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ATYPICAL ECLAMPSIA UNVEILED: LESSONS FROM A SERIES OF CLINICAL CASES

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ABSTRACT

This case series examines the intricacies of unusual eclampsia by specifically focusing on situations where patients had eclamptic seizures without the conventional signs of high blood pressure or protein in the urine. Every instance highlights the distinct clinical difficulties posed by these unusual expressions, which depart considerably from the standard and necessitate customized approaches to treatment. The lack of standard diagnostic indicators requires a high level of attentiveness and flexibility in treatment protocols , resulting in outcomes that demonstrate the varying effectiveness of these techniques. The report supports more investigation into the etiology and treatment of a typical eclampsia to improve the accuracy of diagnosis and patient outcomes. It emphasizes the importance of revised clinical recommendations that include a wide range of probable symptoms and manifestations. This investigation is crucial for enhancing the quality of care and ensuring the safety of all expectant mothers, especially those who exhibit atypical signs of eclampsia.

Keywords: Eclampsia, Diagnostic Indicators, Symptoms and Manifestations

1. INTRODUCTION

Pre-eclampsia, eclampsia, and HELLP syndrome are among the range of hypertension disorders that can occur during pregnancy [1]. These conditions are classified as having different degrees of severity within a continuous range. The term "Atypical Preeclampsia-Eclampsia" describes atypical, non-standard presentations of these illnesses that are difficult to define [2]. Notably, unusual situations can occur without the conventional sign of high blood pressure. It has been noted that between 20% and 38% of these patients may have seizures in the absence of prior signs of proteinuria or hypertension [3]. But only a small percentage of pre-eclampsia cases roughly 2% to 3% go on to have seizures. When atypical eclampsia occurs before the 20th week of pregnancy, more than 48 hours after giving birth, or when conventional signs and symptoms are absent and the patient is resistant to magnesium sulfate treatment, it is diagnosed under particular circumstances. Approximately 8 percent of instances of eclampsia are of this variety [4]**.**

This condition, while comprising a smaller portion of eclampsia cases, presents a unique clinical challenge due to its lack of definitive diagnostic criteria and unpredictable presentation [5]. The background of this exploration shows the critical need for heightened clinical awareness and a more nuanced understanding of atypical eclampsia's pathophysiology, which often eludes the standard diagnostic approach of hypertension and proteinuria [6]. Through a compilation of case studies, the paper aims to shed light on the varied presentations and management outcomes of atypical eclampsia, highlighting the occurrence of seizures without prior hypertensive symptoms, often beyond the conventional postpartum period. The research not only contributes to the existing medical literature by providing empirical evidence from real-world scenarios but also advocates for the adaptation of current guidelines to encompass the breadth of atypical presentations, thereby improving patient care and maternal outcomes.

2. CASE DETAILS

Case 1:

The patient, a 30-year-old primigravida at 30 weeks and 4 days gestation, was admitted following seven episodes of tonic-clonic seizures accompanied by post-ictal phase and a tongue bite. Despite routine antenatal care, her blood pressure (BP) had not been consistently monitored. On admission, her vital signs were recorded as BP 140/80 mmHg, pulse rate 103/min, temperature 98°F, and oxygen saturation 98%, with a capillary blood glucose level of 100 mg/dl. The patient was unconscious but afebrile, displayed mild pallor, and did not have pedal edema. Cardiovascular and respiratory examinations were normal, with a palpable uterus corresponding to a 30-week gestation, in cephalic presentation. The fetus had a heart rate of 150 bpm, and the cervix was found to be soft, closed, and uneffaced.

Initial emergency room treatment included a loading dose of intravenous magnesium sulfate and levetiracetam, complete investigation profile for pregnancy-induced hypertension (PIH) markers , and a urine dipstick test that showed trace proteinuria. Due to eclampsia with an unfavorable cervix, an emergency lower segment cesarean section (LSCS) was performed under spinal anesthesia during which she experienced her eighth seizure. Midazolam and additional doses of magnesium sulfate and labetalol were administered to manage her condition.

The delivery resulted in a preterm female infant weighing 970 grams, who was appropriate for gestational age but extremely premature and presented in breech. Despite initial complications including respiratory distress syndrome (RDS), the delivery itself was uneventful. Postoperatively, the patient required intensive care, where she received continuous labetalol and magnesium sulfate infusions along with a fentanyl and midazolam infusion. She was also evaluated by neurology, ophthalmology, and general medicine.

On the first postoperative day, an MRI of the brain indicated Posterior Reversible Encephalopathy Syndrome (PRES). She was extubated, and her blood pressure normalized after being managed with oral amlodipine. Further assessments on the second day showed normalization of her spot PCR and liver function tests, although she required a transfusion due to mild decrease in hemoglobin level. She was transitioned to oral levetiracetam. Unfortunately, the infant succumbed to complications including RDS, sepsis, neonatal jaundice, and pulmonary hemorrhage. The patient remained stable throughout her hospital stay and was discharged with a normalized blood pressure.

