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Case report

TRICHOTILLOMANIA IN A 4-YEAR-OLD CHILD MIMICKING ALOPECIA AREATA

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Abstract

Introduction: Trichotillomania is an obsessive-compulsive-related disorder classified in the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5). It is characterized by self-induced, chronic, repetitive hair pulling resulting in nonscarring alopecia, particularly in pediatric patients, where it is frequently under-recognized.

Case report: We report the case of a 4-year-old boy presenting with a more than one-year history of a persistent alopecic patch on the scalp. Eight months earlier, the patient had been diagnosed with alopecia areata and treated with topical corticosteroids and calcineurin inhibitors for several months, without clinical improvement. Dermatological evaluation revealed an irregular, nonscarring alopecic area located on the vertex of the scalp. Routine laboratory investigations, including thyroid function tests, were within normal limits, and microbiological examinations were negative. Detailed heteroanamnesis obtained from the mother disclosed long-standing repetitive hair pulling and twisting before falling asleep. Correlation of clinical findings with behavioral history and exclusion of other causes of nonscarring alopecia led to the diagnosis of trichotillomania. Management included parental counseling and cognitive-behavioral therapy focused on habit reversal, without pharmacological treatment, resulting in progressive improvement and near-complete hair regrowth during follow-up.

Conclusion: Trichotillomania in childhood may clinically mimic several conditions, including alopecia areata, tinea capitis, traction alopecia, telogen effluvium, and other causes of pediatric nonscarring alopecia. This case emphasizes the importance of recognizing trichotillomania as a distinct cause of pediatric nonscarring alopecia. Careful anamnesis and early identification of hair-pulling behaviors are essential to ensure appropriate behavioral management and to avoid unnecessary pharmacological or immunosuppressive treatments.

Keywords: trichotillomania, hair pulling disorder, pediatric nonscarring alopecia, traumatic alopecia, alopecia areata

Introduction

Trichotillomania (TTM; hair-pulling disorder) in the pediatric population is an under-recognized and underreported dermatopsychological condition, characterized by recurrent, irresistible urges to pull one's own hair from hair-bearing areas, resulting in noticeable hair loss[1,2-7]. The term was first introduced in 1889 by François Henri Hallopeau[8,9]. Etymologically, it derives from Greek: *thrix* ("hair"), *tillein* ("to pull"), and *mania* ("madness")[9].

According to the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5), published by the *American Psychiatric Association* (APA), TTM is classified within obsessive-compulsive and related disorders[2,4,5,7]. It is defined by: (1) recurrent hair pulling resulting in hair loss; (2) persistent attempts to reduce or stop the behavior; (3) clinically significant distress or impairment in social, occupational, or other important areas of functioning; (4) hair pulling or hair loss not attributable to another medical condition; and (5) hair pulling not better explained by the symptoms of another mental disorder[5,7]. Obsessive-compulsive disorder (OCD), body dysmorphic disorder (BDD), and excoriation disorder may co-occur with TTM[7,9]. Other body-focused repetitive behaviors (BFRBs), such as skin picking, nail biting, lip chewing, and thumb sucking, may also be present[3-5,9].

Hair-pulling behavior can be either automatic or focused[3,4,9]. Automatic pulling occurs outside of full awareness and is more common in younger children[3,4,9]. Focused pulling is intentional, often triggered by negative emotions, and is more frequently observed in older children and adolescents[3,4,9]. It is typically preceded by rising internal tension or urges, with attempts to resist, followed by a sense of relief or pleasure after hair removal[3,4,9].

Clinically, TTM presents as nonscarring alopecia, often with irregular, patchy areas showing variable hair shaft lengths due to breakage[1,7,10]. Although initially noncicatricial, chronic, repetitive hair pulling can lead to permanent follicular damage[1,9,10]. The scalp is the most frequently affected site, followed by the eyebrows and eyelashes, while less commonly involved areas include facial hair, pubic hair, and other body hair[1,3,7]. Severity ranges from mild to severe, with extensive hair loss and significant psychosocial impairment in chronic cases[8,9]. The *National Institute of Mental Health Trichotillomania Severity Scale for Children* (NIMH-TSS-C) is commonly used to assess symptom severity in pediatric populations[8,9].

