Possible Addiction Transference From Cocaine Insufflation to Oral Bupropion in Bipolar Patient

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Objective: Alert for the risk of oral bupropion addiction in patients with cocaine dependence.

Methods: Single-case study.

Results: After a period of cocaine and alcohol abstinence, a 42-year-old patient started taking oral bupropion to relieve the symptoms of cocaine craving. He increased the bupropion dose up to 2250 mg/d without seizures.

Conclusion: This case highlights the possibility of oral bupropion addiction after cocaine dependence. To our knowledge, it is the first case in the literature and emphasizes the risk of bupropion's misuse. Therefore, physicians should carefully examine the patient's profile before prescribing it, as well as follow appropriate measures.

Key Words: addiction, bipolar disorder, bupropion, cocaine, prescription drug abuse

(*J Addict Med* 2015;9: 155–156)

CASE

A 42-year-old male patient with a severe case of alcohol and cocaine use disorder was being treated in a day hospital facility. He was diagnosed with bipolar disorder after psychiatric hospitalizations for manic episodes. After 3 years of follow-up, he managed to stop using cocaine and alcohol. His medications included valproic acid 1500 mg/d, risperidone 2 mg/d, bupropion (immediate release) 300 mg/d, and clonazepam 4 mg/d. For his cocaine cravings, he increased the clonazepam to 20 mg/d but discovered that bupropion would manage it much better. He took approximately 2250 mg/d of bupropion for 3 months together with clonazepam 20 mg/d, still having anxiety as a collateral effect but no cocaine craving. He did not crush the bupropion pills because they

were very difficult to break. As soon as he disclosed these facts, the pharmacist of the facility began to supply his medication on a daily basis. On 3 separate occasions, he relapsed and asked for more medication with the excuse he had been robbed or lost the pills. The patient and relatives revealed that he also went to primary care services, with the allegation he had stopped smoking. With the patient's awareness, contacts with these services were made to warn about the situation. When his doctor tried to lower the dose, he said his depressive symptoms reappeared and was afraid to relapse in cocaine. He kept using bupropion 450 mg/d in a harm-reduction rationale. He had no manic features during this period.

DISCUSSION

Bupropion has a cathinone (beta-keto-amphetamine) structure and inhibits the dopamine and norepinephrine transporter very similar to psychostimulants such as methylphenidate or the newly abused cathinone 3,4-methylenedioxymethamphetamine (Simmler et al., 2013). Norepinephrine mostly mediates the psychostimulant and dopamine the reinforcing properties of drugs of abuse (Rothman et al., 2001). Thus, based on its chemical structure and pharmacological properties, bupropion could be expected to exert stimulant-type psychotropic effects and to carry a risk of abuse.

The substance is a relatively weak dopamine and norepinephrine transporter inhibitor in vitro compared with other psychostimulants (Simmler et al., 2013) and typically has no psychostimulant or rewarding effects when used orally and at therapeutic doses in humans. However, this may change when bupropion is administered intranasally (Yoon and Westermeyer, 2013) or in high doses as reported in this case study. In addition, bupropion has been reported to increase subjective self-confidence and activation similar to other psychostimulants such as cocaine in previous cocaine users (Vento et al., 2013). Thus, bupropion may act as a psychostimulant at higher doses or in vulnerable populations.

To our knowledge, this is the first report on the oral use of bupropion that fulfills diagnostic for "Other (or Unknown) substance-related disorders" moderate severity, correlating to 4 criteria of the *Diagnostic and Statistical Manual of Mental Disorders 5* as specified in Table 1. Seizures may not have occurred because of the use of clonazepam and valproic acid. These 2 substances could have allowed the patient to get higher and maybe addictive doses that have not been studied yet because of ethical issues.

This case alerts the need for caution while prescribing bupropion. Special attention is needed with the patient's

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Received for publication January 30, 2014; accepted November 4, 2014.

The authors declare no conflicts of interest.

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ISSN: 1932-0620/15/0902-0155

DOI: 10.1097/ADM.0000000000000098

TABLE 1. DSM-5 Criteria for “Other (or Unknown) Substance-Related Disorders” in This Case

The substance is frequently used in higher quantities than intended
A large amount of time is spent in activities necessary to obtain the substance and its use
Craving for the substance
Substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance (anxiety and risk of seizures)

DSM-5, Diagnostic and Statistical Manual of Mental Disorders 5.

profile (stimulant dependence, history of incarceration, or institutionalization) (Mariani and Levin, 2012, Hilliard et al., 2013). Other measures that may help are explaining the risk of seizures, documenting the amount of pills provided, and prescribing pills exactly until return (Mariani and Levin, 2012).

REFERENCES

- Hilliard WT, Barloon L, Farley P, et al. Bupropion diversion and misuse in the correctional facility. *J Correct Health Care* 2013;19(3):211–217.
- Mariani JJ, Levin FR. Psychostimulant treatment of cocaine dependence. *Psychiatr Clin N Am* 2012;35:425–439.
- Rothman RB, Baumann MH, Dersch CM, et al. Amphetamine-type central nervous system stimulants release norepinephrine more potently than they release dopamine and serotonin. *Synapse* 2001;39:32–41.
- Simmmler LD, Wandeler R, Liechti ME, et al. Bupropion, methylphenidate, and 3,4-methylenedioxypyrovalerone antagonize methamphetamine-induced efflux of dopamine according to their potencies as dopamine uptake inhibitors: implications for the treatment of methamphetamine dependence. *BMC Res Notes* 2013;6:220.
- Vento A, Schifano F, Gentili F, et al. Bupropion perceived as a stimulant by two patients with a previous history of cocaine misuse. *Ann Ist Super Sanità* 2013;49(4):402–405.
- Yoon G, Westermeyer J. Intranasal bupropion abuse. *Am J Addict* 2013;22:180.