

Seizure in a Hypertensive, Non-Epileptic, Postpartum Woman: Functional Seizure or Eclampsia? Dilemma to Diagnosis! A Case Report

Priya Vardhini William^{1*} and H M Katali²

¹MBBS, MRCOG, Specialty Registrar in Obstetrics and Gynaecology, Wye Valley NHS Trust, United Kingdom

²MBBS, FRCOG, PGCME Consultant Obstetrics and Gynaecology, Wye Valley NHS Trust, United Kingdom

***Corresponding Author:** Priya Vardhini William, MBBS, MRCOG, Specialty Registrar in Obstetrics and Gynaecology, Wye Valley NHS Trust, United Kingdom.

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Abstract

Seizures that arise with no abnormal electrical brain activity are known as Psychogenic Non-Epileptic seizures (PNES) or functional seizures (FS). They are described as physical symptoms triggered by extreme or intense emotions or stress. Eclampsia is a condition presenting with seizures in pregnancy complicated by pre-eclampsia. In non-epileptic pregnant women who have pregnancy induced hypertension or pre-eclampsia, any seizures would raise an immediate suspicion of eclampsia and would be managed with eclampsia protocol until otherwise proven. We are presenting a case of a 25-year old primiparous Caucasian woman who had an emergency caesarean delivery for severe pregnancy induced hypertension. She then presented on postoperative day seven feeling unwell with focal seizure like episodes with elevated blood pressure. Initially started on MgSO₄ protocol for eclampsia. On the background of fairly normal blood picture and imaging studies including EEG and CT head and BP remaining well controlled with antihypertensive medication, the woman continued to have seizure like episodes whilst on MgSO₄. Neurological specialist team were involved to have a multidisciplinary approach who then classified it as Functional Seizures (FS). Key focus for FS is to address the trigger factors. Cornerstone of treatment includes Cognitive behavioral therapy, insight-oriented therapy and practicing mindfulness. The woman reported that sleep deprivation, stressful postnatal period with experience of being a new mum, anxiety and exhaustion were possible triggers. In addition to this was a childhood history of an intentional overdosing with medications, secondary to long-term bullying in school that led to emergency admission to hospital, prolonged hospital stay and then was followed up by mental health services. She mentioned the postnatal stay in hospital gave her flashbacks of her past and added to the stress levels. Hence identifying these triggers and helping with Cognitive behavioral therapy, sleep hygiene, hydration and mindfulness were helpful in her management. At the neurology follow up appointment, patient did confirm better quality of sleep and stable mental health and no further seizure like episodes and has remained well for 20 months now.

Keywords: *Pregnancy and Functional Seizures; Postpartum Seizures; Non-Eclamptic Seizures; Seizures in Pregnancy; Non-Epileptic Seizures in Pregnancy; Psychogenic Seizures in Pregnancy and Postpartum; Postpartum Non-Epileptic Fits*

Introduction

Functional seizures (FS) are seizure-like events occurring in the absence of epilepsy. It is more a psychiatric condition than a neurological one. These type of seizures are classified under somatic symptom disorders and are believed to occur with extremes of emotion or stress. We are hereby presenting a case of FS in a postpartum woman with a background of hypertension in the pregnancy needing antihypertensive where the seizures were initially considered as possible eclampsia.

Case Report

A 25-year old, primiparous, Caucasian woman with a BMI of 39 kg/m² conceived with ovulation induction. She was a known smoker and suffered from Anxiety and depression in the past and required social service involvement as a teenager for reported self-harm and intentional medication overdose.

She was diagnosed with Pregnancy Induced Hypertension (PIH) in the 3rd trimester and commenced on labetalol at 38 weeks gestation. Her blood pressure was well controlled. She was also on Metformin in view of Gestational Diabetes diagnosed at 25 weeks gestation.

At 38+3 weeks gestation, the woman was seen in Maternity triage with severe hypertension and headache and was immediately managed with IV Labetalol and MgSO₄ infusion. Her blood pressure was stabilized and she then underwent an emergency lower segment Caesarean section (LSCS). Postoperatively, her blood pressure remained stable on oral labetalol, and hence she was discharged home on the third day following the Caesarean delivery.

