



Seizure occurrence, pregnancy outcome among women with active convulsive epilepsy: One year prospective study



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ABSTRACT

Purpose: To determine the prevalence of active convulsive epilepsy, seizure frequency and the outcome of pregnancy amongst a cohort of pregnant women attending antenatal clinic (ANC) at two tertiary hospitals.

Methods: An observational cohort study conducted at the University of Maiduguri Teaching Hospital and State Specialist Hospital, Northeast Nigeria. Pregnant women attending antenatal care were screened for previous history of active convulsive epilepsy, and recruited consecutively according to a specified protocol. A standardized questionnaire was administered to record pregnancy history, nature of epilepsy and treatments received. They were followed-up during the course of the pregnancy based on the ANC schedule up to delivery. The outcome of pregnancies was recorded.

Results: A total of 7063 pregnant women were screened, of whom 103 (1.46%) subjects had at least a past history of seizure. Seventy-eight (1.10%) had a past history of seizure(s) from eclampsia and 23 (0.33%) pregnant subjects recruited were identified to have active convulsive epilepsy. The unadjusted prevalence of active convulsive epilepsy in pregnant women was found to be 3.33 per 1000 (95% CI: 2.1–4.8). Subjects who had a history of head injury and encephalitis were more likely to have seizures during pregnancy. ($P = 0.013$ and $P = 0.041$). Those who had recurrent seizures within the last six months before recruitment were more likely to have a negative pregnancy outcome ($P = 0.043$).

Conclusion: Our study found a prevalence of active epilepsy of 3.33 per 1000 among pregnant women, with about one percent having a past history of seizure from eclampsia.

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1. Introduction

Epilepsy is a common and serious neurological condition characterized by an enduring predisposition to generate epileptic seizures with neurobiologic, cognitive, and psychosocial consequences [1,2]. The annual incidence of epilepsy in the developed countries is about 50–70 cases per 100,000 population and a prevalence of about 5–10 per 1000. The developing world accounts for a large percentage of cases with an incidence of 100–190 cases per 100,000 per year [3]. The lifetime prevalence of epilepsy may be lower in low- to middle-income countries (Laics), which is speculated to be due mainly to higher premature mortality [4]. A

Nigeria study gave a crude prevalence of epilepsy at 533 per 100,000 [5]. Head trauma, cerebral infections and primitive obstetric services common in developing countries add to the burden of epilepsy [6–8].

Although the prevalence of epilepsy is slightly higher in men than in women [9,10]. Women with epilepsy (WWE) have been shown to have peculiar issues regarding management [11]. The burden of epilepsy is not well defined in women in LMICs [4], considering that a large proportion of them are within the childbearing age [12]. This is different in high income countries (HIC) where there is a growing concern for WWE with regards to marriage, fertility, pregnancy, childbirth, teratogenicity, menopause, and contraception [13–17]. Despite the treatment gap in epilepsy in LMIC [18]; WWE are by far more neglected in sub-Saharan Africa [19], with more likelihood of psychosocial distress compared to other chronic health conditions [11,19]. Some of the

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peculiar issues faced by WWE in sub-Saharan Africa include stigmatization, poor education, traditional and animistic beliefs, and fear of teratogenic effect of antiepileptic drugs (AEDs) in pregnancy [20–23]. These psychosocial issues often neglected are very important that most women fail to disclose their epileptic status, are inadequately managed and unwilling to take their medications [21]. Pregnancy, childbirth and puerperium is a period that requires proper management and seizure control; on the other hand, even the inappropriate use of AEDs may have deleterious effect on the mother and foetus [24,25].

Studies on pregnant WWE are lacking in North-east Nigeria. The prevalence and outcome of epilepsy among pregnant women have not previously been studied in our environment. There is also no proper ascertainment, counselling, and treatment for pregnant WWE in most hospitals in this region. Therefore we performed a study to determine the prevalence of pregnant WWE, follow them up over the course of their pregnancy; to determine the frequency of seizure and how this affects outcome of pregnancy in women attending antenatal clinics (ANCs) of two tertiary hospitals. This one year prospective study will provide preliminary data and serve as a pilot study for further multi-centre study that will provide large information on pregnant epileptics and foetal outcome in sub-Saharan Africa.

