OPEN ACCESS Freely available online

ISSN: 2161-1459
Journal of Clinical & Experimental Pharmacology

Opinion Article

Pharmacokinetics of Progesterone and Allopregnanolone in Refractory Epilepsy

Farah Chohan*

Department of Internal Diseases, Faculty of Medicine, Medical University, Plovdiv, Bulgaria

DESCRIPTION

Refractory epilepsy is defined as a type of epilepsy that does not respond to therapy with at least two antiepileptic drug types that are used in accordance with recommended dosages. Refractory epilepsy, which is characterized by a higher frequency of repeated seizures, has been linked to (a) changes in the sensitivity of voltage-gated sodium channels, (b) changes in the internalization of Gamma-Amino Butyric Acid A (GABA A) receptors, and (c) changes in the overexpression of P-glycoprotein efflux transporters, which can lower the concentration of antiepileptic drugs. Patients with refractory epilepsy respond poorly to antiepileptic medications. Studies on the usage of the neurosteroids brexanolone and ganaxolone in patients with refractory epilepsy are already available. These two neurosteroids activate the binding of benzodiazepines with the GABA A receptors. However, Thailand has not authorized the use of these medications. In order to find neurosteroids or other medications that was readily available in Thailand and might produce an active metabolite that could operate as a neurosteroid. The hormone progesterone, which has been labeled a neurosteroid, is activated in the central nervous system. Allopregnanolone, an active metabolite also known as 3-hydroxy-5-pregnan-20-one, is produced by the body's metabolism of progesterone as it enters the body. Similar to benzodiazepines, allopregnanolone stimulates the GABA A receptors, but it differs from them, in that it prevents the internalization of GABA A receptors during the extra synaptic GABA A receptor activation.

Neurosteroids can therefore be helpful for people with refractory epilepsy. Progesterone can be used as an add-on medication to help patients with catamenial epilepsy controls their seizures. According to this research, progesterone blood levels between 5 and 25 mg/mL may be helpful in lowering seizure frequency. In addition, there are few pharmacokinetic studies available since there are none on individuals with refractory epilepsy. Only progesterone's pharmacokinetics at doses between 200 and 600 mg per day as part of hormone replacement therapy have been adequately investigated as of yet. Progesterone's pharmacokinetics as an adjunctive treatment for people with epilepsy haven't been investigated. There is just one study on the pharmacokinetics of brexanolone injections in postpartum depression and one on the pharmacokinetics of allopregnanolone injections in individuals with Alzheimer's disease. No study has looked at allopregnanolone levels or pharmacokinetics following progesterone administration in patients with refractory epilepsy. The pharmacokinetic parameters pre-post the initial dosage of progesterone and during the steady state as part of an add-on administration for epilepsy is the subject of the study, which is the first to report on them. In patients with intractable epilepsy receiving progesterone at a dose of 400 mg every 12 hours for three months as a part of an add-on therapy intended to control seizures, we measured the serum levels of both progesterone and allopregnanolone.

The results has shown that the serum progesterone and allopregnanolone levels in the responder group are higher than those of the non-responder group by 6-10 and 2-6 times, respectively, when looking at the relationships between the serum progesterone or allopregnanolone levels with the treatment response during the steady state in the responder group in comparison to the non-responder group. In fact, an *in vivo* investigation found that the serum allopregnanolone level had a direct correlation with the degree of the decrease in seizure frequency. The latter can be simply regarded as evidence that the drop in seizure frequency is directly related to the greater levels of progesterone in the blood.

Correspondence to: Farah Chohan, Department of Internal Diseases, Faculty of Medicine, Medical University, Plovdiv, Bulgaria, E-mail: chohan@gmail.com

Received: 03-Jun-2022, Manuscript No. CPECR-22-17396; **Editor assigned:** 07-Jun-2022, Pre QC No. CPECR-22-17396 (PQ); **Reviewed:** 22-Jun-2022, QC No CPECR-22-17396; **Revised:** 29-Jun-2022, Manuscript No. CPECR-22-17396 (R); **Published:** 06-Jul-2022, DOI: 10.35248/2161-1459.22.12.315.

Citation: Chohan F (2022) Pharmacokinetics of Progesterone and Allopregnanolone in Refractory Epilepsy. J Clin Exp Pharmacol. 12:315.