Case 2:

The patient, a 32-year-old woman with a history of two previous cesarean sections, was 32 weeks and 6 days pregnant with her third child. She has been managing gestational diabetes mellitus (GDM) with insulin and oral hypoglycemic agents and also had hypothyroidism. She was admitted for meticulous glycemic control, had developed polyhydramnios, and received steroids.The patient was under the care of multidisciplinary approach , including ophthalmology for vision assessment, and underwent insulin dose adjustments alongside non-stress tests (NST), Doppler studies, and amniotic fluid index (AFI) measurements.

At 35 weeks and 3 days, she experienced sudden vision blurring followed by a tonic-clonic seizure. Upon admission, her vital signs included a blood pressure of 130/80 mmHg, pulse rate of 109/min, a temperature of 97.4°F, oxygen saturation of 98%, and capillary blood glucose of 116 mg/dl. She was unconscious but afebrile, with no signs of pallor or pedal edema. Cardiovascular and respiratory exams were normal, with her uterus noted to be at term and overdistended but with no scar tenderness, and fetal heart sounds . The cervix was soft and posterior with the os closed and uneffaced.

In the emergency room, she was intubated, and a loading dose of magnesium sulfate and levetiracetam was administered. Her urine dipstick was slightly positive. Due to her history of previous cesareans and the acute onset of eclampsia, an emergency cesarean was performed. During the operation,additional doses of intravenous labetalol was administered due to an elevated blood pressure of 160/110 mmHg. The delivery resulted in a term female infant weighing 3.28 kg, with Apgar scores of 7 and 9 at one and five minutes, respectively.

Intraoperative challenges included mild atonic postpartum hemorrhage (PPH), managed with carboprost, uterine massage, misoprostol, and tranexamic acid, with a total blood loss of 1300 ml and a transfusion of one unit of packed red blood cells. Postoperatively, the patient experienced multiple focal seizures resistant to magnesium sulfate, necessitating additional anti-epileptic treatments including midazolam and fosphenytoin. She also received transfusions of two units of fresh frozen plasma.

Consultations from neurology, medicine, and ophthalmology were obtained. On the first postoperative day, she faced hypotension requiring inotropic support, and her antihypertensive medications were temporarily

withheld while her pregnancy-induced hypertension (PIH) profile was re-evaluated, revealing a decreasing trend in the values. Additionally, an MRI of the brain and an MRI venography were conducted, which indicated features consistent with posterior reversible encephalopathy syndrome (PRES) without any evidence of cerebral venous thrombosis (CVT).

By the second day post-op, her laboratory values showed a decreasing trend, and she was extubated and weaned off inotropes. Her levetiracetam dose was adjusted, and she was eventually transitioned to oral antiepileptics. Additionally, her hemoglobin, protein, and albumin levels were found to be low. As a result, she received ferric carboxymaltose injections to address the low hemoglobin and albumin infusions to correct the protein and albumin deficiencies.

At discharge, her fasting and postprandial blood sugars were stable, and she was reviewed by general medicine and neurology. She was discharged on continued anti-epileptic therapy, having stabilized from her critical condition.

Case 3:

The patient 29 years old ,a 38-week primigravida, suspected case of gestational thrombocytopenia. was admitted for true labor characterized by regular contractions, a small amount of blood and mucus. Her antenatal period was uneventful, with no significant history of blood pressure issues or other concerning symptoms. As a case of gestational thrombocytopenia, other potential causes of her low platelet count were thoroughly investigated and ruled out. Upon examination, she was conscious, with blood pressure at 112/70 mmHg, heart rate of 80 bpm, respiratory rate of 20 bpm, temperature at 36.8°C, and oxygen saturation at 98%. The presentation was cephalic with the vertex at -3 stations, fetal heart rate at 145 bpm, and the cervix was soft, 30% effaced , and dilated to 1 cm.

Labor monitoring included partograph curve tracking, which showed normal vital signs with systolic blood pressure ranging from 110-124 mmHg and diastolic from 72-88 mmHg. During a prolonged second stage of labor, she experienced inadequate contractions, vomiting, blurred vision, and a brief 30-second tonic-clonic seizure. At the time of the seizure, her vital signs were a blood pressure of 130/90 mmHg, a pulse rate of 97 beats per minute, and a capillary blood glucose (CBG) level of 110 mg/dL. Immediate treatment included a 4 g intravenous loading dose of magnesium sulfate, followed by a maintenance dose.

