Seizures in Pregnancy

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KEYWORDS

• Seizure • Eclampsia • Epilepsy • Pregnancy • Antiepileptic drug

KEY POINTS

- Seizures during pregnancy pose significant maternal and fetal risks.
- The initial evaluation of seizures involves detailed clinical and physical examination histories, seizure classification, laboratory studies, and imaging interpretation.
- The management of epilepsy among women of reproductive age is complex and involves unique considerations during the preconception, antepartum, intrapartum, and postpartum periods.
- The management of the acute seizure during pregnancy should follow a predetermined algorithm with the presumptive diagnosis of eclampsia until proven otherwise.

INTRODUCTION: BACKGROUND AND EPIDEMIOLOGY

Seizures are the most common major neurologic complication encountered in pregnancy with a prevalence of in the United States of 1.2%.[1] Nearly one-half million women with epilepsy are of reproductive age and between 0.5% and 1.0% of all pregnancies occur among women with epilepsy.[2,3]

The etiology of seizures covers a wide range of diseases, vascular insults, infectious sequelae, malignant processes, metabolic derangements, toxic insults, primary central nervous system dysfunction, and more.[4,5] In pregnancy, eclampsia represents a unique consideration among possible causes of seizure. Although epileptic seizures are the most common, it is crucial to accurately determine the underlying cause of seizures in pregnancy to provide appropriate therapy.[4]

Epilepsy

Women with epilepsy who become pregnant are at a substantially increased risk of adverse outcomes, including preeclampsia, preterm labor, stillbirth, cesarean delivery, and a more than 10-fold increased risk of death.[6] The majority of maternal deaths

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are related to poor seizure control. As such, achieving control of maternal epilepsy is the primary concern in the management of pregnant women with an underlying seizure disorder.[3] This goal is complicated by the risk of potential congenital malformations owing to the use of antiepileptic therapy.[7–11]

DEFINITION AND CLASSIFICATION

Definition

Conceptually, an epileptic seizure is defined as "a transient occurrence of signs and/or symptoms owing to abnormal excessive or synchronous neuronal activity in the brain."[12] The clinical application of this definition is difficult, because it is often not possible to prove the presence of "abnormal excessive or synchronous neuronal activity." In addition, some seizures that are confirmed electrographically do not demonstrate detectable signs or symptoms.[13] To combat this issue, 3 separate operational definitions of epilepsy have been developed by the International League Against Epilepsy that can be more reasonably applied to the clinical setting:

1. At least 2 unprovoked seizures occurring greater than 24 hours apart,
2. One unprovoked seizure and the probability of further seizures similar to the general recurrence risk ($\geq$60%) after 2 unprovoked seizures, occurring over the next 10 years, and
3. Diagnosis of an epilepsy syndrome.[13,14]

Awareness of and recognition by providers that epilepsy represents a diverse array of brain diseases sharing the common presentation of seizure is critical. It is important for those providing pregnancy care to work closely with a neurologist to improve understanding of an individual's disease. This responsibility not only bears weighty implications for treatment, but also gives insight into predicting the character of the seizure disorder throughout pregnancy.[15,16] The resolution of epilepsy may be determined by a neurologist in the setting of women who have remained seizure free for the last 10 years, with the last 5 years off antiseizure medication, or individuals who were diagnosed with a childhood epilepsy syndrome who are now in adulthood.[14]

Classification System

The classification of epilepsy type greatly influences clinical management. In 2017, the International League Against Epilepsy developed a new classification system allowing for diagnosis at 3 levels according to the range of resources that may be available (**Fig. 1**).[17] In areas of resource-poor settings, diagnosis may be limited to level 1, whereas in settings of high diagnostic capabilities, a seizure can be considered among all levels of diagnosis.[17] Important changes include:

1. Extinction of the terms partial and complex, and instead only describing the presence of awareness;
2. The addition of a motor and nonmotor classification of focal seizures; and
3. The addition of a combined focal and generalized seizure category, and an unknown seizure type category.

Owing to the significant treatment implications, the International League Against Epilepsy also added 6 etiology subgroups to be considered among all levels of diagnosis. These subgroups are genetic, structural, metabolic, immune, infectious, and unknown.[17]