We report a case of TTM initially misdiagnosed as alopecia areata (AA), highlighting the importance of considering TTM among the various causes of pediatric nonscarring alopecia and the need for careful clinical assessment to ensure an accurate diagnosis and appropriate management.

Case report

A 4-year-old boy presented with a persistent alopecic patch on the scalp for over one year. Eight months prior to the current evaluation, he had been diagnosed with AA and treated with topical clobetasol propionate 0.05%, applied once daily to the affected scalp area, together with pimecrolimus 1% cream, applied twice daily. At six-week follow-up, no significant clinical improvement was observed, prompting diagnostic reassessment. Careful history-taking with the mother subsequently revealed repetitive hair-pulling behavior, including wrapping and twisting the hair around his fingers, particularly before sleep. No preceding stressful events or identifiable psychosocial triggers were reported. There was no family history of TTM or OCD. The history of repetitive hair manipulation raised suspicion of TTM.

Dermatological examination revealed a solitary alopecic patch located in the vertex region of the scalp. The lesion was irregular in shape with poorly defined borders and showed incomplete hair loss with hairs broken at different lengths, without evidence of scarring, erythema, or scaling (Figure 1). The hair pull test was negative. Surrounding scalp skin appeared normal.

Laboratory investigations, including complete blood count, inflammatory markers, iron status, and thyroid function tests, were all within normal ranges. Bacteriological and mycological cultures of scalp swab specimens were negative. Direct microscopic examination of scalp hair and scales using potassium hydroxide (KOH) preparation also yielded negative results.

The diagnosis of TTM was established based on the characteristic clinical presentation, detailed heteroanamnesis revealing repetitive hair-pulling behavior, exclusion of other causes



Fig. 1. Irregular alopecic patch with broken hairs of varying lengths



Fig. 2 Marked hair regrowth on previously affected areas

of nonscarring alopecia, and the lack of response to conventional treatment for AA.

The parents were counseled regarding the nature of the condition and the importance of behavioral modification. Behavioral therapy incorporating habit-reversal training (BT-HRT) was provided by a child psychiatrist. No pharmacological treatment was initiated. At 3-month follow-up, progressive clinical improvement was observed, with near-complete resolution of the alopecic area and significant hair regrowth (Figure 2).

Discussion

The etiology of TTM remains incompletely understood and is considered multifactorial, involving genetic susceptibility, neurobiological mechanisms, including abnormalities in cortico-striato-thalamo-cortical (CSTC) circuits and serotonergic and dopaminergic dysregulation, psychological vulnerability, and environmental influences[1-5]. Psychological vulnerability in TTM involves difficulties in emotion regulation, heightened stress sensitivity, and maladaptive coping[1,9]. Hair pulling may help regulate negative emotions, including fear, anger, loneliness, boredom, guilt, frustration, shame, and low self-esteem, while temporary emotional relief reinforces the behavior through negative reinforcement[1,4,9]. Environmental factors interact with these vulnerabilities, particularly in pediatric populations[1,4]. Identified triggers include family-related stressors (parental divorce, separation, birth of a sibling, sibling rivalry), school-related stressors (learning difficulties, bullying, strained teacher-student relationships), recent illness, hospitalization, concerns about appearance, and experiences of physical or sexual abuse[1,4].

In our patient, there was no family history of TTM or identifiable genetic predisposition, and no specific environmental stressor was identified. The hair-pulling behavior occurred before sleep, potentially reflecting an automatic or habitual pattern during relaxation rather than a deliberate response to emotional distress[1,4].