The woman then self-presented to Emergency department (ED) on the seventh postnatal day with headache, epigastric pain, chills and diarrhea. The healthcare team witnessed rolling up of her eyes, without obvious jerky movements of the body. Her BP- was 140/94 mmhg, urine protein 1+, with urine protein creatinine ratio of <30. Respiratory, cardiovascular and neurological examinations were normal. Both CT head and chest X-Ray were reported as normal. Eventually she was admitted in the Delivery suite for further management with one to one care. Enhanced Maternity Care (EMC) pathway was started and on day 8, her BP was recorded as 170/117mmhg, with no symptoms or signs of impending eclampsia. She then developed some seizure like episodes, thrice successively, with each episode lasting over a few minutes. IV Labetalol- 4 doses, hydralazine-loading followed by maintenance dose were administered. Her BP settled to 140/80 mmhg. MgSO₄ was given as per protocol for supposedly eclampsia. During the seizure- like activity, there was involuntary shaking of the right upper limb and rolling up of her eyes. The woman did respond to verbal commands of the nurse communicating with her by squeezing her hand saying she was aware of people around her and could follow commands. While on MgSO₄, she had another seizure like episode, described as twitching of the right side of her body, with right hand tremors. An emergency call was put out, and the attending medical team refrained from diazepam as they witnessed it and agreed it didn't appear like a typical eclamptic fit. Her blood pressure remained to be around 144/80 mmHg with no proteinuria. She again had a similar episode of jerky movements, and CTPA performed was normal. This was initially requested to rule out pulmonary embolism in view of low O₂ saturation levels. At this point an EEG and neurology referral were requested. Blood results remained unremarkable including Magnesium and ammonia levels. All the investigations were reported as normal.

The woman continued to have multiple episodes of seizures, which were witnessed and managed by the team with reassurance and appropriate support. MgSO₄ was stopped at end of 24 hrs. She had 2 further episodes of a seizure-like activity after stopping MgSO₄. The Medical team offered her Levetiracetam (Keppra), which the patient had declined. Multidisciplinary team discussions across regions concluded a possible FS, as BP was normal, with an advise to restart MgSO₄ if further activity combined with raised BP. Neurology specialist reviewed the recorded video footage of the seizure activity for interpretation and was classified as Non-epileptiform seizures/ Functional seizures at the background of stress and sleep deprivation and no organic cause for the same. Further seizure-like activity was noted, after which patient agreed and started Keppra. BP was well controlled on Labetalol 400 QDS. Step down monitoring continued in the postnatal ward for a further 24 hours after which patient requested to be discharged, pending a neurology review.

The neurology team on outpatient follow up about 3 weeks later, highlighted the triggers that patient had, namely stress of being a new mum, anxiety and exhaustion. The catalyst to this was a history of bullying throughout school which had also led to an intentional overdosing of medications 9 years ago and being admitted in hospital feeling seriously unwell, with a prolonged hospital stay and was eventually followed up by the mental health services too. The team derived that, having to take numerous medications post-delivery (analgesics, anti-hypertensives, anticoagulants) were possible contributors as patient had described that holding many different tablets in hand and consuming them gave her flashbacks of the time of overdosage from the past. At the appointment, patient did mention better quality of sleep and stable mental health and no further seizure like episodes and has remained well for 20 months now.

Discussion

Seizures that arise with no abnormal electrical brain activity are known as Psychogenic Non-Epileptic seizures (PNES). They are also referred to as functional seizures (FS) and are known to be triggered by extreme emotional or mental disturbance. It is a physical presentation of an intense, painful or difficult thoughts and feelings. It is a coping mechanism for someone who has very deep and strong emotional stress, that unconsciously presents physically as seizures which helps them cut off or dissociate from those unpleasant thoughts. Hence, they are also known as Dissociative seizures.

The true prevalence is unknown but the estimated prevalence is 2-33 per 100,000. Functional seizures can happen to any age or gender, but are more commonly seen in women (80% female preponderance), and in younger adults usually in their third decade of life. The duration of these seizures can vary between 2 to 150 minutes.

Although the condition is emotionally driven, it would usually manifest into physical symptoms such as seizure-like activity, loss of control of bodily movements, palpitation, sweating, dry mouth, hyperventilation, loss of awareness and/or loss of sensation. These seizure-like activity are gradual in onset, asynchronous, with side-to-side movement of head, arching of back, rigorous thrashing jerky movements and vocalization. Diagnosis is made by the specialist neurologist with a complete and meticulous examination, blood tests with imaging studies of the brain (CT or MRI) to rule out epilepsy.

