

Management of Eclampsia in an Unbooked Primigravida: A Case Report Showing the Impact of Cultural and Socio-Economic Factors on Health Outcomes

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Abstract

Eclampsia is characterised by the occurrence of one or more generalised tonic-clonic seizures in patients with severe preeclampsia in the absence of other neurologic conditions. The clinical features of eclampsia can present at any time during pregnancy, but are more common from the second trimester to the puerperium. This report presents the challenges encountered in the management of eclampsia in a remote setting of a developing country and the influence of cultural and socio-economic factors on health outcomes associated with this condition.

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Introduction

Eclampsia refers to the occurrence of at least one episode of generalised tonic-clonic seizure in a patient with severe preeclampsia provided that other neurologic conditions have been excluded [1, 2]. It is a major contributor to the high maternal morbidity and mortality seen in developing countries including Nigeria [3]. Clinical features can manifest anytime during pregnancy, mostly from the second trimester to puerperium. The incidence of eclampsia in developed countries is in the range of 1.6 to 10 cases per 10,000 deliveries [4-8]; however, in developing nations the incidence varies widely, ranging from 6 to 157 cases per 10,000 deliveries [9-11]. In Nigeria, the incidence varies from 30 to 170 cases per 10,000 deliveries [12-14] and it is the third commonest cause of maternal mortality [15-17]. This high maternal mortality can be linked to several factors, such as late referral, lack of transportation, multiple episodes of seizures prior to admission, cultural beliefs, ignorance, low socio-economic factors, lack of utilisation of antenatal services and delay in hospitalisation [18].

Here, we present a case report of the management of eclampsia in an unbooked primigravida with unfavourable social determinants.

Case Presentation

A 19-year old primigravida was brought late at night to a primary health centre in Northern Nigeria in an unconscious state by her relatives, at a gestational age of approximately 35 weeks following several episodes of seizures at home. The relatives said she had intermittent episodes of seizures at home in the last 12 hours. She was said to have complained of a mild headache 2 days earlier prior to the occurrence of the seizures. The seizures were sudden in onset; each episode lasted approximately 5 minutes. On the whole she had about 6 episodes of seizures prior to her presentation to the health centre and while on admission she had another episode. The seizures were generalised tonic-clonic in nature, with associated upward rolling of eyes and absent faecal or urinary incontinence; however she fell asleep after each episode. The duration between each episode was approximately 2 hours according to the relatives. Following the onset of seizures she was given some local or traditional preparations to provide some relief. The patient's relative claimed they could not afford to bring her to the Primary health centre due to lack of proximity to the health centre and unavailability of transportation;

but more importantly her husband was not present at the time of the incident. According to the relatives, it is culturally wrong for a woman to leave the house without her husband's consent or approval. On the arrival of her husband, about 12 hours later, the patient was eventually brought to the hospital for management.

The patient is the fourth of four wives of a farmer. They all live together in a large compound in a very remote setting. The other wives are well; however some of their children are malnourished. Each wife shares a room with her children. Their source of drinking water is a well, located within the compound. The highest educational level attained by this family is primary education (by the husband).

The patient is not a known epileptic and there is no history of such in the family. Her health card showed that she attended the ante-natal care (ANC) clinic once at a gestational age of 16 weeks after which she absconded. The following examinations and laboratory results were documented on her card during her ante-natal visit; pulse rate as 76 beats per minute, blood pressure as 130/85mmHg, weight as 52kg, height as 152 cm, Paracheck (rapid diagnostic test for malaria) as positive, Venereal Disease Research Laboratory (VDRL) test for syphilis as negative, and Urinalysis was one positive for protein and ketones respectively, and negative for nitrites and leucocytes. A diagnosis of malaria in pregnancy was made during this visit and she was placed on Coartem (artemisinin based anti-malarial medication), 4 tablets to be taken twice daily for 3 days, ferrous folate 1 tablet (150mg ferrous sulfate plus folic acid 0.4mg) daily for 4 weeks and was provided a mosquito net. She was asked to return in 4 weeks for follow up but never did.

