

# Atomoxetine-Related Hair Loss in a Teenager: A Case Report

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## ÖZET:

Bir ergende atomoksetin kullanımı ile ilişkili saç dökülmesi: Bir olgu bildirimi

Atomoksetin dikkat eksikliği hiperaktivite bozukluğu tedavisinde stimulan olmayan, noradrenalin geri alım inhibisyonu yapan yeni bir tedavi seçeneğidir. Atomoksetinin klinik kullanımı sırasında en çok karşılaşılan yan etkiler; baş ağrısı, karın ağrısı, iştah azalması, halsizlik, bulantı, kusma ve baş dönmesidir. Bu olgu sunumunda, atomoksetin başlanması ardından özgeçmişinde ve aile öyküsünde olmadığı halde, yaygın saç dökülmesi gözlenen bir erkek ergeni bildiriyoruz. Bildiğimiz kadarıyla, bu olgu sunumu atomoksetin ile ilişkili saç dökülmesi bildiren ikinci bildirimdir.

**Anahtar sözcükler:** Atomoksetin, saç dökülmesi, yan etki

**Klinik Psikofarmakoloji Bülteni 2010;20:258-260**

## ABSTRACT:

Atomoxetine-related hair loss in a teenager: a case report

Atomoxetine, a selective norepinephrine inhibitor, was introduced as a safe non-stimulant alternative treatment for attention deficit hyperactivity disorder. In the clinical practice common side effects of atomoxetine are headache, abdominal pain, decreased appetite, fatigue, nausea, vomiting and dizziness. Here, we present an adolescent male who developed diffuse alopecia under atomoxetine treatment with no personal and family history of alopecia. To our knowledge, this is the second report of a causal connection between atomoxetine intake and hair loss.

**Key words:** Atomoxetine, hair loss, side effect

**Bulletin of Clinical Psychopharmacology 2010;20:258-260**

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Kabul tarihi / Date of acceptance: 11 Haziran 2010 / June 11, 2010

## Bağıntı beyanı:

M.F.C., Ö.Y.: Yazarlar bu makale ile ilgili olarak herhangi bir çıkar çatışması bildirmemişlerdir.

## Declaration of interest:

M.F.C., Ö.Y.: The authors reported no conflict of interest related to this article.

## INTRODUCTION

Scalp hair grows in cycles and each hair follicle undergoing 10 to 30 cycles in lifetime. Diffuse hair shedding is the result of a disruption of one phase of the hair cycle. The anagen phase (active hair growth) can last 2 to 8 years, the catagen phase (involution) lasts 4 to 6 weeks, and the telogen phase (resting) lasts 2 to 3 months. The exogen phase (the release of dead hair) coincides with the end of the telogen phase. Most people have about 100,000 scalp hairs, and normally 10% to 15% of these are in the telogen phase. Shedding of 100 to 150 telogen hairs per day is normal. Anagen hair loss is never normal (1). The most common type of diffuse shedding is telogen effluvium, in which anagen-phase hair follicles prematurely transition to the telogen phase, resulting in a noticeable increase in hair shedding at the end of the telogen phase 2 to 3 months later. Telogen effluvium is a sign of an underlying condition. Triggers of diffuse telogen hair loss include physiological stress, emotional stress, drugs, medical conditions and dietary deficiencies (2).

Hair loss as a consequence of a medical treatment is a well-known side effect. One of the most common causes

of alopecia is the use of certain chemotherapeutic drugs. But, antithyroid drugs, anticoagulants, triparanol, lithium and the antiepileptics or the analogues of vitamin A may produce a diffuse alopecia (3).

Hair loss is a rare side effect of psychotropic agents (4). For this reason, usually physicians don't ask this side effect and usually miss out. Although patients notice this side effect, they usually don't connect hair loss with the drug they use. For these reasons, the real prevalence of hair loss due to psychotropic drugs is not obvious (5).

Here, we present an adolescent who developed diffuse alopecia under atomoxetine treatment with no personal and family history of alopecia. Afterwards, atomoxetine was discontinued and hair loss resolved within three-weeks.

## CASE

A 13-year-old boy was referred to our outpatient clinic with complains of easily distracted, day-dreaming, not finishing work, difficulty listening, jumping from one activity to another, often talks excessively for about eight years. He was worrying about his school performance;

