

Research

Corresponding author*Yacouba Njankouo Mapoure, MD**

Neurologist

Senior Lecturer

Department of Clinical Sciences

Faculty of Medicine and

Pharmaceutical Sciences

The University of Douala

Carrefour Ange Raphael

Douala, Cameroon

Tel. 00237 696963747

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Thunderclap Headache in HIV Positive Patients: Aetiology, Clinical Findings and Long-Term Follow-Up of a Series of 5 Cases

Yacouba Njankouo Mapoure^{1*}, Namme Henry Luma², Cyrille Nkouonlack³, Ariane Vanessa Pokossy⁴ and Albert Sone Mouelle⁵

¹Neurologist, Senior Lecturer, Department of Clinical Sciences, Faculty of Medicine and Pharmaceutical Sciences, The University of Douala, Carrefour Ange Raphael, Douala, Cameroon

²Internist, Professor, Department of Infectious Disease, Faculty of Medicine and Biomedical Sciences, The University of Yaoundé, Joseph Tchooungui Akoa, Yaounde, Cameroon

³Neurologist, Regional Hospital of Buea, Cameroon

⁴Department of Clinical Sciences, Faculty of Medicine and Pharmaceutical Sciences, The University of Douala, Carrefour Ange Raphael, Douala, Cameroon

⁵Professor, Head Department of Clinical Sciences, Faculty of Medicine and Pharmaceutical Sciences, The University of Douala, Carrefour Ange Raphael, Douala, Cameroon

ABSTRACT

Background: Thunderclap headache is a severe headache of sudden onset that peaks within a few seconds. The aim of this study was to describe the clinical characteristics, etiologies and long-term prognosis of thunderclap headaches in HIV positive patients.

Patients and Methods: This was a 5-year retrospective study of thunderclap headaches in HIV positive patients with a long-term follow-up at the Neurology Unit of the Internal Medicine Department of the Douala General Hospital. All patients had a cerebral magnetic resonance imaging and cerebrospinal fluid analysis. Patients were followed-up at the out-patient department after hospitalization.

Results: 65 patients were recorded with thunderclap headaches over the study period, and 5 were infected with HIV type 1 (7, 69%). The mean age was 50, 8±15, 4 years. There were three females and the mean CD4 count was 328, 6±195, 8 cells/mm³. The aetiologies of thunderclap headache were one case each of subarachnoid haemorrhage, ischemic stroke, primary thunderclap headache, cryptococcal meningitis and migraine without aura respectively. The mean duration of the out-patient follow-up was 17 months±10, 2 (1-25) months; 95% CI (5, 7-24). There was no relapse of thunderclap headache and the mortality rate was 20%.

Conclusion: Thunderclap headache in HIV positive patients occurs spontaneously and is independent of the level of CD4 count. The aetiologies are heterogeneous, and show no predominance of subarachnoid haemorrhage thus highlighting the important role of neuroimaging in the diagnosis of its cause.

KEYWORDS: Thunderclap headache; HIV; Aetiologies; Outcome.

INTRODUCTION

Headache is a common cause of consultation in medicine.^{1,2} Its prevalence in the general population is estimated at 90%.³ Headache is major public health problem due to its influence on the Quality of Life (QoL) of patients and its related cost of healthcare.^{4,5} In 2010, it was among the ten top causes of disabilities worldwide.⁶ Headache has a variety of causes. According to the International Headache Society classification in 2004 there are, primary

headaches of which migraine and tension-type headaches are the most common; secondary headaches attributed to an organic cause; cranial neuralgias, primary and central facial neuralgias; and the other primary headaches.⁷ Thunderclap headache is a rare form of headache.⁷ It is an acute and severe headache of instantaneous onset, with its maximal intensity in a few seconds or minutes.^{8,9} Thunderclap headache could be a primary headache with benign outcome, or secondary headache due to a variety of aetiologies leading to serious morbidity and mortality.⁸ The most common aetiology of thunderclap headache is subarachnoid haemorrhage.^{7,10} There are other varieties of causes depending on authors and include; intracerebral haemorrhage, brain tumours, cerebral venous thrombosis, meningitis, acute glaucoma and sinusitis.¹¹⁻¹³ The incidence of thunderclap headache worldwide is not known because of this multitude of aetiologies.^{8,10} In Cameroon, the prevalence of HIV infection in adults is 5, 3%.¹⁴ The aim of this study was to describe the clinical characteristics, aetiologies and outcome of thunderclap headaches in HIV positive patients.

PATIENTS AND METHODS

This was a retrospective study of medical records of patients admitted for thunderclap headache and HIV infection over a period of 5 years from 1st January to 31st December 2014 at the Neurology Unit of the Internal Medicine Department of Douala General Hospital. Cases were identified from patients' medical records, registers of admissions and out-patient departments. For each patient the following data was collected: age, sex and marital status; characteristics of headaches: circumstances at onset (coughing, coitus, physical effort, defecation, intellectual effort, sudden emotion, bathing, head movements, spontaneous); trigger factors (postpartum, drugs and alcohol); localization of the pain (temporal, bitemporal, occipital, frontal, diffuse); associated signs and symptoms (nausea, vomiting, agitation, photophobia, seizures, focal neurological deficits, altered state of consciousness, fever, neck stiffness). Toxicological past history was also investigated (alcohol consumption, tobacco smoking, drug use and medications). As investigations, all our patients had had a cerebral Magnetic Resonance Imaging with MRI – Angiography and a lumbar tap. All cerebrospinal fluids were analysed for cytology, bacteriology, Indian ink stain, detection of soluble antigens and culture. After discharge from the hospital, patients were followed-up at the out-patient department. The total duration of follow-up was estimated in month. We searched for relapse of thunderclap headache, the occurrence of other forms of primary headaches (migraine, tension-type headache, and unspecified headaches) and death.