The diagnosis of TTM is primarily clinical and relies on a detailed history, examination of the pattern of hair loss, and consideration of alternative causes of nonscarring alopecia[3,4]. In preschool children, repetitive hair-pulling behaviors may be difficult to identify, as children may lack awareness of the behavior or the ability to describe the circumstances in which it occurs[3]. Consequently, caregiver information is particularly important[3]. Trichoscopy may be helpful in diagnostically uncertain cases, while scalp biopsy is rarely required[3,6,8]. Neither was performed in this case, as the clinical findings and history of repetitive hair-pulling supported the diagnosis. The main differential diagnoses include AA, telogen effluvium, traction alopecia, and tinea capitis[3,4,9]. In the present case, AA was initially diagnosed, but the lack of response to topical immunosuppressive therapy and the mother's report of hair-pulling behavior before sleep supported the subsequent diagnosis of TTM[3,4]. Tinea capitis was excluded by negative KOH examination and fungal culture. Traction alopecia was less likely due to the absence of clinical signs of traction, while telogen effluvium was inconsistent with the irregular patch shape with hairs of varying lengths, rather than diffuse shedding.

Following diagnosis, assessment for trichophagia (ingestion of pulled hair) is essential due to the risk of trichobezoars (hair masses accumulating in the gastrointestinal tract), which may cause obstruction and require surgery[4,9,10]. In our case, no signs of trichophagia or gastrointestinal complications were observed.

Management of TTM can be challenging due to the lack of standardized treatment guidelines, particularly in preschool children, and requires a multidisciplinary approach involving dermatologists, pediatricians, and psychiatrists[2,7]. The focus of therapy should be on psychological counseling to support both the child and the family throughout the course of the disorder[7-10]. BT-HRT is strongly recommended as the first-line intervention and focuses on identifying triggers, increasing awareness of hair-pulling behavior, and developing competing responses, supported by motivational strategies and family involvement[7-10]. In our case, BT-HRT was implemented as the primary therapeutic approach, adapted to the child's developmental stage. Other approaches include acceptance and commitment therapy (ACT), which promotes psychological flexibility, dialectical behavior therapy (DBT), which targets emotional regulation and distress tolerance, and acceptance-enhanced behavioral therapy (AEBT), which combines HRT with acceptance-based strategies[7-10]. Mindfulness-based interventions and progressive muscle relaxation may serve as complementary techniques for improving awareness of urges and managing stress[7-10]. Response inhibition training is a

computerized adjunct targeting impulse control[7-10]. Psychodynamic therapy may also be considered to explore underlying emotional conflicts, although evidence for these alternative approaches, particularly in preschool children, remains limited[7-10]. Treatment should therefore be individualized according to developmental abilities, with family involvement playing an important role[7-10].

Pharmacological options may be considered in selected cases and include tricyclic antidepressants (TCAs, e.g., clomipramine), selective serotonin reuptake inhibitors (SSRIs), antipsychotics (e.g., olanzapine), and opioid antagonists (e.g., naltrexone)[7,8]. In addition, N-acetylcysteine (NAC), a derivative of the amino acid cysteine, has been proposed as an effective treatment by modulating extracellular glutamate levels in the nucleus accumbens, and milk thistle, as an alternative herbal remedy, through its antioxidant and immune-modulating silymarin compounds, has shown promising outcomes[7,10]. However, evidence for pharmacological interventions in the pediatric population is limited, and currently, no drug has been specifically approved by the *Food and Drug Administration* (FDA)[1,7]. In our case, no pharmacological treatment was initiated, and successful management relied only on behavioral therapy.

Conclusion

This case highlights the importance of differentiating TTM from other causes of pediatric nonscarring alopecia, including AA, tinea capitis, traction alopecia, and telogen effluvium. Early recognition of hair-pulling behaviors and careful clinical assessment are essential to ensure appropriate behavioral management and to avoid unnecessary pharmacological or immunosuppressive treatments. Optimal care also requires attention to coexisting psychosocial factors and collaboration between dermatology and behavioral therapy specialists, allowing for a personalized, multidisciplinary management plan. These findings further underscore the need for continued research into the pathophysiology and treatment strategies for TTM in preschool children.

Conflict of interest statement. None declared.
Written consent of the patients was obtained.

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