Epilepsy & Behavior Case Reports 2 (2014) 15–16

Contents lists available at ScienceDirect

Epilepsy & Behavior Case Reports

journal homepage: www.elsevier.com/locate/ebcr

Case Report

Compulsive gambling possibly associated with antiepileptic medication ☆

Susanne Storrier [a], Roy G. Beran [b,c,d,*]

[a] Marima Medical Clinic, Goulburn, New South Wales, Australia
[b] Strategic Health Evaluators, Sydney, New South Wales, Australia
[c] Griffith University, Gold Coast, Queensland, Australia
[d] University of New South Wales, Sydney, New South Wales, Australia

ARTICLE INFO

Article history:
Received 5 November 2013
Received in revised form 20 November 2013
Accepted 21 November 2013
Available online 08 January 2014

Keywords:
Antiepileptic drugs
Adverse events
Compulsive gambling

ABSTRACT

Compulsive gambling is recognized with Parkinson's disease treatment with dopamine agonists but has not been reported with antiepileptic medications (AEMs) in epilepsy. This is the first report regarding possible compulsive gambling, provoked by AEMs in a patient with idiopathic generalized epilepsy, who presented with nonconvulsive status epilepticus, having previously not achieved seizure control with carbamazepine, valproate, (VPA), topiramate, gabapentin (GPT), lamotrigine (LTG), and clobazam. Levetiracetam (LEV) was added to VPA and GPT, which the patient was already taking and LTG subsequently retrialed. Following the reintroduction of LTG, she lost $4000–5000, which she concealed. With better seizure control, VPA and GPT were withdrawn, leaving her on LEV and LTG. With increased LTG dosage, she lost $50,000, prompting discovery of her gambling.

1. Introduction

Compulsive gambling has been reported with treatment of Parkinson's disease but not with epilepsy. This report provides the first possible connection between gambling and treatment of epilepsy.

2. Case

A 46-year-old female, diagnosed with idiopathic generalized epilepsy at the age of 18, was first seen in the clinic in 2000, when she had nonconvulsive status epilepticus. She had trialed carbamazepine, valproate (VPA), topiramate, gabapentin (GPT), and lamotrigine (LTG), prior to attending the clinic, to which had been added clobazam without seizure control. Levetiracetam (LEV) was introduced in 2001, at which time she was on VPA and GPT. Lamotrigine was reintroduced in 2006, and both GPT and VPA were stopped in 2009 when her seizure activity was better controlled.

She was known to have a tendency toward excessive behavior (shopping, drinking, and exercising) but this predated her epilepsy. Her father drank alcohol to excess and was largely absent during her childhood. He attempted suicide and was hospitalized, but there was no other premorbid psychiatric history within the family, and the patient was never diagnosed with a mental illness. She did have an eating problem, being overweight with difficulty dieting.

Following the reintroduction of LTG, she initially lost $4000–$5000 in gambling, which she could repay. She had, up to this time, successfully concealed her gambling, but with increased dosage of LTG she lost $50,000 of her family's assets, thereby provoking serious consequences. At the time of discovery, she was on LEV 500 mg II B.I.D. (blood level: 31 mg/L, therapeutic) and LTG 200 mg I mane and II nocte (blood level: 53.6 μmol/L, therapeutic). She was not on dopamine agonists.

3. Discussion

GSK (Glaxo Smith Kline) and UCB (United Chemical Belgium) were contacted, and GSK reported intrusive repetitive behavior (similar to punding) associated with LTG but that there had been no reports of excessive gambling. UCB reported that LEV is associated with depression and other emotional issues, but there are no known cases of gambling with LEV. Evidence of an association between LEV and a genetic variation in dopaminergic activity and hence the risk for psychiatric complications has been previously reported [1]. As it is presumed to be the dopaminergic effect of dopamine agonists that provoke the compulsive gambling in Parkinson's disease, this may offer a plausible explanation in this case.