Post-seizure evaluations indicated her blood pressure had risen to 138/72 mmHg, heart rate was 90bpm, respiratory rate was 18 bpm, temperature slightly elevated at 36.9°C, and oxygen saturation decreased to 96%, with a urine dipstick showing 2+. She delivered a healthy boy baby vaginally weighing 2.5 kg, who was appropriate for gestational age.

Following the seizure, consultations were made with neurology, medicine, cardiology, and ophthalmology. A CT scan of the brain showed no neurological abnormalities. Investigations revealed deranged liver function tests, and pregnancy-induced hypertension (PIH) profile was requested. Her post-treatment status showed symptomatic improvement, and her blood pressure remained normal throughout her hospital stay, indicating effective management of her acute symptoms during labor.

Table 1 Laboratory investigations

Parameter	CASE 1	CASE 2	CASE 3
On Admission	Hb: 7.5 gm Plt: 1.50 L Urine albumin: trace Spot PCR: 0.05 SGOT: 31 IU/L SGPT: 22 IU/L LDH: 855 IU/L D dimer: 1031	Hb: 13.1 gm Plt: 2.3 L Urine albumin: 1+ Spot PCR: 0.50 SGOT: 29IU/L SGPT: 23IU/L LDH: 286IU/L D dimer: 636	Hb: 10.9 gm Plt: 1.2 L Urine albumin: NIL Spot PCR: 0.04SGOT: 30IU/L SGPT: 21IU/L LDH: 300IU/L D dimer: 570

Immediate Post-Op	Hb: 8 gm Plt: 1.20 L Urine albumin: 3+ Spot PCR: 3.48 SGOT: 45 IU/L SGPT: 35 IU/L LDH: 766IU/L D dimer: 746	Hb: 8.8gm Plt: 2.3 L Urine albumin: 3+ Spot PCR:5.6 SGOT: 64IU/L SGPT: 40IU/L LDH: 899IU/L D dimer: 575	Hb: 9.9 gm Plt: 1.1 L Urine albumin:2+ Spot PCR: 0.05 SGOT: 34IU/L SGPT: 18IU/L LDH: 545IU/L D dimer: 565
On POD 2	Hb: 9.7 gm Plt: 1.9 L Urine albumin: nil Spot PCR: 0.07 SGOT: 28IU/L SGPT: 17 IU/L LDH: 443IU/L D dimer: 500	Hb: 9.5 gm Plt: 2.3 L Urine albumin: NIL Spot PCR: 0.03 SGOT: 35 IU/L SGPT: 18IU/L LDH: 326IU/L D dimer: 577	Hb: 10.1 gm Plt: 2.0 L Urine albumin: NIL Spot PCR: 0.05 SGOT: 31IU/L SGPT: 18IU/L LDH: 320IU/L D dimer: 575
Imaging Studies	PRES - hyperintensities in subcortical white matter of bilateral high frontal parieto-occipital lobes.	PRES - hyperintensities in subcortical white matter of bilateral high frontal parieto-occipital lobes.	No neurological abnormality

3. DISCUSSION

Eclampsia is a severe and sometimes fatal obstetric illness marked by the sudden occurrence of seizures in a woman who already has pre-eclampsia [7]. Pre-eclampsia is a hypertension condition that occurs during pregnancy and is characterized by elevated blood pressure and the presence of protein in the urine. Eclampsia is the final stage of severe pre-eclampsia and is a serious emergency in obstetric care since it is linked to considerable health problems and significant morbidity and mortality for both the mother and the fetus [8]. Managing eclampsia is a crucial part of obstetric care, necessitating swift identification and timely intervention to avert severe consequences for both the mother and the infant.

Eclampsia typically manifests with a medical history that includes signs of pre-eclampsia, such as high blood pressure, presence of protein in the urine, headaches, vision problems, and pain in the upper abdomen [9]. Eclampsia is frequently characterized by the abrupt onset of seizures. These standard presentations enable healthcare personnel to predict and get ready for the handling of these pregnancies with a high risk [10].

Nevertheless, it is crucial to acknowledge the significance of identifying unusual instances of eclampsia.Atypical eclampsia can manifest without any previous indications of high blood pressure or protein in the urine, and it can arise after childbirth or even in the absence of seizures.[11]. These instances present a substantial obstacle since they deviate from routine screening protocols and have the potential to impede the timely diagnosis and treatment. The unusual presentation can make the clinical picture more complex and need a more subtle approach to diagnosis. Recognizing the possibility of unusual manifestations is crucial in obstetric treatment to guarantee the security and welfare of patients who may not display usual symptoms of this disorder [12].

