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Case Report

Postpartum Hemorrhagic Stroke in African Maternal Care: A Case-Based Review from Benguela, Angola

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Abstract

Stroke in the puerperium is rare but potentially fatal, with significant morbidity in young women. Physiological and hemodynamic changes of pregnancy, particularly when associated with hypertensive disorders, increase cerebrovascular risk. Reports from Sub-Saharan Africa remain scarce. We present the case of a 38-year-old multiparous woman from Benguela, Angola, who developed sudden severe headache and loss of consciousness one week postpartum. She had gestational hypertension diagnosed at 37 weeks. On admission, she was unconscious (Glasgow Coma Scale = 9) with severe hypertension (180/100 mmHg). Cranial computed tomography showed a large left capsuloganglionic hematoma with intraventricular extension. She was managed with strict blood pressure control, osmotic diuretics, nimodipine, and oxygen therapy. Follow-up imaging revealed ventricular dilatation as a post-stroke sequela. This case emphasizes gestational hypertension as a major determinant of postpartum hemorrhagic stroke and represents the first documented report from Angola, highlighting the need for timely diagnosis and multidisciplinary management in resource-limited settings.

Keywords: Postpartum Stroke; Hemorrhagic Stroke; Gestational Hypertension; Puerperium, Sub-Saharan Africa

Introduction

Stroke is defined as an acute neurological manifestation resulting from focal injury to the central nervous system of vascular origin, which may present as cerebral infarction, intracerebral hemorrhage, or subarachnoid hemorrhage. It is one of the leading causes of morbidity and mortality worldwide and currently represents one of the most significant public health challenges [1]. Globally, stroke is estimated to account for approximately 12% of all deaths and for a considerable proportion of long-term disability [2]. It is classically associated with elderly patients with multiple cardiovascular risk factors.

On rare occasions, stroke may occur in younger individuals, including during pregnancy and the puerperium, circumstances in which it acquires particular clinical relevance. Pregnancy and the postpartum period are physiological states characterized by hemodynamic and hematological changes that predispose women to thromboembolic and hemorrhagic events. The risk of stroke is estimated to be three times higher during pregnancy and the early weeks postpartum when compared with non-pregnant women of the same age group [3]. In addition, specific obstetric conditions such as preeclampsia, eclampsia, puerperal infections, and complications related to childbirth further increase vulnerability during this period [4].

Despite advances in diagnostic and therapeutic techniques, stroke associated with the pregnancy–puerperal cycle remains a clinical challenge due to its frequently nonspecific presentation

and the need for rapid differentiation from other causes of acute neurological deficit. The literature reports that cerebrovascular events in this patient population, although uncommon, are associated with significant morbidity and may result in severe maternal outcomes, including permanent disability or death [5].

Given its low frequency, each newly reported case contributes to expanding understanding of clinical manifestations, predisposing factors, differential diagnoses, and the most appropriate therapeutic approaches. In this context, the present report describes the case of a postpartum woman who developed stroke, highlighting the clinical, diagnostic, and therapeutic aspects involved, and discussing the importance of early identification and timely management in this population.

Case Description

We report the case of a 38-year-old Black woman, resident of Benguela Province, with an obstetric history of eight pregnancies, five deliveries, two spontaneous abortions, and one stillbirth (G8P5A2N1). Her first pregnancy occurred at the age of 17 and resulted in a stillbirth. The second, third, fourth, and sixth pregnancies culminated in live births (currently aged 19, 15, 12, and 5 years, respectively). The fifth and seventh pregnancies ended in spontaneous abortions. The eighth pregnancy resulted in the current newborn. All deliveries were performed in hospital settings, with no previously reported obstetric complications.

The patient had been apparently well after her most recent delivery, performed about one week earlier, until the onset of the present condition. Four hours prior to hospital admission, she experienced a sudden, intense, pulsatile frontal headache, unrelieved by analgesic measures, followed by abrupt collapse and loss of consciousness. She was referred to the General Hospital of Benguela.