Dopaminergic medications, in the form of Madopar (L-dopa combined with benserazide), have been trialed in 3 patients with intractable epilepsy, resulting in seizure reduction in 2 patients, thereby suggesting possible reinforcement of the hypothesis of a dopaminergic mechanism of seizure control in idiopathic generalized epilepsy [2,3].

* Corresponding author at: Suite 5, Level 6, 12 Thomas St, Chatswood, NSW 2067, Australia. Fax: +61 2 9413 1353.
E-mail address: roy@royberan.com (R.G. Beran).

2213-3232/$ – see front matter
http://dx.doi.org/10.1016/j.ebcr.2013.11.002

There have been other reports of obsessive behavior with LEV that dissipated upon stopping LEV [4], which also indicates it to be a potential provocateur in this case. Lamotrigine has also been associated with obsessive symptoms, which appeared dose-dependent in one case [5]. In that case, it was hypothesized that LTG inhibited the presynaptic release of glutamate with altered striatal dopamine uptake, which again is relevant to the reputed cause of gambling associated with Parkinson's disease and dopaminergic therapy. Others [6] have also noted the emergence of obsessional behavior in association with LTG and questioned glutamatergic regulation. Animal studies have demonstrated stereotyped behavior provoked by dopaminergic mechanisms induced by LTG. The hypothesis is that LTG may directly stimulate the postsynaptic striatal D2 and D1 dopamine receptors or indirectly release dopamine from the nigostriatal dopamine neurons [7].

These reports, when seen in the context of this patient, raise serious concerns that this patient's gambling behavior may well be AEM-provoked and could be due to either the LTG or the LEV or the combination of both. The emergence of compulsive gambling in Parkinson's disease is a relatively newly recognized phenomenon and has become a major focus of patient monitoring. This patient initially concealed her gambling, and without such behavior being recognized as a possible adverse event of AEMs, it might have remained (and may remain) unexplained.

4. Conclusion

To our knowledge, this case represents the first report of possible compulsive gambling associated with the use of AEMs, either LTG or LEV or their combination. It highlights a potential adverse effect of AEMs that may be more widespread if actively sought as this patient was able to initially conceal it until the problem became unmanageable.

Contributorship statement

Roy G Beran —study concept and design.
Susanne Storrier —acquisition of data.
Susanne Storrier, Roy G Beran —analysis and interpretation.
Roy G Beran —critical revision of the manuscript for important intellectual content.
Roy G Beran —study supervision.

Funding statement

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Financial disclosure

The authors report no disclosures.

Competing interest statement

The authors have no competing interests to report.

References

[1] Helmstaedter C, Mihov Y, Toliat MR, Thiele H, Nuernberg P, Schoch S, et al. Genetic variation in dopaminergic activity is associated with the risk for psychiatric side effects of levetiracetam. Epilepsia 2013;54(1):36–44.
[2] Hodoba D, Santic AM, Schmidt D. Adjunctive Madopar for ultra refractory epilepsy? Preliminary observations. Epilepsy Behav 2013;28:201–2.
[3] Ciumas C, Robins Wahlin TB, Espino C, Savic I. The dopamine system in idiopathic generalized epilepsies: identification of syndrome-related changes. NeuroImage 2010;51:606–15.
[4] Sherer M, Padilla S. A case of obsessiveness induced by levetiracetam in a patient with epilepsy, intellectual disability and pervasive developmental disorder. Ment Health Aspects Dev Disabil 2008;11(1):1–4.
[5] Kuloglu M, Caykoylu A, Ekinci O, Yilmaz E. Lamotrigine-induced obsessional symptoms in a patient with bipolar II disorder: a case report. J Psychopharmacol 2009;23(8):10001–3.
[6] Kemp DE, Gilmer WS, Fleck J, Dago PL. An association of intrusive, repetitive phase with lamotrigine treatment in bipolar II disorder. CNS Spectr 2007;12(2):106–11.
[7] Shinde AR, Shinde RV, Thorat VM, Jadhau SA, Balsara JJ. Effect of lamotrigine on dopamine dependent behaviours in rats. Int J Recent Trends Sci Technol 2013;8(2):138–42.