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CORRESPONDENCE

Treatment of neuropathic pain in acute intermittent porphyria with gabapentin

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The clinical features of acute intermittent porphyria (AIP), the most common type of porphyria, are severe abdominal pain, dark urine, peripheral neuropathies, and seizure. Pain is common in patients with AIP, suggesting the involvement of small myelinated Aδ and C fibers. Constant current perception threshold (CPT) testing is related to direct stimulation of myelinated and unmyelinated nerve fibers in the skin. In this report, we present a case with intractable AIP pain, which was well controlled by administering gabapentin. We evaluated the pain-relief effect of gabapentin by objective constant CPT testing.

A 28-year-old woman had intermittent, severe tingling pain in her lower legs, abdominal colicky pain, nausea, vomiting, and visual and auditory hallucinations since August 2010. In October 2011, she was admitted to a hospital for abdominal pain and limb weakness. Her porphyrin biochemical data [aminolevulinic acid (ALA): 70.91 mg/dL (reference values: 1.3–7 mg/dL), porphobilinogen: 184.87 mg/dL (reference values: 0–2 mg/dL)] obtained from 24-hour urine collection were compatible with those for AIP. After hematin use, she demonstrated rapid clinical and biochemical improvement. Unfortunately, the chronic neuropathy pain was not well controlled. Gabapentin was started at 300 mg/day and was slowly titrated to 1800 mg/day to treat pain. Objective constant CPT was tested on the right index finger. The patient were tested at three sinusoidal stimulation frequencies (that selectively stimulated Aβ, Aδ, and C fibers using a 2000-, 250-, and 5-Hz stimulus, respectively) in the median nerve distribution. After gabapentin use, the necessity of morphine or meperidine for acute pain decreased, fewer seizure episodes occurred, and improvement in limb pain was observed. The results are shown in Fig. 1.

The probable mechanisms of AIP-inducing neuropathy are damage from free radicals, ALA neurotoxicity, or heme deficiency in nervous tissue. Several analgesics, including morphine, meperidine, and codeine, are used for AIP pain management. Unfortunately, patients develop increased tolerance and in our AIP case, the chronic neuropathy pain was not well controlled. Gabapentin has been reported to effectively control seizure in AIP without inducing porphyric crisis because it does not induce cytochrome P450. In addition, administration of gabapentin has been proven to

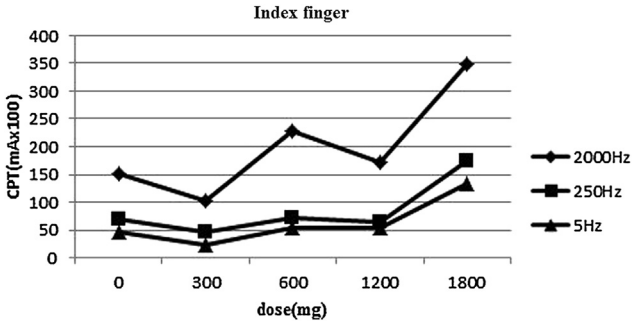

Figure 1 A gabapentin dose-dependent effect on CPT threshold.

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be effective in treating neuropathic pain.[1] The CPT values are useful in evaluating the effect of analgesics for improving neuropathic pain after peripheral nerve injury.[2] It had been reported with significance that the frequencies are dependent on fiber diameter and function. The threshold values in our CPT testing showed a dose-dependent trend, with increases in 2000-, 250-, and 5-Hz stimulation after gabapentin use. It has been hypothesized that neuropathic pain in patients with AIP is due to gate control dysfunction.[3] Gabapentin was shown to cross the blood—brain barrier and show interactions with various mechanisms, including an affinity to calcium channel subunit, alteration of monoamine neurotransmitters and serotonin in blood, and neuroprotection.[1,4] Our study suggests that the involvement of the central pain receptors in the pain-control mechanism of gabapentin is more than that of the peripheral pain receptors. The results obtained in this study may provide an alternative for the evaluation and management of neuropathic pain in patients with AIP.

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