At the 37th week of her most recent pregnancy, she had presented with elevated blood pressure (160/70 mmHg) and was treated with methyldopa (Aldomet) and furosemide. She had no prior history of chronic arterial hypertension.

Physical examination on admission

Patient in critical condition, Glasgow Coma Scale = 9 (Eye opening: 3; Verbal response: 2; Motor response: 4), unconscious, with no meningeal signs. Mucous membranes were pink and moist; skin was afebrile. Respiratory system: vesicular breath sounds present, no rales. Cardiovascular system: normal heart sounds, regular rhythm, no murmurs; blood pressure = 180/100 mmHg. Abdomen: flat, depressible, no visceromegaly.

Complementary examinations

Cranial CT scan

Non-contrast axial cranial computed tomography (CT) revealed a large left capsuloganglionic intraparenchymal hematoma, with intraventricular extension and marked mass effect, characterized by midline shift and effacement of adjacent cortical sulci (Figure 1).

Non-contrast axial cranial CT scan showing prominent, symmetrical dilation of the lateral ventricles and the third ventricle, a finding consistent with hydrocephalus. This condition was observed in the context of sequelae of stroke and post-eclampsia complications. The patient's clinical presentation of hemiparesis, predominantly affecting the right upper limb, suggests that the ventricular dilation more likely represents compensatory (ex vacuo) hydrocephalus, secondary to cerebral parenchymal atrophy caused by prior injuries (Figure 2). This scan was performed two months after the first imaging.

- Complete blood count: Within normal limits
- Blood glucose: 106 mg/dL
- Urea and creatinine: Normal
- Thick blood smear: Negative

Management instituted

Bed rest; monitoring of vital signs every six hours; capillary glucose monitoring every 12 hours; low-sodium diet; oxygen therapy (5 L/min); intravenous hydration with normal saline plus vitamin B complex and vitamin C. Antihypertensive therapy was initiated (captopril, nifedipine, hydralazine, according to blood pressure levels), diuretics (furosemide, mannitol), nimodipine, and analgesia with dipyrone.

Discussion

Stroke in the puerperium is a rare condition, yet one of great clinical relevance, as it represents a leading cause of neurological morbidity and indirect maternal mortality. Although the incidence during pregnancy is low, the risk of occurrence increases significantly within the first six weeks postpartum—a period in which women undergo intense physiological changes that heighten their

vulnerability to cerebrovascular events [6]. Even when not fatal, stroke in postpartum women often results in permanent neurological sequelae, disproportionately affecting the patient, her family, and the community, as it occurs in young women of reproductive and productive age [7]. It is important to emphasize that, to the best of our knowledge, this is the first case reported in Angola and possibly one of the few described across Sub-Saharan Africa, which further underscores its scientific and clinical significance.

From a pathophysiological perspective, the puerperium is marked by rapid and significant changes in the cardiovascular and hemostatic systems. Immediately after delivery, there is abrupt redistribution of blood volume, blood pressure instability, and persistence of a hypercoagulable state characterized by increased procoagulant factors and reduced fibrinolytic activity [6]. Hormonal levels, particularly estrogen and progesterone, also influence vascular endothelium and coagulation regulation, creating an environment of increased fragility and predisposition to thrombotic or hemorrhagic phenomena [8]. Within this context, three mechanisms are identified as the main contributors to puerperal stroke: cerebral venous thrombosis, frequently associated with hypercoagulability and dehydration; arterial dissection, favored by hypertensive peaks and arterial wall fragility; and a generalized prothrombotic state, exacerbated by factors such as hypertension, puerperal infections, or thrombophilias [9,10].