also he had social phobic traits at the school. He was shy in the interview. He appeared to show no signs of elevated or depressed mood and psychosis. He had normal physical examination and no history of significant medical illness. The Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version (K-SADS-PL) (6) was conducted and diagnosed with attention deficit hyperactivity disorder (ADHD) according to DSM-IV criteria (7). His symptoms of shyness and symptoms of performance anxiety didn't meet social phobia or other anxiety disorders diagnostic criteria. He was 156 cm tall and weighed 45 kg. As our case had anxious traits, we chose to begin atomoxetine 25 mg/day for ADHD as medical treatment. And after ten days atomoxetine dose was increased to 40 mg/day. Symptoms of attention deficit and school behavior problems were dramatically reduced on this regimen but his anxiety slightly increased. He was more irritable and nervous. Approximately two weeks after starting atomoxetine he and her mother noticed that more scalp hair appeared in his comb and pillow daily. He has noted diffuse alopecia over one month period since then. Scalp pain didn't accompany with his nonscarring hair loss. He was not taking any other medications and had no history of allergies. In his personal and familial history, there was no history of hair loss at early ages. He was consulted to the Dermatology Clinic, and he was diagnosed with hair loss with the unknown cause. Complete blood count, biochemical analysis, thyroid function tests, vitamin B12, folic acid, ferritin, serum iron and total iron-binding capacity, serum zinc, copper levels, HBsAg, anti-HBs, HBe Ag, anti-HBc IgG, anti-HBc IgM, CMV IgM, EBV IgM revealed no abnormality. Because the drug-related event was suspected, atomoxetine was discontinued and hair loss resolved within three-weeks. After three weeks later, for the reason he had anxious features accompanying ADHD, imipramine at the dose of 35 mg/day was continued. We are managing ADHD symptoms with the same dose of imipramine for the last six months with no signs of hair loss.

## DISCUSSION

Hair loss perceives an undesirable effect, resulting in poor compliance and hence therapeutic failures. Alopecia is simply defined as any type of hair loss. The alopecias are conventionally grouped into non-scarring and scarring

categories. Non-scarring alopecias may be localized or diffuse. Alopecias induced by drugs are generally characterized by a diffuse, nonscarring hair loss and by its reversibility after stopping the treatment. Dosage reduction, drug discontinuation, or pursuing therapy with another agent remains the most promising management option for hair loss.

Normally, everyone loses about 50-150 hairs per day, and these hairs are replaced by new ones. However, aging, genetic predisposition, and hormonal changes may contribute to gradual hair thinning and hairline recession. For this reason clinicians couldn't presume all hair loss cases as pathological. It is important to learn personal hair loss and hair cycle pattern, before diagnosing a pathology (8).

It is difficult to diagnose hair loss due to drug use; there is no special method for the certain diagnosis. The only way to diagnose is discontinuing medication and close observation of hair renovation. The recurrence of hair loss, when turned to same drug, is the certain finding of drug induced hair loss. (5,9). For the differential diagnosis it is necessary to consider trichotillomania, hypothyroidism, hyperthyroidism, hormonal pathologies of hypothalamic-pituitary-gonadal axis, iron, copper, zinc deficiencies and to investigate the use of other drugs (antihypertensives, anticoagulants, anticonvulsants, non-steroidal anti-inflammatory drugs, antiulcer agents) related with hair loss (10). For this reason the other organic conditions associated with hair loss must be eliminated. In our case, we eliminated organic conditions that can cause hair loss. Then we discontinued medication, to observe hair loss is whether due to atomoxetine or not.

Pathological mechanism of hair loss due psychotropic drugs hasn't yet to be fully elucidated. Drug-induced alopecia is a rare adverse effect reported in a limited number of psychotropic medications such as, lithium, valproic acid, venlafaxine, fluoxetine and sertraline (11-14). In few case reports alopecia due to stimulants like methylphenidate (15,16) and amphetamines (17) have been reported which have similar effects with atomoxetine, an alternative non-stimulant drug, in ADHD treatment.

The relationship between emotional stress and hair loss is difficult to ascertain, and hair loss itself is stressful to the patient (18). Historically, acute reversible hair loss occurring with great stress has been reported (19). However, the relationship between chronic diffuse hair loss and psychological stress is controversial (18,19). Although atomoxetine is often chosen in the treatment

of ADHD when it is comorbid with anxiety disorders (20), sometimes atomoxetine can increase anxiety and experienced stress, defiance, tantrums, aggression, and irritability (21) due to his noradrenergic arousal and alertness effects (22). Also reported direct toxic effects of psychotropic drugs to the hair follicle matrix (23) must be considered for the reason of hair loss in this case.

Common adverse events of atomoxetine include headache, abdominal pain, decreased appetite, vomiting, somnolence, and nausea (24). To date, dermatological side

effects like atopic dermatitis associated with atomoxetine have been reported (25). Dittmann et al. (2009) reported one case of adolescent alopecia, possibly related to atomoxetine treatment (0.6%) in their research study with a large sample size (n=159). In that case, alopecia led to discontinuation of atomoxetine treatment like in our case (26). To our knowledge this is the second report which connects hair loss with atomoxetine. Patients and clinicians should be aware of alopecia or hair loss as a possible but very rare side effect of atomoxetine treatment.

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