Lamotrigine prevents the development of psychiatric comorbidity in epileptic animals

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Recently, numerous studies have been focused on the relationship between epilepsy and psychological disturbances[1;2]. It was generally found that depression and anxiety have the highest prevalence in epileptic patients[3]. Despite behaviour in experimental animals has been studied in several models of epilepsy, only few can be regarded as animal models of comorbid epilepsy and mood disorders[4]. Since several models of epilepsy and psychiatric disorders are already available, we wondered whether a mixture of two of them could represent a valid alternative to study comorbidity in preclinical settings.

Here, we present a possible new experimental protocol for the study of drugs' effects on the development of psychiatric comorbidity in epileptic animals, more specifically: chemically kindled animals (pentylenetetrazol kindling) were then subjected to the chronic mild stress (CMS) model procedure. We also tested the effects of a chronic lamotrigine (LTG) treatment, started before CMS and after kindling, on the development of psychiatric comorbidity in epileptic and not epileptic control animals.

The following behavioural tests were performed: forced swimming test, sucrose consumption test, open field arena, elevated plus maze and Morris water maze. We found that epileptic-depressed animals showed more pronounced behavioural alterations in comparison to the others mice groups, indicating that kindled animals develop more pronounced CMS-induced behavioural alterations than non-epileptic mice and lamotrigine was able to prevent the development of such comorbidities. In conclusion, we determined that the sequence kindling/CMS might represent a prospective model of psychiatric/neurologic comorbidity in epilepsy; however, more experiments are needed. Furthermore, we observed that a chronic long-term treatment with lamotrigine is able to prevent the development of depressive and anxiety behaviour also improving cognitive functions in epileptic animals.

References

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