In the present case, the patient developed gestational hypertension, with elevated blood pressure values recorded at 37 weeks, suggesting a late form of hypertensive disease specific to pregnancy. Additionally, her obstetric history, consisting of eight pregnancies, five live children, two spontaneous abortions, and one stillbirth, is relevant. This history highlights the cumulative effect of multiparity as an additional risk factor for hypertensive complications during pregnancy and the puerperium, a condition well established in the literature as predisposing to adverse maternal outcomes, including stroke [11]. Another noteworthy aspect was the tomographic finding described in Figure 1, which revealed a large left capsuloganglionic hematoma with intraventricular extension and significant mass effect. This radiological feature explains the severe clinical presentation and emphasizes the gravity of hemorrhagic strokes in this population, while also underscoring the importance of timely access to computed tomography—a resource still limited in many regions of Sub-Saharan Africa. Gestational hypertension is considered one of the main risk factors for hemorrhagic stroke, as pressure instability may precipitate the rupture of small intracranial vessels, leading to severe hemorrhage. Reports in the literature confirm that gestational hypertension alone can account for most cases of intracerebral hemorrhage in the puerperium, unlike other contexts in which additional factors such as cesarean delivery, infections, or thrombophilias play a more prominent role [12,13].

The clinical presentation was also highly characteristic of acute cerebral hemorrhage. The patient experienced sudden, severe, pulsatile headache, followed by loss of consciousness and decreased level of consciousness, with a Glasgow Coma Scale score of 9 at admission. Headache is reported in up to 75% of puerperal stroke cases and is often the initial symptom. However, it is frequently underestimated or attributed to benign causes such as fatigue, sleep disturbances, or common postpartum headaches. This diagnostic challenge is even more pronounced in low- and middle-income countries, such as ours, where access to complementary tests, particularly imaging, is severely limited [14]. Cranial CT, which is the diagnostic tool of choice for differentiating ischemic from hemorrhagic stroke, is not always readily available in all hospitals, potentially delaying diagnosis and worsening prognosis. In this case, early CT imaging was decisive in confirming the intracerebral hemorrhage with ventricular extension and guiding management [15].

The treatment of hemorrhagic stroke in the puerperium, particularly in resource-limited settings, is primarily based on supportive measures and strict control of risk factors. International guidelines emphasize the importance of controlled blood pressure reduction to prevent hematoma expansion, as well as ensuring adequate oxygenation and intensive neurological monitoring. The use of osmotic diuretics such as mannitol is indicated in cases of intracranial hypertension, while nimodipine may be administered to reduce the risk of vasospasm. In some cases, neurosurgical intervention is required; however, the decision depends on hemorrhage volume, clinical evolution, and the availability of specialized resources [16,17]. In the present case, the patient received clinical support, oxygen therapy, fast-acting antihypertensive agents (captopril, nifedipine, hydralazine), diuretics, and nimodipine, in addition to general supportive care an appropriate management strategy consistent with established protocols.

The prognosis of hemorrhagic stroke in the puerperium is generally poor, with reported mortality rates ranging from 20% to 40%, and a high risk of permanent neurological sequelae among

survivors. Nevertheless, early recognition and rapid management can significantly improve outcomes, reducing the severity of sequelae, as observed in our case. Another critical consideration is that women who experience stroke during pregnancy or the puerperium face an increased risk of recurrence in future pregnancies, particularly if hypertension remains uncontrolled [18]. Therefore, long-term multidisciplinary follow-up is recommended, involving a neurologist, obstetrician, and general practitioner, along with the implementation of secondary prevention strategies, including strict blood pressure control, investigation of thrombophilias, and counseling regarding future risks.

Conclusion

In summary, this case highlights the need for heightened attention to neurological symptoms in postpartum women, which should never be underestimated. Gestational hypertension was shown to be the determining factor for the occurrence of cerebral hemorrhage, corroborating evidence in the literature linking hypertensive disorders of pregnancy to an increased risk of stroke. Furthermore, it is worth emphasizing that this may be the first report of its kind in Angola and in Sub-Saharan Africa, a context in which diagnostic and therapeutic challenges are even greater due to resource limitations.

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