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Use of Levetiracetam via Continuous Subcutaneous Infusions

Indication

Levetiracetam is licensed for use in people with epilepsy. Patients with palliative care needs may have a history of epilepsy or develop seizures as a consequence of their life limiting illness, e.g. brain metastases. Many patients are initially commenced on an oral antiepileptic drug (AED); however, the oral route becomes less reliable as the illness worsens and the end of life approaches.

In a palliative care setting, it is common practice to stop established oral AEDs once the oral route is lost and switch to an alternative AED via the subcutaneous (SC) route. The therapeutic options via the subcutaneous route are limited. An example from clinical practice might be stopping oral levetiracetam and commencing a continuous subcutaneous infusion of midazolam. The starting doses of midazolam range from 10 to 30mg, with the dose escalated if seizures are witnessed and the addition of phenobarbital if seizures remain uncontrolled.

While benzodiazepines and barbiturates achieve effective seizure control, they also induce sedation. This sedative effect may be desirable in agitated patients. However, the sole use of sedating medications risks ongoing sedation of a patient who might otherwise have regained consciousness following a postictal period. Therefore, there is a need to explore a non-sedating alternative should this be felt to be appropriate. Use of off licence subcutaneous levetiracetam offers the possibility of maintaining seizure control when the oral route is lost without increasing the level of sedation.

Use of off licence medicines is common in a number of areas of clinical practice and includes the frequent and safe use of medicines via continuous subcutaneous infusion, e.g. morphine and diamorphine.

Evidence Base

A systematic review (Sutherland et al, 2017[i]) has examined the evidence base of the use of levetiracetam. 73 cases where subcutaneous levetiracetam was administered were reviewed. Doses ranged from 250mg to 4000 mg daily. Oral to subcutaneous conversion ratios where stated were 1:1. Levetiracetam was reported as the sole administered antiepileptic drug (AED) in eight cases, and no seizures

were reported until death in five cases. Titration of dose improved seizure control. Five were switched back to enteral levetiracetam. In seven cases, levetiracetam was combined with other AEDs to provide seizure control at the end of life.

Local Experience

Levetiracetam has been used in specialist palliative care settings in the city with evidence of good safety and clinical effect.

Dosing

A 1:1 conversion is used, for example a prescription of levetiracetam 500mg by mouth twice a day would be converted to 1000mg via continuous subcutaneous infusion over 24 hours. Water for infections or 0.9% sodium chloride can be used as a diluent. It is recommended that the maximum dose in one infusion is 2000mg. Higher doses therefore may need to be administered in two separate infusions.

If you think that levetiracetam via continuous subcutaneous infusion may be of benefit for one of your patients, it is recommended that you discuss this with s Specialist Palliative Care Professional

Author: Academic Palliative and End of Life Care Centre

APCU telephone no. 0151 706 2448
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[i] Sutherland AE, Curtin J, Bradley V, Bush O, Presswood M, Hedges V, et al. . Subcutaneous levetiracetam for the management of seizures at the end of life. BMJ Support Palliat Care (2017) 8:129–35. 10.1136/bmjspcare-2016-001261 [PubMed] [CrossRef] [Google Scholar]