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## CORRESPONDENCE

# Gabapentin-induced myoclonus in an elderly with end-stage renal failure



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Received 17 June 2012; accepted 19 June 2012

A 79-year-old woman, with end stage renal failure (ESRF) due to diabetic nephropathy, presented with generalized involuntary movements for 3 days. She had a history of hypertension, hyperlipidemia, and gouty arthritis. Gabapentin (GBP) 300 mg nocte was prescribed for her post-herpetic neuralgia involving her right V<sub>1</sub> dermatome. Ten hours later, she developed generalized involuntary jerky movements, and was also drowsy and unable to walk. She did not take further doses of GBP. On the following 2 days, her involuntary movements persisted but were decreasing in severity. She presented to us on the third day. She had a Glasgow coma scale of 15 and had high frequency multifocal myoclonus involving her neck, bilateral upper extremities, and trunk. Blood tests showed random glucose 8.1 mmol/L, urea 27.4 mmol/L, creatinine 531 μmol/L, adjusted calcium 2.15 mmol/L, phosphate 1.87 mmol/L, and normal liver function test. Computed tomography of the brain reviewed cerebral atrophy. Her medications include calcium supplements, frusemide, amlodipine, isosorbide mononitrate, sodium bicarbonate, and paracetamol. GBP level measured 67 hours later was 23 μmol/L (reference range 70–120 μmol/L). Clonazepam was prescribed but she was unable to tolerate it due to

dizziness. On the fifth day, her myoclonus completely subsided. One month later, her renal function remained static and myoclonus did not recur.

GBP is commonly used to control neuropathic pain and epilepsy.<sup>1,2</sup> Myoclonus, a sudden, brief, shock-like involuntary movement, can be caused by anoxic brain injury, metabolic derangement, focal brain lesions, medications, and viral infections.<sup>2</sup> Myoclonus is reported in 0.1% to 12.5% of patients using GBP.<sup>2</sup> Myoclonus is classified as focal if only one limb is involved or multifocal if it occurs asynchronously in at least two limbs. High frequency myoclonus refers to twitches at more than one/minute. GBP is cleared by the kidney and its clearance is reduced in the elderly and patients with chronic renal failure (CRF).<sup>3</sup> The half life of GBP is prolonged to >20 hours in patients with CRF as compared to 5 to 8 hours in patient with normal renal function.<sup>3</sup> There have been previous case reports of GBP induced myoclonus in patients with CRF (Table 1).<sup>2–5</sup> GBP overdose is the most likely cause of the myoclonus in our patient as she has never had previous myoclonus, there was a clear temporal relationship between myoclonus and GBP, and cessation of myoclonus after GBP was stopped. Uremia alone was unlikely to have been the cause, as her renal function remained static. The dosage of GBP (300 mg) was the lowest among the reported cases. We are unable to obtain GBP level immediately after the onset of myoclonus. The persistence of myoclonus even when the drug level fell within the normal range suggested that GBP-induced myoclonus may

Conflicts of interest: The authors have no conflicts of interest relevant to this article.

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**Table 1** A summary of our patient and previous reported cases of gabapentin-induced myoclonus in patients with chronic renal failure.

References	Age	Sex	Creatinine level ( $\mu\text{mol/L}$ )	GBP dosage and duration of treatment before myoclonus	Duration of myoclonus	Treatment
Zhang et al <sup>2</sup>	59	Male	704	3 d after stepping up from 300 mg daily to 900 mg daily	15 d	Observation
Zhang et al <sup>2</sup>	56	Male	616	5 d after 600 mg daily	4 d	Observation
Zhang et al <sup>2</sup>	43	Female	880	3 d after stepping up from 900 mg daily to 1600 mg daily	5 d	Observation
Holtkamp M et al <sup>3</sup>	66	Male	Worsened from 116 to 236	900 mg daily for 2 y	1 d	Observation
Healey et al <sup>4</sup>	47	Male	359	900 mg daily (duration of treatment before myoclonus not reported)	Not reported	Observation
Guddati AK et al <sup>5</sup>	57	Male	Worsened from 317 to 862	900 mg daily (duration of treatment before myoclonus not reported)	3 d	Continuous venovenous hemodiafiltration
Current patient	79	Female	531	300 mg for 1 d	5 d	Observation

not be dose related but threshold related.<sup>3</sup> GBP probably lowered the threshold for myoclonus in uremia.<sup>2–5</sup> In general, GBP induced myoclonus is self limited. Low-dose benzodiazepine and renal replacement therapy<sup>5</sup> can be used in case of severe myoclonus.

This case highlights that 300 mg of gabapentin could result in myoclonus in patients with CRF.

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