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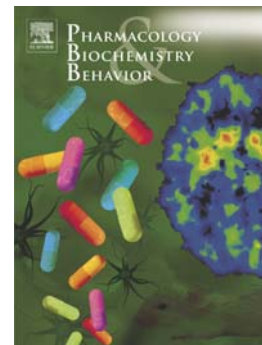
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Invited Review

Pharmacology, Biochemistry and Behavior

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The Neuroendocrine Basis of Sex Differences in Epilepsy

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ABSTRACT

Epilepsy affects people of all ages and both genders. Sex differences are well known in epilepsy. Seizure susceptibility and the incidence of epilepsy are generally higher in men than women. In addition, there are gender-specific epilepsies such as catamenial epilepsy, a neuroendocrine condition in which seizures are most often clustered around the perimenstrual or periovulatory period in adult women with epilepsy. Changes in seizure sensitivity are also evident at puberty, pregnancy, and menopause. Sex differences in seizure susceptibility and resistance to antiseizure drugs can be studied in experimental models. An improved understanding of the neuroendocrine basis of sex differences or resistance to protective drugs is essential to develop targeted therapies for sex-specific seizure conditions. This article provides a brief overview of the current status of sex differences in seizure susceptibility and the potential mechanisms underlying the gender differences in seizure sensitivity.

Keywords: Catamenial epilepsy; Epileptogenesis; Sex difference; Seizure; Pilocarpine; Neurosteroid

1. Introduction

Epilepsy has many causes. Sex differences are well known in epilepsy, which is characterized by an enduring predisposition to recurrent seizures. A seizure is an abnormal electrical storm in the brain that causes sudden alterations in consciousness, sensation and behavior that can manifest in forms ranging from an eye flicker to full-body convulsions. Epileptic seizures arise from dysfunctional neuronal network mechanisms that regulate excitability and synchrony. Epileptic seizures are classified into partial (simple partial and complex

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