

## PAPER DETAILS

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# Methylphenidate-Induced Hyperhidrosis in an Adolescent Boy

## Erkek Bir Ergende Metilfenidat ile İndüklenen Hiperhidrozis

### Abstract

Hyperhidrosis (excessive sweating) is a rarely reported side effect of methylphenidate treatment in young subjects with attention-deficit/hyperactivity disorder. There are few reports of hyperhidrosis associated with methylphenidate overdose in children and adolescents with diagnosis of ADHD. Here we report a case of an adolescent boy who developed hyperhidrosis after taking osmotic-controlled release oral delivery system methylphenidate (Concerta®) for his attention-deficit/hyperactivity disorder.

**Keywords:** Methylphenidate; hyperhidrosis; ADHD; adolescent

### Öz

Hiperhidrozis (aşırı terleme) dikkat eksikliği ve hiperaktivite bozukluğu nedeniyle metilfenidat tedavisi uygulanan çocuklarda nadiren bildirilmiş bir ilaç yan etkisidir. Dikkat eksikliği ve hiperaktivite bozukluğu tanımlı çocuk ve ergenlerde aşırı doz metilfenidat alımına bağlı hiperhidrozis bildirilen birkaç vaka örneği vardır. Bu yazımızda dikkat eksikliği ve hiperaktivite bozukluğunu tedavi için uzun etkili metilfenidat (Concerta®) kullanımı sonrasında hiperhidrozis yan etkisi görülen bir hastayı sunmaktayız.

**Anahtar Sözcükler:** Metilfenidat; hiperhidrozis; DEHB; ergen

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## INTRODUCTION

Hyperhidrosis (excessive sweating) is a rarely reported side effect of methylphenidate treatment in young subjects with attention-deficit/hyperactivity disorder (ADHD) (1,2). There are few reports of hyperhidrosis associated with methylphenidate overdose in children and adolescents with diagnosis of ADHD (3,4). Here we report a case of an adolescent boy who developed hyperhidrosis after taking osmotic-controlled release oral delivery system (OROS) methylphenidate (Concerta®) for his ADHD.

## CASE REPORT

A 13-year-old boy with normal developmental history was diagnosed with ADHD inattentive type. His weight was 44 kg. His treatment was started with 18 mg/d of OROS methylphenidate (MPH). In the next visit, 1 month later, his ADHD symptoms showed mild improvement in parents' and teacher's reports. He generally tolerated medication well without any significant side effect. His medication was increased to 27 mg/d of OROS MPH. His inattention symptoms showed moderate improvement; but he was reported to develop hyperhidrosis (excessive sweating) on his face, upper extremities and trunk, alongside some level of decreased appetite. Despite these side effects, he continued medication until the end of the school year. He was free of medication and there was no hyperhidrosis during 3 months of summer holiday. With the start of the school year the medication was restarted at 27 mg/d dosage. In the next visit, his symptoms showed no further improvement and he developed hyperhidrosis without any other obvious side effect. His medication was increased to 36 mg/d. One month later, his ADHD symptoms and school performance showed significant improvement in parents' and teacher's reports. However, his hyperhidrosis also increased, causing some level of physical and social distress. He had hyperhidrosis regardless of physical activity and had no hyperhidrosis on drug-free weekends. His physical examination and investigation (i.e. blood tests and electrocardiogram) revealed no significant problems. We offered either to discontinue or change the medication or to add another medication to manage hyperhidrosis; but the family preferred to continue the cur-

rent medication until the end of the school year. The boy was suggested some behavioral precautions (such as taking daily showers, changing his underwear or clothes, avoiding exposure to cold weather or wind) to prevent hyperhidrosis-related physical and social distress or risks.

## DISCUSSION

Methylphenidate has been the first-line psychopharmacological treatment in children and adolescents with ADHD and results in significant improvement in 70 to 80% of affected subjects (5). Nausea, decreased appetite, weight loss, and sleep disturbances are among the most frequently reported adverse effects during MPH treatment (5). Besides these common adverse effects, MPH has also been reported to cause some unusual adverse effects such as hallucinations (6), hypersexuality or inappropriate sexual behaviors (7), skin eruptions (8,9), obsessive-compulsive symptoms (10), gynecomastia (11), and painful muscle cramps (12).

Despite the fact that the exact neurophysiological pathways responsible for sweating have not been entirely understood and no clear mechanisms have been suggested for MPH-associated hyperhidrosis, medications that affect norepinephrine and dopamine neurotransmitters can potentially cause sweating abnormalities. In this regard, for example, tricyclic antidepressants such as imipramine, nortriptyline, and amitriptyline can cause hyperhidrosis in up to 14% of patients, probably through the stimulation of peripheral adrenergic receptors (2,13). Although it is not mentioned specifically in the literature, this may also be true for methylphenidate as a norepinephrine and dopamine reuptake inhibitor to cause hyperhidrosis. A literature review has showed that there are few reports of hyperhidrosis associated with MPH toxicity or overdose in children diagnosed with ADHD (2,3). Despite the previous studies reporting hyperhidrosis associated with MPH toxicity or overdose (2,3), it may be important to note that this side effect can occur at routine treatment dosage as in our case. Assessment with Naranjo causality scale revealed a score of 7, showing probable causality (14). Clinicians should be aware of this possible side effect while treating chil-

dren with ADHD. Because this side effect may cause physical and social discomfort, it may pose some health risks and complicate treatment compliance.

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