Levetiracetam-associated Weight Loss: A Case Report

Levetirasetam ile İlişkili Kilo Kaybı: Olgu Sunumu

Levetirasetam ile İlişkili Kilo Kaybı / Levetiracetam-Associated Weight Loss

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Özet

Levetirasetam, sekonder jeneralize olan veya olmayan parsiyel başlangıçlı nöbetlerin tedavisinde kullanılan, yeni etki mekanizmasına sahip bir antiepileptik ilaçtır. Levetirasetamın distoni tedavisinde kullanılabileceği bildirilmiştir. Levetirasetam iyi tolere edilebilen bir ilaç olarak kabul edilmekle birlikte, yorgunluk, sinirlilik, irritabilite, ajitasyon ve vertigo gibi bazı yan etkilere neden olabilir. Kilo kaybı nadiren ortaya çıkan bir yan etkidir. Levetirasetamın kilo kaybı mekanizması tam olarak bilinmemektedir. Bu yazıda distoni nedeniyle düşük doz levetirasetam kullanan ve levetirasetam ile ilişkili kilo kaybı gelişen 21 yaşında bir olgu sunulmuştur.

Anahtar Kelimeler

Levetirasetam; Kilo Kaybı

Abstract

Levetiracetam, an antiepileptic medication with a novel mechanism of action, is approved as adjunctive therapy in partial-onset seizures, with or without secondary generalization. It has been suggested that levetiracetam could be used for the treatment of dystonia. Although it is usually well tolerated, it can cause some adverse reactions such as fatigue, nervousness, irritability, agitation and vertigo. Weight loss is a rare side effect of levetiracetam. The mechanisms of weight loss related to levetiracetam are not precisely known. In this report, we present the case of a 21-year-old patient who experienced weight loss associated with low-dose levetiracetam used for the treatment of dystonia.

Keywords

Levetiracetam; Weight Loss

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Introduction

Levetiracetam (LEV), the S enantiomer of piracetam, is an antiepileptic drug that has been shown to be well tolerated and effective in the treatment of partial-onset, generalized tonic-clonic, myoclonic seizures. Its mechanisms of action are thought to involve reversible and saturable neuronal binding to synaptic vesicle protein 2A, inhibiting high-voltage activated calcium channels and calcium release from intraneuronal stores, indirect effect on $GABA_A$/glycine inhibitory neurotransmission, and inhibiting extreme synchronized activity between neurons [1]. It has been reported that LEV is an effective treatment for dystonia [2,3]. Common adverse effects of LEV are neurobehavioral effects such as fatigue, nervousness, generalized weakness, irritability, agitation, emotional lability, depression, mood swings, vertigo, anxiety, unsteadiness, seizures, memory loss, confusion, increased reflexes, paresthesia, aggression, cognitive decline, and increased risk of suicide [4]. There have been rare reports of patients on LEV treatment developing weight loss. Herein, we report a case of weight loss associated with low-dose LEV treatment.

Case Report

A 21-year-old man (height, 165.2 cm; weight, 58.4 kg; body mass index (BMI), 21.47 kg/m^2) presented to a university movement disorders clinic for treatment of primary idiopathic cervical dystonia. Detailed investigations of the etiology of the dystonia were within normal limits. The patient's medical history and a review of his medical records revealed that there was no response to anticholinergics, benzodiazepines, or baclofen. The patient was treated with LEV in monotherapy, starting with 500 mg daily. After starting the LEV treatment, he lost 8.0 kg in two months, and his BMI decreased by 18.52%. There was no interference from other drugs that affected the weight. Laboratory findings, including complete blood count, electrolytes, liver and renal function tests, thyroid function tests, and tumor markers, were normal. The patient did not report decreased appetite during the period of weight loss. According to a systematic mood evaluation and a thorough clinical interview by a psychiatrist, there was no reason for the weight loss. Gastroenterology and endocrinology assessments were also normal. We identified no other cause of the weight loss besides LEV use. According to the Naranjo causality scale [5] (the score was 6), the adverse effect was probably due to LEV use. The patient continued the treatment, as it reduced his complaints of dystonia and the weight tended to plateau over the course of long-term treatment.

Discussion

This case demonstrates the importance of monitoring changes in body weight after the start of LEV treatment. Although LEV is considered a weight-neutral drug, there have been rare cases of weight loss associated with its use. Weight loss was listed in a study comparing treatment-emergent adverse events related to the use of LEV in young and elderly patients, and determined in the group of 97 elderly patients with anxiety. [6]. Hadjikoutis et al. reported four cases of considerable weight loss with LEV use in doses ranging from 2000 to 3000 mg/day. Only one patient decided to stop LEV treatment, and her weight increased. The other patients decided to continue LEV treatment, as it improved their seizure control [7]. Gelisse et al. reported 19 cases of significant weight loss related to LEV at both lower and higher doses; some of the patients had LEV in polytherapy. The researchers found that women were at higher risk of weight loss [8]. But our case was male. Furthermore, in our case weight loss occurred with low-dose (500 mg daily) LEV monotherapy and there was no anxiety.

The mechanisms of weight loss associated with LEV are not precisely known. Topiramate is well-known anti-epileptic drugs to cause considerable weight loss. The average body weight may decrease by 2 to 7% due to topiramate. It has been reported that serum leptin, insülin and corticosterone levels were reduced with topiramate in rats. Among antiepileptic drugs zonisamide and felbamate are also known to cause weight loss. Weight loss observed with these drugs is probably associated with anorexia [8]. Zonisamide causes the augmentation of dopamine synthesis and/or stimulation of D2 receptors. The mechanism of action of LEV does not involve GABA, glutamate, serotonin, dopamine or histamine [4].

We suggest that LEV can cause weight loss, even at lower doses, and that it can affect patients who are already underweight. Control of the patient's BMI prior to and during LEV treatment might be required. Because the mechanisms of weight loss associated with LEV are not exactly known, in our opinion, further data with larger series might provide more information regarding this adverse effect.

Competing interests

The authors declare that they have no competing interests.

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