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Moth-Eaten Alopecia of the Scalp and Beard as a Manifestation of Secondary Syphilis: A Diagnostic Challenge

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ABSTRACT

Syphilis, caused by Treponema pallidum, remains a diagnostic challenge because of its highly variable clinical manifestations that often mimic other dermatologic conditions. We report a case of secondary syphilis presenting with moth-eaten alopecia of the scalp and beard in a middle-aged man. The condition was initially mistaken for alopecia areata, delaying effective treatment. Trichoscopy showed nonspecific findings, but serologic testing confirmed the diagnosis. Benzathine penicillin therapy led to progressive hair regrowth and clinical resolution. This case underscores the importance of considering syphilis in the differential diagnosis of nonscarring alopecia and highlights the role of serology in avoiding misdiagnosis, unnecessary treatments, and ongoing disease transmission.

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Introduction

Syphilis remains a major global health concern, with a resurgence in incidence reported in recent years across both high- and low-resource settings [1]. Caused by the spirochete Treponema pallidum, syphilis has long been called "the great imitator" due to its ability to mimic a wide variety of dermatological and systemic conditions [2].

Syphilitic alopecia (SA) is a rare but distinct manifestation of secondary syphilis, reported in approximately 2.9-7% of patients [3,4]. The alopecia is nonscarring, often patchy, and classically described as "moth eaten," with small, irregular, poorly defined areas of hair loss [5]. While the scalp is most frequently affected, SA may also involve other hair-bearing sites such as the eyebrows, axillae, trunk, and rarely, the beard [6].

Because SA can closely mimic more common conditions, particularly alopecia areata (AA), tinea capitis, and trichotillomania, the diagnosis is often overlooked. Misdiagnosis may result in inappropriate treatment, unnecessary investigations, and delayed management of syphilis, with ongoing risk of transmission.

Here, we report a case of secondary syphilis presenting with moth-eaten alopecia involving both the scalp and beard, highlighting the clinical and trichoscopic features, diagnostic pitfalls, and importance of considering syphilis in the differential diagnosis of alopecia.

Case Presentation

A 47-year-old man presented with progressive patchy hair loss affecting the scalp and beard over a five month period. He denied systemic complaints such as fever, malaise, or arthralgia. Past medical history was unremarkable. The patient reported unprotected sexual intercourse with a single partner during the previous year. He had previously been treated with topical corticosteroids for suspected alopecia areata, but without improvement.

On examination, multiple irregular, poorly demarcated, nonscarring alopecic patches were noted on the temporal scalp (Figure 1) and beard area (Figure 2). The underlying skin was normal, without erythema, crusting, or scarring. In addition, a faint, nonpruritic exanthem was observed on the chest area, consisting of multiple pink to erythematous, blanchable, and non-scaly macules, some of which were confluent in places and had gone unnoticed by the patient (Figure 3). Neither the palms, soles, nor mucous membranes were involved, and no lymphadenopathy was detected.

Trichoscopy revealed decreased hair density with multiple short regrowing vellus hairs of varying lengths, along with a few broken shafts and empty follicular openings (Figure 4). No erythema or scaling was observed. Characteristic features of alopecia areata, such as exclamation-point hairs, yellow dots, or black dots, were absent, as were findings suggestive of tinea infection. Although these observations were nonspecific, they helped exclude other causes of nonscarring alopecia and raised suspicion for syphilitic alopecia. Laboratory studies, including complete blood count, thyroid-stimulating hormone, and ferritin, were within normal limits. Fungal cultures and Wood's lamp examination were negative. Given the lack of trichoscopic features consistent with alopecia areata and the clinical suspicion of an alternative diagnosis, serological testing for syphilis was performed. The

Venereal Disease Research Laboratory (VDRL) test was strongly reactive at 1/64, and the T. pallidum hemagglutination assay (TPHA) was positive at 1/10240. HIV and hepatitis B/C serologies were negative. A diagnosis of secondary syphilis with syphilitic alopecia was established. The patient and his partner received counseling, and intramuscular benzathine penicillin G (2.4 millions IU weekly for three weeks) was administered per institutional protocol. Clinical and serological follow-up were scheduled. At early follow up, the patient showed start hair regrowth of scalp and beard, with a significant decline in VDRL titers. No adverse events were observed.

Discussion

Syphilitic alopecia (SA) is a distinctive but often underrecognized manifestation of secondary syphilis. First described by McCarthy in 1940, it is traditionally classified into three patterns : the moth-eaten patchy alopecia, a diffusé thinning resembling telogen effluvium, and a mixed presentation combining both features [1]. The moth-eaten variant, as illustrated in our case, is the most frequent and carries a strong diagnostic value because of its irregular, sharply demarcated patches that mimic other nonscarring alopecias.

The exact pathogenesis of SA remains debated. Some authors attribute hair loss to a direct inflammatory effect of Treponema pallidum on the follicle, while others suggest an indirect mechanism involving systemic inflammation and altered hair cycling [2,3,5]. Regardless of the mechanism, the clinical presentation is typically nonscarring and reversible after appropriate antibiotic treatment.

Although SA occurs in approximately 4% of secondary syphilis cases, it remains rare but clinically important. While typically involving the scalp, it can extend to other hair-bearing areas, including the beard, axillae, trunk, and legs, which can complicate the diagnosis [3]. The differential diagnosis includes alopecia areata, tinea capitis, and trichotillomania. Syphilitic alopecia shares some clinical and histopathological features with alopecia areata, but the presence of exclamation mark hairs distinguishes alopecia areata from SA. Fungal testing helps differentiate SA from tinea capitis, and clinical history along with trichoscopic findings can help distinguish it from trichotillomania [4].

Trichoscopy has become an increasingly valuable diagnostic tool in hair disorders, although the features of SA remain nonspecific. Ye et al. reported that SA may present with decreased hair density, short regrowing hairs, and absence of broken hairs, findings that overlap with other alopecia types [4].

Resolution of syphilitic alopecia typically occurs within three months of appropriate antibiotic therapy. Intramuscular benzathine penicillin remains the treatment of choice for immunocompetent patients [5]. The epidemiological context further amplifies the importance of recognizing SA. The global resurgence of syphilis over the past decade has been well documented, with significant increases in incidence particularly among young adults [5,6]. Consequently, dermatologists and non-dermatologists alike are more likely to encounter atypical or misleading presentations. In this regard, scalp and beard involvement in the same patient, as reported here, is rare but highly evocative, and should always prompt a syphilis serology test.

Failure to recognize syphilitic alopecia may delay treatment, increase the risk of transmission, and lead to unnecessary investigations or therapies. This highlights the necessity of maintaining a high index of suspicion in young patients presenting with sudden-onset patchy alopecia, especially when accompanied by other subtle signs of secondary syphilis.

Conclusion

Syphilitic alopecia is an uncommon yet diagnostically significant manifestation of secondary syphilis that may affect both the scalp and beard. Its striking similarity to alopecia areata and other nonscarring alopecias highlights the importance of maintaining a high index of suspicion, especially in sexually active patients with patchy hair loss unresponsive to conventional therapy. Trichoscopy, while not pathognomonic, can be helpful: the absence of specific findings suggestive of alopecia areata, should raise suspicion for syphilitic alopecia. Early recognition through serological testing ensures timely antibiotic treatment, partner management, and interruption of transmission, reinforcing the importance of this diagnosis for both patient care and public health.

Disclosures

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Author Contributions

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