

# Methylphenidate treatment in an analgesic dependent adolescent with ADHD

Ayşegül Yolga Tahiroğlu<sup>1</sup>, Gonca Gül Çelik<sup>2</sup>, Ayşe Avcı<sup>1</sup>, Canan Kuygun Karıcı<sup>3</sup>

<sup>1</sup>Prof., <sup>2</sup>Assis. Prof., Çukurova University Medical Faculty Child And Adolescent Psychiatry, Adana, Turkey  
<https://orcid.org/0000-0002-3039-2864><https://orcid.org/0000-0001-6101-0796><https://orcid.org/0000-0001-5450-4659>

<sup>3</sup>M.D., Dr. Ekrem Tok Psychiatry Hospital, Child And Adolescent Psychiatry, Adana, Turkey <https://orcid.org/0000-0002-9355-9449>

## TO THE EDITOR

Substance use disorder (SUD) is more common in the attention-deficit hyperactivity disorder (ADHD) group than in the non-ADHD group. There are many explanations about this topic including complex interactions of genetic and environmental factors such as poor judgment or impulsive behavior in social settings, genetic susceptibility such as DRD2 genes, comorbid conduct disorder, and antisocial disorder (1,2).

Some physicians think that methylphenidate (MPH) abuse is an important risk in the treatment of patients with co-morbid ADHD and SUD. Despite the similarity in pharmacologic effects, the rewarding ability and abuse probability of MPH are significantly lower than with cocaine (3,4). Abuse by oral administration of MPH is rare but episodic use, self-administration via smoking or intravenous use can lead to addiction. MPH has been shown to have more abuse potential by cognitive enhancers than patients with ADHD (5-7). Moreover, recent studies have indicated that MPH treatment in childhood reduces the risk of SUD in adult life in individuals with ADHD (1,8).

Although, it is well known that addictive behaviors are common in ADHD, we found no data about non-narcotic analgesic dependency in the ADHD group in the literature. In this study, we present a non-narcotic analgesic-dependent adolescent with ADHD, and discuss the evaluation and treatment processes.

## CASE REPORT

A 13-year-old boy who was a student in the 7th grade with poor academic achievement was brought to our outpatient clinic by his mother. At the first consultation, he reported having only a “simple neck pain.” He gave short answers to questions, avoided eye contact, and seemed reluctant to talk about his pain symptoms. He did not mention the analgesic use and related problems. His mother reported the boy’s frequent analgesic use. The boy answered the question about analgesic use as, “when I don’t take any analgesic drugs, I feel weakness, fatigue, irritability, unwillingness, widespread pain, and concentration difficulties.” Moreover, he wanted to stop taking analgesics, he had tried three times but each attempt had failed. He had taken analgesics such as acetaminophen and non-steroidal anti-inflammatory agents several times per day for a year. Although he had taken analgesics two or three times per week initially, it had gradually increased; he is currently taking three or four analgesics per day.

His parents had limited the boy’s analgesics use since two or three months because they suspected drug abuse. After that, he began buying drugs from pharmacies, and his parents also prevented this by speaking with all pharmacists nearby. After that, he started to steal analgesics from neighbors’ homes and his friends’ bags; he had broken the windows and entered the houses of neighbors. When parents talked to the boy about the problem, he denied it and had temper tantrums. His truancy rate increased, despite there being no problems in previous years. His mother said that he had severe

hyperactivity, oppositional behavior, and inattention problems, especially at school-related activities. His school achievement had gradually decreased, especially after the 4th grade. Although there had been no problems in social interactions and peer relations previously, he had lost his friends gradually.

He was diagnosed as having ADHD according to the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV criteria, and with the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime version (KSADS-PL). The Stroop Color Word test was applied; this test score also supported the diagnosis of inattention. Blood analgesic concentrations were measured three times during the first examination and in the following two months. The acetaminophen blood concentration was found at the therapeutic concentration at the first examination. OROS-methylphenidate 36 mg/day was given and he was followed up at 1-month intervals for the first three months. After one month, it was reported that he had not taken any analgesics, and his blood test to determine analgesic concentrations was negative. At the third examination, his mother reported that his academic achievement had improved, and he had no craving to take analgesic drugs.

## DISCUSSION

There are no currently universally accepted diagnostic criteria for analgesic drug dependency in adolescents. For these reasons, we think that this case may be discussed according to SUD diagnostic criteria (DSM, APA 2013): 1) Tolerance; a need for markedly increased amounts of a substance and/or a diminished effect with continued use of the same amount of the substance. The patient gradually increased taking analgesics from two or three times per week to three or four analgesics per day. 2) Withdrawal; the characteristic withdrawal syndrome for the substance and/or the same or a closely related substance is taken to relieve or avoid withdrawal symptoms. This patient had many symptoms that could be regarded as withdrawal symptoms such as feeling weakness, fatigue, irritability, unwillingness, widespread pain, and con-

centration difficulties. 3) Amount – Duration; the substance is often taken in larger amounts or over a longer period than intended. For one year, the patient had been using increasing doses of analgesics for the problem he described as “a simple neck pain.” 4) Self-control; there is a persistent desire or unsuccessful efforts to cut down or control substance use. The patient also wanted to stop taking analgesic drugs and his three attempts had failed. 5) Spent time; a great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects. He had also displayed these typical behaviors by buying drugs from pharmacies, and stealing analgesic drugs from his neighbors’ homes and his friends’ bags. 6) Social; important social, occupational or recreational activities are given up or reduced because of substance use. Similarly, he got away from his friends, he denied use, and had temper tantrums when his parents talked about it.

Analgesic abuse is a major public health problem, for example with analgesic nephropathy with consequent terminal renal failure, peptic ulcer, anemia, hypertension, ischemic heart disease, and psychiatric manifestations. The rates of daily analgesic use were found to be higher among persons with psychiatric disorders. Additionally, the most common psychiatric diagnoses are depression, personality disorders, and SUD among patients with analgesic dependency [9,10].

Several evidence-based guidelines have suggested that stimulants such as MPH should be the first option for treatment of ADHD. However, ADHD treatment studies typically exclude individuals with SUD. Moreover, some physicians avoid using stimulants because of the common prejudice that stimulants may improve the symptoms of ADHD but it may also worsen the SUD (1). The treatment of this patient was planned based on the results of studies that investigated comorbid ADHD and SUD because of the lack of literature data about the treatment of patients with ADHD with analgesic drug dependency. It was reported that long-acting stimulants had lower potential for abuse, providing safe and effective treatment for patients with co-morbid ADHD and SUD (11-13). In the literature, patients with reported cocaine dependence were treated with MPH and there were dra-

matic improvements in abstinence symptoms, cravings, and other behavioral disturbances associated with cocaine abuse (14,15). Our findings support these previous studies; a significant improvement was observed in the patient's ADHD, analgesic drug dependency symptoms such as craving, abstinence symptoms, and his other behavioral problems.

Although addictive disorders are more frequent in ADHD, there are limited data about the treatment and clinical management of these cases. Treatment of ADHD is important in the prevention of psychopathologies and addiction through a patient's lifetime. As we mentioned in our case, MPH can be effective in both symptoms of ADHD and addictive behaviors.

## Disclosures

The authors have no conflicts of interest to disclose.

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Correspondence address: M.D., Canan Kuygun Karıcı, Dr Ekrem Tok Psychiatry Hospital, Child And Adolescent Psychiatry, Adana, Turkey c\_kuy@hotmail.com

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