

Does Modafinil Produce Euphoria?

TO THE EDITOR: In the March issue of the *Journal*, Stefan P. Kruszewski, M.D. correctly noted that the *Physicians' Desk Reference* lists euphoria among the possible effects of modafinil. Dr. Kruszewski legitimately disagreed with the following statement about modafinil (1): "The medication has not been reported to produce euphoria, and there has been no indication of excessive use or abuse in clinical trials" (p. 549). However, he incorrectly concluded that our group's research on modafinil fails to support the lack of euphoria. We recently reported that modafinil promoted abstinence in cocaine-dependent subjects (N=62) during an 8-week placebo-controlled trial (2). We assessed modafinil abuse/overuse by dispensing a 9-day supply of study medications each week and analyzing pill return rates in the modafinil (N=30) and placebo (N=32) groups. There were no significant differences between the modafinil-treated and placebo-treated groups on pill return rates ($\chi^2=0.01$, $df=1$, $p=0.93$), and the Mann-Whitney test showed no differences between the groups ($z=-0.14$, $p=0.99$) on pill return rates. Cocaine-addicted patients are arguably the most likely to abuse any substance that produces stimulant-like euphoria and are therefore unlikely to return pills that actually produce euphoria. Rather than producing additive euphoria when mixed with cocaine, modafinil blunts cocaine-induced euphoria under controlled laboratory conditions (3, 4).

Modafinil is a schedule IV medication under the Controlled Substances Act and is chemically unrelated to central stimulants. It binds the dopamine transporter with an affinity that is well below that of the unscheduled antidepressant bupropion, also listed as producing euphoria by the *PDR*. Other studies (5) have reported that modafinil did not produce amphetamine-like effects and was indistinguishable from caffeine; that, in comparison with methylphenidate and placebo, modafinil "is not an amphetamine-like agent," (6) and that subjects with a history of heavy cocaine abuse could not discriminate the cocaine-like effects of modafinil under controlled conditions. Only one study reported that women with a history of cocaine dependence (N=12) could discriminate some amphetamine-like effects of modafinil (7). Based on these premarketing studies, the Food and Drug Administration/Drug Enforcement Administration did not schedule modafinil along with methylphenidate and other stimulants in schedule II but rather in the less restrictive schedule IV. Postmarketing surveillance and animal studies suggest that modafinil has little potential for abuse. We therefore believe that modafinil has not been convincingly reported to produce euphoria, and there has been no indication of excessive use or abuse in clinical trials among individuals with cocaine dependence.

References

1. Kruszewski SP: Euphoric and abusive properties of modafinil (letter). *Am J Psychiatry* 2006; 163:549
2. Dackis CA, Kampman KM, Lynch KG, Pettinati HM, O'Brien CP: A double-blind, placebo-controlled trial of modafinil for cocaine dependence. *Neuropsychopharmacology* 2005; 30:205-211
3. Dackis CA, Lynch KG, Yu E, Samaha FF, Kampman KM, Cornish JW, Rowan A, Poole S, White L, O'Brien CP: Modafinil and co-

caine: a double-blind, placebo-controlled drug interaction study. *Drug Alcohol Depend* 2003; 70:29-37

4. Malcolm R, Book SW, Moak D, DeVane L, Czepowicz V: Clinical applications of modafinil in stimulant abusers: low abuse potential. *Am J Addict* 2002; 11:247-249
5. Warot D, Corruble E, Payan C, Weil J, Puech A: Subjective effects of modafinil, a new central adrenergic stimulant in health volunteers: a comparison with amphetamine, caffeine and placebo. *Eur Psychiatry* 1993; 8:201-208
6. Jasinski DR: An evaluation of the abuse potential of modafinil using methylphenidate as a reference. *J Psychopharmacol* 2000; 14:53-60
7. Jasinski DR, Kovacevic-Ristanovic R: Evaluation of the abuse liability of modafinil and other drugs for excessive daytime sleepiness associated with narcolepsy. *Clin Neuropharmacol* 2000; 23:149-156

CHARLES P. O'BRIEN, M.D., PH.D.
CHARLES A. DACKIS, M.D.
KYLE KAMPMAN, M.D.
Philadelphia, Pa.

Physician-Assisted Suicide

TO THE EDITOR: Studies support that psychiatrists' ethical views on physician-assisted suicide clearly affect their clinical understanding of this practice (1). This bias is demonstrated in both the manner in which N. Gregory Hamilton, M.D., and Catherine A. Hamilton, M.A. (2) described cases of physician-assisted suicide and the *Journal* editors' choice to publish the case report. Dr. and Ms. Hamilton stated that the law failed to protect "Kate Cheney, an 85-year-old cancer patient with growing dementia, whose psychiatrist believed she was being pressured by her family. Nevertheless, she was approved for an overdose by a psychologist" (p. 1061). I was the psychiatrist who determined that Ms. Cheney did not meet the requirements of the law, but concern regarding coercion was not the primary basis. This woman had mild, potentially reversible cognitive deficits that interfered with her ability to understand her options. I agreed with the need for a second opinion and assisted in finding a qualified mental health professional to give one. As noted by Grisso and Appelbaum (3), "A key element in attempting to maximize patient performance is delaying the final decision about their capacities...repeat evaluations are often helpful in distinguishing between time-limited and permanent impairments" (p. 92).

A second case mentioned was a patient who, according to Dr. and Ms. Hamilton, "also had been diagnosed with depression" (2, p. 1060) and was given a lethal prescription by Dr. B, "a known assisted suicide activist" (p. 1062). I interviewed (and audiotaped) the internist who made this supposed diagnosis. He clarified that ultimately he did not believe that the patient was depressed. He declined involvement because her "single-mindedness" in obtaining physician-assisted suicide made him uncomfortable. Several other physicians, including a psychiatrist whom I respect and who interviewed the patient and reviewed the case with me, could find no evidence of a DSM-based mood disorder. The only knowledge that Dr. and Ms. Hamilton had of both of these cases appears to be from Oregon newspaper accounts.

I am troubled and perplexed by the *Journal's* choice of this single case report as representative of scientific discourse on