CASE REPORT

Continuous subcutaneous levetiracetam in end-of-life care

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SUMMARY

Seizures constitute a determining aspect in quality of life and are frequently challenging in palliative care—a field where treatment has yet to be standardised. Levetiracetam—a new generation anticonvulsant—has proved efficacy both through oral, as well as intravenous administration in the general population. This case reports on the use of continuous subcutaneous levetiracetam to effectively control seizures in a terminally ill patient without patent oral route.

BACKGROUND

Seizures constitute a determining aspect in quality of life and are frequently challenging in palliative care—a field where treatment has yet to be standardised. Levetiracetam—a new generation anticonvulsant—has proved efficacy both through oral, as well as intravenous administration in the general population.¹ In 2014, Rème *et al* showed non-inferiority of subcutaneous administration of levetiracetam in a geriatric population in palliative care.² This case reports on the use of continuous subcutaneous levetiracetam to effectively control seizures in a terminally ill patient without patent oral route.

CASE PRESENTATION

The authors present the case of a 99-year-old woman who is bedbound due to advanced vascular dementia causing secondary difficult-to-control epilepsy. The patient was admitted to an internal medicine ward in the setting of severe sepsis resulting from community acquired pneumonia and status epilepticus. Global clinical improvement in response to instituted therapy was observed. Intravenous levetiracetam was used to control status epilepticus after failure of phenytoin 300 mg/day. The dose of intravenous levetiracetam was titrated until full symptomatic control was achieved—maximum of 1 g/day divided in two doses (12/12 hour). However, the patient presented with food refusal and dysphagia, limiting oral therapy administration. On planning patient discharge, the family insisted on having the patient at home, according to her expressed will. Since home intravenous drug administration was not feasible, administration of rectal diazepam was initiated, without effective seizure control. Considering a prognosis inferior to 6 months a nasogastric tube insertion was proposed. This procedure was complicated by superior oesophageal perforation with signs of contained mediastinitis. Large

spectrum antibiotics were administered. At this point the patient was in status epilepticus (more than 10 seizures/day) despite scheduled rectal and on-demand intravenous diazepam (scheduled 5 mg rectal diazepam was administered up to five times a day and rescue 5 mg intravenous diazepam was delivered in a bolus in a total of 30 mg a day). Considering this setting and with the aim of a minimally invasive strategy for a patient in palliative care, continuous subcutaneous therapy with levetiracetam was commenced, using a 1:1 conversion ratio. The dose was titrated accordingly and after discussion with the Munich group—a continuous subcutaneous perfusion of 1 g levetiracetam diluted in 750 mL glucose 5% was administered at a 31.25 mL/hour infusion rate.² The perfusion was administered over a 24-hour period, continuously, through a syringe driver. Seizure frequency was reduced to less than once weekly and the patient was responsive to diazepam rescue therapy for 4 weeks, until the patient died without signs of discomfort. Local complications from the subcutaneous administration were not identified.

DISCUSSION

Seizures are frequently a cause for family and patient distress and are detrimental to the patient's quality of life.³ Intravenous drug administration is particularly difficult in a palliative home care setting, making seizure control challenging in clinical practice.⁴ Subcutaneous administration of levetiracetam remains vastly unexplored. Rème *et al* demonstrated efficacy of administering levetiracetam subcutaneously in palliative care with good tolerance and an 80% success rate in controlling epileptic events, as seen in the case presented above. Facing unavailability or inefficacy of usual administration routes (oral, intravenous, rectal), continuous administration of

Learning points

- ▶ Seizures in palliative care present a management challenge.
- ▶ On unavailability of usual administration routes subcutaneous levetiracetam was effective in seizure control.
- ▶ Continuous subcutaneous administration of levetiracetam in palliative care appears to be an alternative to more invasive and technically more complex measures.

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subcutaneous levetiracetam allowed for effective control of seizures during a period of 4 weeks, without compromising the patient's comfort in the time which preceded her death and without complications.

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