Current gold standard for differentiating PNES from epilepsy is the Video Electroencephalogram (Video EEG). Around 30% of patients with video-EEG were diagnosed with PNES, of which 75% were women.

People with FS can have co-existing psychiatric conditions or may predispose to it, such as anxiety, major depressive disorder, borderline personality disorder, post-traumatic stress disorder (PTSD) and bipolar disorder. Several studies have shown its impact on the quality of life, have a negative social consequence, incur financial costs and increased mortality rates.

Management of FS is multi-professional approach including neurologist, psychiatrist, psychotherapist and primary care physician. Key focus should be on addressing the trigger factors. Cornerstone of treatment includes Cognitive behavioral therapy, insight-oriented therapy and practicing mindfulness. An acute seizure is managed by critical care/anesthetic team, ensuring airway is assessed and maintained, oxygen support, short acting benzodiazepines, along with constant psychological support and reassurance. Other non-obstetric causes of seizures include metabolic derangements, intracranial space occupying lesions, infection, arteriovenous malformations. Relevant tests to rule out these conditions is important. Potential to use Machine learning and Artificial Intelligence (AI) to aid in the diagnosis of FS is indicated in few recent studies.

On the other hand, Eclampsia presents as generalized tonic-clonic seizures in a woman with pre-eclampsia and is considered as a life-threatening complication of this disease process. Preeclampsia is defined as blood pressure of over 140/90 mmHg after 20 weeks gestation with significant proteinuria (> 300 mg) and/ or end organ dysfunction (renal, hepatic, neurological symptoms, pulmonary oedema, and thrombocytopenia). Presentation could be antenatal (after 20 weeks of gestation), intrapartum or up to 6 weeks postpartum.

Pathophysiology of pre-eclampsia is the abnormal placentation, inability of the cytotrophoblasts to permeate the uterine vasculature causing remodelling of spiral arteries that leads to oxidative stress and release of free radicals and cytokines (VEGF) and pro-inflammatory proteins. This disrupts the endothelium of the uterus and also the cerebral endothelium, causing hypoperfusion, ischemia and lead to eclampsia. Incidence of eclampsia in the western world is about 1 in 2000-3000 pregnancies.

Prevention and also treatment is with magnesium sulphate (MgSO_4), loading dose and then through an infusion for up to 24 hours after the last eclamptic seizure. It is important to monitor for any MgSO_4 toxicity which in itself could be detrimental. However, key treatment lies in delivery of the fetus and the mode and timing of delivery depends on maternal and fetal factors.

An article by John C. Detoledo., *et al.* [1] reports five women with psychogenic seizures in pregnancy and the challenge with need to continue antiepileptic medications as the patients and their family felt the woman and the baby were at harm by stopping the medications and that it worsened the seizures. Sadly, very less information is available on psychogenic seizures in pregnancy as per literature review. Additionally, Dworetzky., *et al.* [2] in their study mention how withdrawal of anticonvulsant is often needed to diagnose PNES but poses risk of a generalised seizure causing threat to fetus and incurs legal implications too.

A very recent paper published by Catherine., *et al.* [3] in 2024, studied 34 pregnancies in 25 patients known with PNES, states an increased caesarean section rates (61%) and other complications included preeclampsia/eclampsia in 20%, gestational hypertension in 16.7% and Small for gestational age in 16.7% [4-10].

Conclusion

The essence of this case report is to mainly highlight the common presentations in different systemic conditions which can pose challenges in the diagnosis and hence in the appropriate treatment of the same. However, with a multidisciplinary team approach, involving the appropriate specialties, ordering the relevant investigations to rule out the differentials, and deriving at an accurate diagnosis is vital to ensure we are not under or over treating any given condition. RCOG recommends pregnant women presenting with seizures in the second half of pregnancy which cannot be clearly attributed to epilepsy, should be started with immediate treatment protocols for eclampsia management until a definitive diagnosis is made by a full neurological assessment which was rightly followed in our case presented. But being open minded in considering other causes helped us classify the presentation as functional seizures which importantly reflects on how her future health or any subsequent pregnancies will be looked after.

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