In this case series, we examine three distinct eclampsia presentations in obstetric care. Case 1 features a primigravida at 30 weeks and 4 days, with an uneventful antenatal history and no recorded blood pressure evaluations, who presented with seven episodes of tonic-clonic seizures followed by post-ictal confusion. Initial management included magnesium sulfate and anticonvulsant therapy. Case 2 involves a woman in her third

pregnancy, with two prior cesareans, diagnosed with gestational diabetes and hypothyroidism, which at 35 weeks experienced sudden vision blurring and a seizure. Her treatment also included securing the airway, magnesium sulfate, and anticonvulsant administration. Case 3, a primigravida at 38 weeks, showed no prior hypertensive issues but experienced a seizure during the prolonged second stage of labor, managed with magnesium sulfate. These cases underscore the complexity of diagnosing and managing eclampsia, highlighting the importance of tailored interventions based on the unique presentation of symptoms in each patient.

In discussing the unusual aspects of each case from the series, it's evident that atypical eclampsia can present significant challenges in diagnosis and management due to the absence of traditional risk factors and antenatal indicators:

Taken as a whole, these instances highlight the heterogeneity of eclampsia and the need for healthcare personnel to remain highly suspicious even when standard risk markers are absent. Every instance highlights the significance of thorough prenatal care and monitoring for any neurological symptoms, since eclampsia can manifest without the usual warning signs, necessitating an immediate and specialized therapeutic approach.

The absence of documented hypertension during antenatal visits, a key screening marker for pre-eclampsia risk, sets Case 1 apart from conventional eclampsia. Typically, hypertension with eclampsia would be extensively watched and probably treated or managed in advance. This example is consistent with research findings such as those of Maturu et al. (2022), which describe cases of atypical eclampsia in which there is no history of hypertension, making prompt detection and intervention more difficult [13].

The patient's complicated medical history of gestational diabetes and hypothyroidism, which are not directly related to eclampsia but complicate the overall clinical therapy, makes Case 2 different from the others. Albayrak et al. (2010) state that, as this patient [14] showed, atypical eclampsia cases can present with non-traditional symptoms like blurred vision without a history of severe hypertension or proteinuria. This highlights the need of a more comprehensive diagnostic approach in patients with multiple comorbidities. Because Case 3 did not exhibit any pre-eclamptic signs during the pregnancy, such as hypertension or proteinuria, it is unique in the setting of eclampsia. The case mimics the situation that Postma et al. (2014) described in the literature, when neurological symptoms similar to eclampsia develop without the typical pre-eclampsia precursors [15], thereby upending the prenatal treatment paradigms of screening and monitoring.

The research on atypical eclampsia emphasizes the variety of presentations and the possibility of eclampsia occurring in the absence of the traditional antecedents, such as proteinuria and hypertension. Regardless of blood pressure or urine protein levels, Sibai and Stella (2009) address the therapeutic problems presented by unusual presentations and advise healthcare practitioners to keep a high index of suspicion for eclampsia in any pregnant patient presenting with neurological symptoms [16]. The findings of Weiner et al. (2016) support this, indicating that atypical eclampsia might be a different pathophysiological process [17], potentially connected to underlying inflammatory or vascular diseases that don't show up as the usual pre-eclamptic symptoms. Shin et al. (2012) conducted a retrospective study comparing typical and atypical eclampsia, revealing that atypical eclampsia did not result in better maternal outcomes than typical eclampsia, highlighting the serious nature of atypical forms and the need for aggressive management strategies similar to those used in typical cases [18]. Aja-Okorie and Ngene (2022) - This case report details an atypical presentation of preeclampsia-eclampsia syndrome manifesting at 18 weeks of gestation, involving symptoms indicative of HELLP syndrome and eclampsia, highlighting the rare but serious early-onset forms of the condition [19]. Khalloufi et al. (2023) - This study reports on a case of atypical preeclampsia that developed before 20 weeks of gestation, underscoring the importance of early diagnosis and the variability in the onset of preeclampsia symptoms [20].

CONCLUSION

An examination of unusual eclampsia cases through diverse case reports provides valuable insights on its unpredictable and complex characteristics. The key takeaways highlight the importance of careful monitoring and a comprehensive diagnostic approach that goes beyond the usual markers of hypertension and proteinuria. This is necessary since there can be many presentations that do not exhibit these typical symptoms. Managing atypical eclampsia typically involves a multidisciplinary approach to promptly and effectively address each patient's complicated needs, which can greatly improve results. The wide range of unpredictable and intricate cases of atypical eclampsia highlights the immediate necessity for continuous study in order to create more accurate diagnostic instruments, comprehend the fundamental pathophysiology, and assess efficient techniques for treatment. Intensified research endeavors are essential for enhancing the precision of diagnoses and increasing outcomes. This underscores the need for a more thorough examination of this complex obstetric disease to guarantee superior care and safety for pregnant women worldwide.

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