

# Associations of antiepileptic drugs with anxiety and depressive symptoms in pediatric epilepsy

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## Psychopathology in epilepsy

- Epilepsy-rated phenomenon (e.g. a presenting feature of epileptic seizures) or
- Comorbidity (e.g. depression).
- Specific psychopathology as an outcome of the interplay of various factors .
- Added values of antiepileptic drugs (AEDs).

## Antiepileptic drugs (AEDs)

- AEDs psychotropic effects - beneficial and adverse - on emotions, cognitions, and behaviors in epilepsy.
- Enhancement of GABA leading to sedating/anxiolytic/depressogenic effects or the blockage of glutamate leading to activating/anxiogenic/antidepressive effects.

## A pilot study

- To evaluate associations of AEDs and other major factors with anxiety and depressive symptoms.
  - A generalized linear model was created from the data of 54 children with epilepsy completing the Screen for Child Anxiety Related Emotional Disorders (SCARED) and Mood and Feeling Questionnaire (MFQ).
  - Nine children taking carbamazepine (CBZ), 25 valproate (VPA), five lamotrigine (LTG), and 15 two/three AEDs (COMB)
- Main results:** Age, type of epilepsy, seizure frequency, epilepsy duration, AEDs, depressive symptoms, and interaction among these variables accounted for 66.9% of the variations in anxiety symptoms ( $F = 6.99$ ,  $p < 0.0001$ ). The same set of variables, with anxiety instead of depressive symptoms, accounted for 60.7% of the variations in depressive symptoms ( $F = 5.28$ ,  $p < 0.0001$ ).

### Associations of specific AEDs with anxiety and depressive symptoms

| Anxiety symptoms    |                       | Depressive symptoms |                  |
|---------------------|-----------------------|---------------------|------------------|
| AED*other variables | T test (p value)      | AED*other variables | T test (p value) |
| Carbamazepine       | - 1.15 (0.26)         | Carbamazepine       | 0.35 (0.76)      |
| Valproate           | 1.04 (0.30)           | Valproate           | - 0.84 (0.40)    |
| Lamtrigine          | - 1.39 (0.14)         | Lamtrigine          | - 1.07 (0.29)    |
| COMB                | <b>- 3.06 (0.004)</b> | COMB                | 1.39 (0.17)      |

## Conclusions and future study

- There is an added value of AEDs in expression of anxiety or depressive symptoms in children with epilepsy.
  - Taking two/three AEDs was significantly associated with lower levels of anxiety symptoms.
  - VPA associated with decreased not only increased depressive symptoms; LTG associated with increased both symptoms; CBZ associated with increased anxiety, but decreased depressive symptoms.
  - A follow-up study needed with newly diagnosed epilepsy and AEDs in relationships with specific symptoms.
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