57.7% for non-aneurysmal SAH [7]. The predominant role of tobacco, high blood pressure, and alcohol abuse in the occurrence of HSA was highlighted by the meta-analysis of Feigin, *et al.* in 2005 [4]. The environmental factor would also be involved in the occurrence of stroke [9]. Comparing our findings regarding the major risk factors for SAH and those of Song, *et al.* [7], we found a clear difference in hypertension. In our series, 40.32% of our patients were hypertensive, compared to 30.8% for aneurysmal SAH and 17.8% for non-aneurysmal SAH for the study. The other risk factors described by some authors [4,7], including alcohol and tobacco, were found in our series: 8.06%. For admission reasons, our results show some similarities with many previous series. According to Edlow JA, *et al.* as well as Linn FH, *et al.* 12 - 40% of patients admitted for an unusual headache experienced SAH [10,11]. In Huang J's meta-analysis, 10% of patients with an unusually severe, sudden headache had SAH [12]. For and Ahanogbe K.M.H, 42.85% of their patients had headache [6]. In our series, the majority of patients, 41.40% complained of unusual headache. Seizures were found in 14.51% of our patients. This figure is much higher than that of Lin [13] and Ahanogbe KMH [6] with the respective values of 6 to 15% and 5.71%. We found that only 24.19% of our patients had a motor deficit on admission, compared to 42.85% for Ahanogbe KMH [6]. For nausea and vomiting (59.67%) and loss of consciousness (27.41%), our results were consistent with those reported by Audibert G, *et al.* [14] who found 69% and 28% respectively. On physical examination, we found that HSA was much more manifest in meningeal syndrome in 88.70% of cases compared to 70% in the literature [14]. Indeed, the appearance of a meningeal syndrome secondary to aneurysmal SAH does not manifest until after several hours [14], since in our series, we have a very long management time (7.16 days). The majority of our patients (51.62%) had a grade WFNS 2. We did not have any cases of SAH grade WFNS 5. Indeed, given the very limited number of service capable of taking charge of vascular neurosurgery (two services in the capital for 25 million inhabitants), the majority of serious patients (grade WFNS 4 and 5) do not arrive in these services. They died pre-hospital (10% according to the MONICA study [15]) for financial reasons and inaccessibility to care.

## Conclusion

SAH is a rare but serious pathology. The polymorphism of the clinical presentation and the difficult access to the CT scan make the diagnosis difficult. Often this pathology is under diagnosed. The promotion of the fight against high blood pressure could be an asset to decrease the frequency of SAH. Apart from its scientific interest, our result will serve as a database in SAH in Antananarivo.

## Conflict of Interest

The authors declare that they have no links of interest.

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