On examination, she was unconscious, Glasgow Coma Scale (GCS) was 8/15 –eye opening: 2, best motor response: 4, best verbal

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response: 2, mildly pale, temperature 37.3°C, not cyanosed, in mild respiratory distress, mildly dehydrated with bilateral pitting pedal oedema. The neck was slightly stiff, no cervical, axillary and inguinal lymphadenopathy. Examination findings were; pulse rate of 90beats per minute (bpm), blood pressure was 180/120 mmHg, respiratory rate was 36 bpm, chest auscultation revealed bilateral basal crepitation, abdomen was soft and gravidly enlarged, symphysis-fundal height (SFH) was 35 cm at approximately 35 weeks gestation, foetal lie was longitudinal, foetal presentation was cephalic, foetal position was left Occipito-anterior, foetal heart rate was 156 bpm and cervix was 2 cm dilated. Other findings were non-contributory.

A diagnosis of Ante-partum eclampsia in an unbooked primigravida was made. Other differential diagnoses noted were cerebral malaria and meningitis. Blood sample was taken for complete blood count and differentials; rapid diagnostic test for malaria parasite (Paracheck), and blood slide for malaria microscopy was also taken but no parasites were seen, random blood sugar and urinalysis were also conducted. The results of the investigations are displayed in Table 1.

Investigation	Results	Reference values
Complete blood count and differentials	Haemoglobin: 10.3g/dl	11 - 16.5 g/dl
	Red cell count: $3.3 \times 10^6 / \text{mm}^3$	$3.8 - 5.8 \times 10^6 / \text{mm}^3$
	White cell count: $5.6 \times 10^3 / \text{mm}^3$	$3.5 - 10 \times 10^3 / \text{mm}^3$
Complete blood count and differentials	Lymphocytes: 13%	17 - 48%
	Monocytes: 2.5%	4 - 10%
	Granulocytes: 60%	43 - 76%
Rapid diagnostic test (Paracheck)	Negative	
Serum blood glucose	3.7mmol/l	3.5 - 6.5mmol/l
Urinalysis	Protein: +++	
	Ketones: +	
	Nitrites: +	
	Leucocytes: +	
	Blood: +	

Table 1: Results of pre-diagnostic test completed for Eclampsia*
*These were the only investigations that could be done at the primary health centre.

Immediately intravenous access was established, the patient was commenced on magnesium sulfate, a loading dose of 14g (4g was given intravenously over 5 -10 minutes, and 5g given intramuscularly in each buttock), intravenous hydralazine 10mg was also given, intravenous ceftriazone 1g stat dose and 500 mls of ringers lactate was given as well. Urinary catheter was placed in patient's bladder. 15 minutes later her blood pressure dropped to 160/100 mmHg, convulsion ceased, but she was still unconscious. While preparations were being made for her referral she passed away.

Discussion

This case reveals some important but overlooked factors that contribute to the high maternal mortality seen in developing countries due to eclampsia despite the availability of proper and effective management.

Eclampsia is recognised as a major cause of maternal mortality worldwide especially in developing countries. About 50,000 maternal deaths occur globally each year from eclampsia, mostly in developing countries. Nigeria has one of the highest maternal mortality in the world, and eclampsia has been noted to be among the main causes [15, 19].

The group at highest risk of developing eclampsia are non-white, nulliparous women from low socio-economic background; with peak incidence usually in young females in their teenage years and early twenties, and also in women over 30 years of age [20]. About half of all cases of eclampsia occur before term, with more than one-fifth occurring before 31 weeks gestation [4]. Several studies done in different parts of Nigeria showed that eclampsia was the most common cause of death [19], thus making it a chief killer of pregnant women. In developing countries, there is low utilisation of antenatal care services especially in remote areas, and patients may present to health centres only as a last resort. The opportunity to detect women at risk is therefore usually missed. This negative health seeking behaviour of patients usually results in poor health outcomes. The World Health Organisation (WHO) estimates that only 40% of births in developing countries take place in health facilities [21], when delivery is sought it is done late, after a lot of delays and this contributes to maternal mortality.