2. Materials and methods

2.1. Study population

This was a one year observational cohort study conducted at two ANCs of University of Maiduguri Teaching Hospital (UMTH) and the State Specialist Hospital (SSH) Maiduguri, Borno state, North east Nigeria, between September 2012 and August 2013. These two hospitals have the largest number of antenatal care attendance in the state both for normal antenatal care and referred cases. Subjects were consecutively recruited within an 8 month period (September 2012–April 2013) as they attended ANC for antenatal booking. In the recruitment process all women with viable pregnancy underwent a 3 stage screening. The first stage of screening was to determine those who have had any previous history of paroxysmal event(s) that may be suggestive of a seizure. Secondly, subjects who have had a history of any paroxysmal event in their lifetime were further screened to determine those who have had at least a seizure. The third stage is to determine those with epilepsy as defined by the International League Against Epilepsy (ILAE) as those who had 2 or more unprovoked seizure [26]. Subjects with active epilepsy (defined as those on treatment or those who had at least a seizure within the last one year) [27], were then recruited for the study. Most cases were ascertained from history, and are more likely to have active ‘convulsive’ epilepsy. For most subjects, consultations were made to a family member or friend who had witnessed the seizure episodes or their past medical records to ascertain the nature of such paroxysmal event(s). Those excluded from the study include; those with single episode of seizure, seizure from a metabolic or a reversible cause, misdiagnosed seizures as syncopal attacks, and women who have had seizures from eclampsia either from a previous or index pregnancy.

2.2. Instrument

We developed a standardized structured questionnaire, adapted and modified from ‘Questionnaire for Investigation of Epilepsy in Tropical Countries’, which was developed through collaborative work involving the Institute of Neurological Epidemiology and Tropical Neurology of Limoges France, the Pan-African Association of Neurological Sciences and the ILAE, for the purpose

of standardizing epilepsy study in tropical countries [28]. Medical officers and midwives were trained on how to fill the questionnaire, perform basic examinations and follow-up the subjects. The questionnaire consists of questions to elicit socio-demographic characteristics (such as age, place of residence, educational attainment, ethnic group, employment and trade), relevant information on the index pregnancy, natural history of the seizure disorder, clinical classification of the seizure type based on ILAE classification, diagnosis of seizures and epileptic syndromes, predisposition, risk factors, and precipitating factors of epilepsy [26]. Both centres had experienced clinicians who were involved in case ascertainment, supervision of the filling of questionnaires, and assist in clinical diagnosis and classification of epilepsy [Questionnaire included as Supplement 1].

2.3. Treatment of pregnant epileptics

All treatments and doses received were documented. For subjects not on AEDs, consent is sought to commence appropriate medications if required. Common AEDs available in our hospital are: Phenytoin, Carbamazepine, Diazepam, Phenobarbital, Primidone, and Valproic acid. The commonest prescribed in women of child bearing age is Carbamazepine. Additionally, they are routinely prescribed haematinics containing iron and folic acid.

2.4. Follow-ups and delivery

The subjects were followed-up during the course of the pregnancy based on the ANC schedule. The conventional ANC schedule in these hospitals starts with ANC booking at the end of the first trimester. They are seen every 4 weeks until 28 weeks of gestation, then every 2 weeks until 36 weeks and weekly until delivery. The frequency and seizure types, including treatments were recorded during these visits, in addition to their routine antenatal consultations.

Delivery was conducted by an obstetrician registrar or a midwife at the labour wards of the hospitals. The method of delivery is documented. On delivery the newborn were examined; the APGAR score was calculated, and gestational age was determined. Adverse outcomes of pregnancy include; Stillbirth, foetal loss and congenital malformations. Those who had an uneventful pregnancy, delivery, and no adverse foetal outcome were considered to have a positive pregnancy outcome. All these information were recorded in the questionnaire.

The subjects were encouraged to come for follow-ups and to deliver in the designated hospitals. Telephone numbers, proper addresses of the patient were recorded for the ease of tracking them, since it is known that women in general and WWE may just prefer to deliver at home under the supervision of a traditional birth attendant [18,23].

2.5. Ethical methods

The study protocol was reviewed and approved by the Ethics Committee of the University of Maiduguri Teaching Hospital and the Borno State Ministry of Health. Informed consent was obtained before a candidate is enrolled in the study. All questionnaires written in English were interpreted into the common local languages, Hausa and Kanuri. Trained medical personnel were assigned to each of the designated clinics, who administered the Informed consent and the questionnaire.

2.6. Statistical analysis

Descriptive statistics was used to analyze characteristics. A univariate analysis was carried out using Fisher's Exact test for

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