



Young man with unexplained hair loss

Topical antifungals had failed to improve the patchy hair loss on this patient's head. The pattern of the alopecia and a closer look at his history provided valuable diagnostic clues.

A 21-YEAR-OLD HISPANIC MAN sought care at our dermatology clinic because he was concerned about the patchy hair loss on his scalp that had begun 4 months earlier (FIGURE). His primary care physician had prescribed topical antifungals for presumed seborrheic dermatitis with no effect.

Three months prior to his visit with us, the patient had also seen his primary care

physician for a nonspecific exanthema. It was presumed to be a viral exanthem and spontaneously resolved.

- WHAT IS YOUR DIAGNOSIS?
- HOW WOULD YOU TREAT THIS PATIENT?

Jeffrey Kinard, DO;
Kathy Tieu, MD, FAAD;
Sandra Kimmer, MD,
MPH

Aviano Air Base, Italy (Dr. Kinard); Clinical Skin Center of Northern Virginia, Fairfax (Dr. Tieu); Fort Belvoir Community Hospital, VA (Dr. Kimmer)

jeffrey.kinard.1@us.af.mil

DEPARTMENT EDITOR

Richard P. Usatine, MD
University of Texas Health Science Center at San Antonio

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FIGURE

Patchy alopecia on patient's scalp



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Alopecia in a “moth-eaten” pattern is a less common finding of secondary syphilis.

Diagnosis: Secondary syphilis

Our patient’s “moth-eaten” alopecia—an uncommon sign of syphilis—heightened our suspicion of this sexually transmitted infection and prompted us to ask additional questions about his sexual history. We learned that our patient had engaged in unprotected sex with a male partner approximately 6 months prior to his unusual hair loss. Shortly after that encounter, the patient went to his primary care physician for screening of sexually transmitted diseases after his partner had complained of a new lesion on his penis. At that screening, our patient was tested for chlamydia, gonorrhea, herpes simplex virus (HSV), and human immunodeficiency virus (HIV), and was given a rapid plasma reagin (RPR) test. He was positive only for HSV-1.

■ **How “the great imitator” presents.** A solitary painless genital ulcer marks the first (primary) stage of infection with the spirochete *Treponema pallidum* (TABLE¹⁻³). Secondary syphilis results from the hematogenous or lymphatic spread of the *Treponema pallidum* spirochete, and often results in dermatologic findings that mimic numerous other conditions. Patients may also experience fever and myalgia. Typically, secondary syphilis lesions are pink and scaly 1 to 2 cm patches, which generalize in 80% of patients.² Alopecia in a “moth-eaten” pattern is an uncommon finding of secondary syphilis, and should prompt a thorough sexual history.

While syphilis can be diagnosed by direct detection of the treponemal spirochete under dark-field microscopy, it is usually identified by one of 2 quick and inexpensive serologic screening tests: an RPR or a venereal disease research laboratory (VDRL) test. These tests can be positive as early as 7 days after the appearance of the original chancre. Due to the possibility of a false positive result caused by a viral infection, tuberculosis, or connective tissue diseases, confirmatory testing with fluorescent treponemal antibody absorption (FTA-ABS) or a *Treponema pallidum* hemagglutination assay (TPHA) is necessary.²

Our patient initially had several false negative RPR tests. His RPR at the time of his visit to our dermatology clinic was also negative. This was due to the prozone phenomenon,

which occurs when a high antibody titer interferes with the formation of an antigen-antibody lattice, which is needed for a positive flocculation test. The incidence of this phenomenon ranges from 0.2% to 2%,¹ and it is commonly reported with HIV coinfection and pregnancy. If syphilis is suspected in a patient, a negative RPR should prompt requests for the laboratory to dilute the patient’s serum to ensure that the prozone phenomenon does not result in a false negative.

Because we highly suspected syphilis in our patient, we requested his serum be serially diluted. The final RPR titer was positive (1:128), and a confirmatory FTA-ABS was also positive.

Rule out these other potential causes of hair loss

The differential diagnosis for syphilis alopecia includes alopecia areata, telogen effluvium, trichotillomania, and tinea capitis.

■ **Alopecia areata** is characterized by the rapid loss of sharply defined round/oval areas of hair, and is often seen in children and young adults with a family history of autoimmune disorders.⁴ Topical or intralesional steroid injections are used for treatment, although the condition can self-resolve.

■ **Telogen effluvium** is sudden diffuse hair loss following a major stressor (such as childbirth, a “crash” diet, or severe illness).⁴ The hair loss often stops when the underlying event has passed.

■ **Trichotillomania** is recurrent hair pulling that results in patches of hair loss with irregular and angulated borders.⁴ Treatment usually consists of behavioral modification and psychotherapy.

■ **Tinea capitis** is caused by the invasion of hair shafts by fungal hyphae. Findings range from small, round, scaly areas of alopecia to large, inflamed, boggy lesions (kerions). Fungal hyphae are visible on a potassium hydroxide preparation. Treatment includes oral antifungals and topical selenium sulfide or ketoconazole shampoo.^{2,4}

Treat with penicillin

Treatment at any stage is important to prevent further progression and central nervous

TABLE

The stages of syphilis at-a-glance¹⁻³

Stage	Timing	Exam findings	Treatment
Primary	10-90 days after exposure (average 21 days)	Solitary painless genital ulcer	Penicillin G 2.4 million units IM one time Penicillin allergic: Doxycycline 100 mg orally twice daily OR tetracycline 500 mg orally 4 times daily; both for 2 weeks
Secondary	Approximately 6 weeks after appearance of chancre; lasts 2-10 weeks	An influenza-like syndrome, nonspecific rashes that generalize and disappear, "moth-eaten" hair loss, lesions on palms and soles	See primary stage treatment Penicillin allergic: See above
Latent	<i>Early:</i> ≤2 years from primary infection <i>Late:</i> >2 years	No symptoms with positive serologic testing	<1 year from primary infection: See primary stage treatment >1 year from primary infection: 2.4 million units penicillin G, given IM every week for 3 weeks
Tertiary	Generally 1-10 years after initial infection	Cardiovascular and central nervous involvement with systemic granulomas (gummas)	2.4 million units penicillin G, given IM every week for 3 weeks

IM, intramuscular.

system or cardiac dissemination. The initial treatment for either primary or secondary (<1 year) syphilis is one injection of penicillin G 2.4 million units intramuscularly (IM). When treating symptoms of more than a year's duration, the injection is repeated once a week for 3 consecutive weeks. For patients who are allergic to penicillin, oral doxycycline 100 mg twice daily or tetracycline 500 mg 4 times daily can be used for 2 weeks.³

■ Our patient received a single dose of

penicillin G 2.4 million units IM. The result was complete resolution of his alopecia. He was retested at 6 months and there was an appropriate drop in titer. Infectious disease specialists were notified on the day of diagnosis, and the patient's partner was also contacted for testing and treatment. Both patients were counseled on safe sex practices. **JFP**

CORRESPONDENCE

Jeffrey Kinard, DO, 31 AMDS/SGPF, APO, AE, 09604; jeffrey.kinard.1@us.af.mil.

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