The pathogenesis of seizure in eclamptic women is not clearly understood. However two hypotheses have been proposed [22]. In one there is cerebral overregulation as a result of high systemic blood pressure which results in arterial vasospasms, reduced brain perfusion, localised ischemia and intracellular oedema [22]. The other focussed on deterioration of auto regulation of cerebral blood flow in response to high systemic pressure thus causing over perfusion, endothelial damage and extracellular oedema [20]. Eclampsia is diagnosed clinically on the presence of one or more generalised convulsions and/or coma in a woman with preeclampsia, provided other neurologic conditions have been ruled out [20]. The seizures seen in eclamptics are self-limiting and usually last no longer than 5 minutes. Certain symptoms may occur before the onset of seizures such as, persistent headaches (frontal or occipital), epigastric pain, visual disturbances (diplopia, blurred vision) and altered mental state [20]. The foetal state is also an important factor to consider in eclamptic patients; a fall in the foetal heart rate lasting 3 to 5 minutes is commonly seen at some stage during an eclamptic seizure, but this is not necessarily a prerequisite for an emergency caesarean section. Other clinical conditions that should be ruled out when assessing an eclamptic patient include infection (meningitis, encephalitis) especially in a patient with a history of headache and mild neck stiffness, brain tumour, brain abscess, and/or metabolic disorders (hypoglycaemia, uraemia, inappropriate anti-diuretic hormone secretion). However, being a primary health centre, there was a limit to the number investigations that could be done.

The WHO recommended magnesium sulphate as a safe, cheap and effective drug for the treatment of eclampsia [16]. Several reports have shown its successful introduction in some countries including Nigeria, as well as its safety for both the mother and child [23-26]. However, its availability is limited in several developing countries where it is mostly needed [19]. There are several regimens for the administration of magnesium sulphate, but the regimen used for this patient involved a loading bolus dose of 4g of magnesium sulphate given intravenously over 5 to 10 minutes and 10g given intramuscularly (5g in each

buttock). A maintenance dose of 5g was given intramuscularly into each buttock alternately every 4 hours over a 24 hour period [27]. Other management principles employed in the management of eclamptic cases, especially when the patient is convulsing include; maintenance of patent airway and prevention of aspiration, patient should be placed in recovery position, oxygen should be administered via a face mask to treat hypoxemia due to hypoventilation during the convulsive episode [28]. The use of antihypertensive have also been recommended in eclamptics with elevated blood pressure; commonly used drugs are hydralazine and labetalol [20]. In this patient 10 mg of hydralazine was administered to control the elevated blood pressure.

Two previous studies in Nigeria reported a considerable decline in the contribution of eclampsia to maternal mortality attributed to the use of magnesium sulphate in the treatment of eclamptic patients [14, 29]. Nevertheless, poor maternal outcome when patients present after 12 hours following the onset of convulsion and when they have antepartum eclampsia was also reported [30], similar to what was observed in the patient in this case report. Mortality due to eclampsia is commonly seen in young women in their first pregnancies and in elderly women of higher parity; this may be attributed to their poor adjustments to the stress of pregnancy, as well as low rates of antenatal visits and illiteracy. These often results in high default rate and indifferent attitude towards urgent medical intervention especially in emergencies [31]. This patient had only one antenatal visit, assuming she continued her routine visits her case would have been detected early and managed accordingly. Ignorance of the importance of seeking early medical attention and undue cultural practices contributes to delay in accessing health facilities as seen in this patient.

Conclusion

In conclusion, eclampsia will remain a major killer of pregnant women in developing countries unless certain measures are taken to address those factors that limit easy accessibility to health care facilities, especially in rural and remote settings. This calls for government's commitment in promoting women education, provision of free antenatal and post-natal care for pregnant women, emergency obstetric care facilities in tertiary hospitals for effective case management, good roads and effective transportation network, and also to establish laws and policies to abolish harmful cultural practices that pertain to the wellbeing of women.

Conflict of Interest

There are no relevant conflict of interest to disclose regarding the publication of this paper.

Author Contributions

Ayodeji M. Obaseki conceived and wrote the initial draft.

Theophilus I. Emeto reviewed the draft and contributed essential comments.

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