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Ismail Akaltun & Tayfun Kara

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CASE REPORT



## Recreational abuse of a prescribed medication by an adolescent with attention deficit hyperactivity disorder

İsmail Akaltun <sup>a</sup> and Tayfun Kara <sup>b</sup>

<sup>a</sup>Department of Child and Adolescent Psychiatry, Gaziantep Dr. Ersin Arslan Training and Research Hospital, Gaziantep, Turkey; <sup>b</sup>Department of Child and Adolescent Psychiatry, University of Health Sciences, Bakirkoy Dr. Sadi Konuk Training and Research Hospital, Istanbul, Turkey

### ABSTRACT

Methylphenidate (MPH) is one of the most commonly used medical therapeutic options in the treatment of attention deficit hyperactivity disorder (ADHD). We discuss a 14-year-old male adolescent started on MPH in therapeutic doses with a diagnosis of ADHD, who then developed euphoria and rapid tolerance, followed by subsequent abuse of medication. The patient and his family both gave written consent for the publication of this report.

### ARTICLE HISTORY

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### KEYWORDS

Methylphenidate; prescription stimulants; attention-deficit/hyperactivity disorder; misuse; recreational drugs

A 14-year-old boy was brought to our clinic by his family due to rapid boredom, excessive talkativeness, forgetfulness, and unwillingness to perform attention-requiring activities. Attention deficit hyperactivity disorder (ADHD) was diagnosed based on Diagnostic and Statistical Manual of Mental Disorders, fifth edition criteria. Behavioural therapy, psychoeducation and OROS MPH 36 mg (12 h of extended release) were started after diagnosis. At follow-up 2 weeks later, increased attention after taking the medication, feelings of happiness and a gradual decrease in the effect of the drug were all reported. The Methylphenidate (MPH) dosage was raised to 54 mg. At follow-up 1 week later, we learned that the patient felt much happier after the increase in the medication dosage and sang songs all the time, but felt worse when the effect of the drug diminished. The length of effect of the medication shortened increasingly, and he began taking MPH several times a day, without his parents' knowledge. MPH was stopped, and atomoxetine was prescribed. The patient objected when he learned that MPH was to be terminated and requested that it be continued, exhibiting highly insistent behaviour. At follow-up 3 weeks after prescription of atomoxetine, attention-related symptoms had decreased, but the patient was still complaining that he needed to use MPH on a continuous basis.

MPH is an amphetamine-type central nervous system stimulant shown to increase intrasynaptic concentrations of noradrenalin and dopamine in the central nervous system. It has been suggested that repeated

and intensive use of MPH results in dependence through stimulation of dopamine D1 receptors in the nucleus accumbens and of the striato-orbitofrontal cortex. It causes intense and euphoric happiness by suddenly raising dopamine levels in the synaptic space. Studies have shown that MPH taken by the venous route very quickly exhibits a similar effect to that of cocaine [1]. There are two forms of abuse, for purposes of cognitive enhancement among students wishing to improve their academic performance, and sometimes for its recreational effect [2]. Levels of prescription of MPH have increased together with the incidence of diagnosis of ADHD in recent years. Since application is predominantly oral, the majority of cases of abuse of MPH are thought to have been for the purpose of increasing attention, motivation, and social and intellectual performance [3]. Abuse of MPH is more commonly seen in adults. Our scan of the literature revealed very few cases of abuse of MPH associated with use in therapeutic doses for the treatment of children and adolescents. In one published case report, Corrigan and Ford described euphoria and a risk of abuse following MPH use in an 11-year-old boy diagnosed with ADHD [4]. Atomoxetine, another agent frequently used in the treatment of ADHD, has a lower potential for abuse and recreational effect compared to MPH [5]. Treatment was also continued with atomoxetine in our case. Although our patient realized its euphoric effect and despite the increase in dosage for purposes of abuse, other side-effects of MPH, such as palpitations,

**CONTACT** Tayfun Kara  [tayfunkara@hotmail.com](mailto:tayfunkara@hotmail.com)  Department of Child and Adolescent Psychiatry, University of Health Sciences, Bakirkoy Dr. Sadi Konuk Training and Research Hospital, Bakirkoy 34147, Istanbul, Turkey

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restlessness, and agitation, were not observed. This raised the question of whether a euphoric effect is more common in patients developing rapid tolerance to and fast metabolization of MPH. In conclusion, we are reporting this case to emphasize the need for clinicians to take greater care in patients using MPH, in terms of both the potential for abuse and the possibility of euphoric effects being observed at therapeutic doses, as in the present case.

### Disclosure statement

No potential conflict of interest was reported by the authors.

### ORCID

Ismail Akaltun  <http://orcid.org/0000-0002-9938-9276>

Tayfun Kara  <http://orcid.org/0000-0002-2156-3457>

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