Safe use of levetiracetam at doses higher than the maximum recommended  

(Abstract number: 4CPS-175)  
(_ATC code: N03 -Antiepileptics)  
Contact email: cmarinofernandez@gmail.com

C. Mariño Fernández¹, R. Juvany Roig¹, C. Esteban Sánchez¹, M. Falip Centellas², R. Rigo Bonnin³,  
J. Sala Padró², R. Jodar Masanes¹

¹Hospital Universitari Bellvitge- IDIBELL, Pharmacy, Hospitalet de Llobregat, Spain.  
²Hospital Universitari Bellvitge- IDIBELL, Neurology (Epilepsy Unit), Hospitalet de Llobregat, Spain.  
³Hospital Universitari Bellvitge- IDIBELL, Clinical Laboratory, Hospitalet de Llobregat, Spain.

Objective

To describe the importance of therapeutic drug monitoring (TDM) of levetiracetam (LEV) for minimizing toxicity when it is used at doses higher than recommended (maximum 3000mg/ day according to the summary product).

Methods

Case report of 57 year-old man diagnosed with symptomatic focal epilepsy and human immunodeficiency virus.

- Antiepileptic treatment: LEV 4000 mg/ day, topiramate 300 mg/ day and clonazepam 4 mg/ day since 2010 plus lacosamide 200 mg/ day added in 2015. In September 2016 dosage of LEV was increased to 4500mg/ day because he had a new neurological crisis.
- Antiretroviral medication (AM): was changed in 2013 from tenofovir/efavirenz/emtricitabine to abacavir/ lamivudine plus efavirenz. In January 2017 AM medication was simplified to dolutegravir/abacavir/ lamivudine.

Results and discussion

<table>
<thead>
<tr>
<th>Date</th>
<th>Dose (mg/day)</th>
<th>GFR (ml/min/1.73 m²)</th>
<th>Cmin LEV (μg/mL)</th>
<th>Toxicity signs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 2015</td>
<td>4000</td>
<td>&gt;60</td>
<td>---</td>
<td>No</td>
<td>---</td>
</tr>
<tr>
<td>April 2016</td>
<td>4000</td>
<td>&gt;60</td>
<td>35.9</td>
<td>No</td>
<td>This was the situation after six years with LEV 4000mg/ day and glomerular filtration rate (GFR) &gt;60 ml/min/1.73 m². The LEV therapeutic range is [10-40 μg/mL].</td>
</tr>
<tr>
<td>March 2017</td>
<td>4500</td>
<td>51</td>
<td>67.1</td>
<td>Yes tired and sleepy</td>
<td>Three months after increasing the dose of LEV, there were high levels of LEV and a slight deterioration of renal function. Concomitant medication seemed not interact with LEV.</td>
</tr>
<tr>
<td>June 2017</td>
<td>3500</td>
<td>50</td>
<td>36.3</td>
<td>No</td>
<td>After reducing the dose of LEV, values returned to the normality and clinical signs of toxicity disappeared.</td>
</tr>
</tbody>
</table>

Conclusions

LEV at doses higher than recommended could be used safely if there is a close TDM program to assure treatment effectiveness and minimize adverse effects.