Statistical Analysis

Data was analysed using the SPSS (Statistical Package for the Social Sciences) version 20.0 software. Qualitative data were expressed as percentages and quantitative variables as mean and standard deviations.

Ethical considerations

The study was approved by the Institutional Ethical Committee of the University of Douala.

RESULTS

Over the study period 65 cases of thunderclap headache were recorded of which five were infected with HIV type 1 (7.69 %). The mean age of patients was 50, 8±15, 4 years (38-69), CI 95% (39-62, 6). The median age was 43 years. Four of the five patients were known HIV positive patients while the thunderclap headache revealed the HIV infection in one patient. The mean CD4 cell count was 328, 6±195, 8 cells/mm³ (104-609); CI 95% (85, 2-252, 6). Four patients were on antiretroviral treatment comprising: 2 patients on the Zidovudine – Lamivudine – Nevirapine and 2 patients on the Zidovudine – Lamivudine – Efavirenz combinations respectively. One patient was not yet eligible for antiretroviral treatment. The clinical profile of patients' is shown in Table 1. The aetiologies were different for the five patients: subarachnoid haemorrhage (class II of the World Federation of Neurology), ischaemic stroke, cryptococcal meningitis, migraine without aura and a case of primary thunderclap headache. Four of the five patients were admitted in the hospital, the mean duration of admission was 15±7, 7 (5-22) days; CI 95% (1-9, 81). No case of death was registered during admission, the duration of follow-up in the out-patient department was 17 months±10, 2 (1-25) months; CI 95% (5, 7-24). There was no relapse of thunderclap headache during the period of follow-up. One patient with the diagnosis of primary thunderclap headache had a sudden death giving a mortality rate of 20%. The death occurred at the 22nd month of follow-up. During the follow-up period, three patients including the patient with subarachnoid haemorrhage had no symptoms, while the patient with cryptococcal meningitis developed tension – type headache.

	Number (N)	Percentage (%)
Context of occurrence		
Spontaneous	4	80
Bathing	1	20
Localization of thunderclap headache		
Occipital	2	40
Frontal	2	40
Diffuse	2	40
Parietal	1	20
Temporal	1	20
Signs and Symptoms		
Vomiting	3	60
Photophobia	3	60
Nausea	2	40
Neck stiffness	2	40
Fever	2	40
Focal neurological deficit	2	40
Altered state of consciousness	1	20

Table 1: Clinical characteristics of thunderclap headache in HIV positive patients.

DISCUSSION

This study shows the clinical profile, aetiological aspects and evolution of thunderclap headache in HIV infected patients. It is of interest as it is one of the first studies on thunderclap headache focussing only on HIV positive patients. Classically, headache occurs in about 83% of HIV positive patients with the aetiologies being mainly infections of the central nervous system as cerebral toxoplasmosis as cryptococcal meningitis.¹⁵ Thunderclap headache is specific with its acute and severe sudden onset with peak intensity in a few seconds. Its main aetiology is subarachnoid haemorrhage.^{8,16} The occurrence of thunderclap headaches in HIV positive patients led us to enquire about its aetiological characteristics and outcome. The first lesson is that there should exist some clinical specificities as 80% of cases were on spontaneous occurrence compared to 63% reported by Landtblom and colleagues¹⁰ in a series of HIV negative patients. The mean age of occurrence was 50.8 years as opposed to 40 years reported in HIV negative patients by other authors.^{10,17}

The second lesson is that the occurrence of thunderclap headache in HIV positive patients is independent of the level of CD4 count, as the mean CD4 count of the 5 patients was 328, 6 ± 195 , 8 cells/mm³ with a range from 104 to 609 cells/mm³. The question arises whether antiretroviral treatment could influence the occurrence of thunderclap headaches, however, we cannot answer that with this study design.

The third lesson is that the aetiologies of thunderclap headache on HIV are variable and subarachnoid haemorrhage does not seem to predominate. We recorded 20% of cases due to subarachnoid haemorrhage in our series of HIV positive as against 40% reported by other authors in HIV negative patients.^{8,10} This heterogeneity of causes reemphasizes the need of cerebral neuroimaging in HIV positive patients with thunderclap headache. For example, the ischaemic stroke was diagnosed on cerebral MRI which showed infarction at the superficial territory of the middle cerebral artery meanwhile a prior head CT scan was normal. The cerebrospinal fluid analysis ruled out the diagnosis of minimal subarachnoid haemorrhage and infectious causes as bacteria or fungi. The case of primary thunderclap headache was diagnosed based on a normal CSF and brain MRI. The long-term outcome was favourable for all the cases. We could not explain the cause of sudden death in the patient primary thunderclap headache. This patient had no cerebrovascular risk factors as hypertension, diabetes, smoking and dyslipidaemia. He had benefited from neuroimaging procedures with a brain MRI and angio-MRI which were normal. Our findings however have certain limitations given our small sample number of cases.

CONCLUSION

Thunderclap headache in HIV positive patients occurs spontaneously and is independent of the CD4 count. The aeti-

ologies are variable without any predominance of subarachnoid haemorrhage, thus highlighting the importance of neuroimaging. The outcome of thunderclap headache on HIV is favourable.

CONFLICTS OF INTEREST

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

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