

A rare case of modafinil dependence presenting as sleep disorder

Modafinil, which is commonly used to treat narcolepsy, is also prescribed for some cases of shift-work type sleep disorder. The use of modafinil as a nonmedical cognitive enhancer in otherwise healthy individuals is on the rise, increasing the risk of dependence. A case of modafinil dependence is presented because of its rarity.

A 25-year-old Hindu man, Diploma in Mechanical Engineering working as a machine operator, unmarried, came to the psychiatry outpatient department (OPD) with complaints of excessive sleepiness, lethargy, and decreased concentration for the past 3 years. Symptoms were insidious in the onset and progressed gradually. He was initially diagnosed with narcolepsy by a private psychiatrist and treated with tablet Modafinil 50 mg OD. The patient felt better with the medicine and he gradually increased to 200 mg OD on his own over a period of 1 year due to excess sleep on the previous dose after a few months. During the lockdown, due to the unavailability of his medication and lack of prescription, he approached the psychiatry OPD for a prescription of tablet Modafinil. When informed about the ill effects of long-term modafinil consumption, he kept pleading for the same prescription as before and insisted that no other drug would work. He had no significant past/family history of any psychiatric or medical illnesses. There was no history of substance abuse apart from daily tobacco consumption of one packet. His physical examination was within normal limits. On mental status examination, he was restless, anxious, and mildly irritable and conveyed his mood as “pareshaan.” No features of depression or psychosis were seen. He was admitted tdiagnosis [Figure 1]. The patient was started on tablet

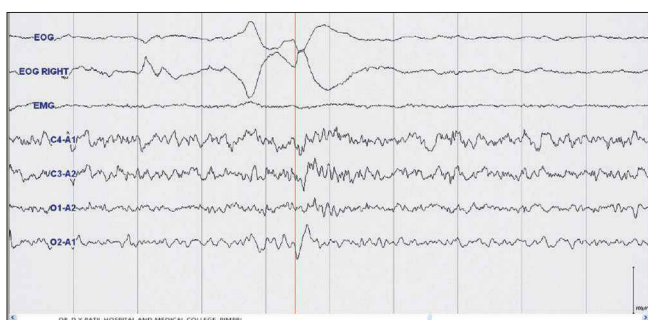


Figure 1: Sleep laboratory recording of the patient showed no abnormalities

ramelteon 8 mg plus tablet zolpidem 5 mg and slowly weaned off of tablet modafinil. On showing significant improvement in the next 2 weeks, he was retrospectively diagnosed as shift-work type Circadian rhythm disorder with modafinil dependence. The patient is currently functional and maintaining well on tablet ramelteon 8 mg HS.

In the literature, only a few cases have been reported on modafinil dependence at higher doses.^[1,2] In our case, the patient on his own decided to consume more tablets to increase the effects derived from modafinil which ultimately resulted independence. Modafinil is believed to act by mechanisms independent of dopaminergic system which is involved in the dependence phenomenon of sympathomimetics and opioids. Hence, modafinil is said to be devoid of addiction potential, but this is under scrutiny. Few studies have reported that modafinil also binds to dopamine receptors and affects dopamine uptake by dopamine transporters in the neurons. Higher doses of modafinil are reported to be a potent reinforcer. Modafinil dependence is ascribed to its dopamine uptake blockade resulting in increased dopamine levels in dopaminergic areas of brain.^[2,3] Animal studies done in mice devoid of dopamine transporters, have shown no effect on the wake-promoting activity of modafinil, further enhancing the belief that it acts through increasing dopamine levels in the brain.^[4] As this is a hypothesis still under evaluation, the postulated low risk of dependence of modafinil may eventually be scrapped altogether.

Our case reinforces the belief that modafinil dependence does occur in higher doses. Modafinil is available over the counter in our country, unlike many other countries where its sale is restricted. There is an urgent requirement of revising the regulation on modafinil sale in India to prevent its abuse.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the legal guardian has given his consent for images and other clinical information to be reported in the journal. The guardian understands that names and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Letter to Editor

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Received: 22 January 2021

Revised: 10 April 2021

Accepted: 02 May 2021

Published: 22 October 2021

REFERENCES

1. Krishnan R, Chary KV. A rare case modafinil dependence. *J Pharmacol Pharmacother* 2015;6:49-50.
2. Kate N, Grover S, Ghormode D. Dependence on supratherapeutic doses of modafinil: A case report. *Prim Care*

Companion CNS Disord 2012;14:PCC.11101333.

3. Myrick H, Malcolm R, Taylor B, LaRowe S. Modafinil: Preclinical, clinical, and post-marketing surveillance--A review of abuse liability issues. *Ann Clin Psychiatry* 2004;16:101-9.
4. Qu WM, Huang ZL, Xu XH, Matsumoto N, Urade Y. Dopaminergic D1 and D2 receptors are essential for the arousal effect of modafinil. *J Neurosci* 2008;28:8462-9.

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Access this article online

Quick Response Code:



Website: www.industrialpsychiatry.org

DOI: 10.4103/0972-6748.328856

How to cite this article: Samudra M, Gupta N, Dhamija S, Chaudhury S, Saldanha D. A rare case of modafinil dependence presenting as sleep disorder. *Ind Psychiatry J* 2021;30:S354-5.

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