



Pruritic rash on trunk

The patient had been treated with topical antifungals and steroids without relief, but a more detailed history suggested a serious infectious etiology.

A 48-YEAR-OLD HISPANIC MAN came into our dermatology clinic with a 2-month history of a pruritic rash that was confined mainly to the trunk. Prior to this visit, he had tried topical corticosteroids and antifungals, but they had not helped.

His trunk showed erythematous macules and reticulate patches with interspersed thin urticarial plaques without scale (FIGURE). Given that the patient had no vesicles or li-

chenification (which one would expect with eczematous dermatitis) and that the topical steroids did not provide any relief, we performed a biopsy.

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

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The authors reported no potential conflict of interest relevant to this article. The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the Department of Defense.

FIGURE

Erythematous macules and reticulate patches without scale



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After further investigation, the patient revealed a history of unprotected sex with multiple women.

Diagnosis: Secondary syphilis

Our patient's punch biopsy showed an unremarkable epidermis but a superficial perivascular infiltrate. On higher magnification, the infiltrate proved to be predominately plasma cells. After further investigation and interview, the patient revealed a history of unprotected sex with multiple women; his rapid plasma reagin (RPR) was elevated with a titer of 1:256. Specific treponemal antibody tests confirmed the diagnosis of syphilis. The patient's human immunodeficiency virus (HIV) test was negative.

Syphilis, a systemic disease with varied dermatological findings, has been described as "the great imitator." Although it is on the list of differential diagnoses for multiple conditions, it is rarely the culprit—especially given how uncommon it has become in 20th century medicine. With the worldwide HIV epidemic, safe sex programs effectively dropped the incidence of primary and secondary syphilis in the United States to the lowest in recorded history in the year 2001 at 2.17/100,000.¹

More recently, however, this infection appears to be making a comeback. Beginning in 2002, its incidence started to rise, reaching 4.6/100,000 in 2009.¹

■ **Secondary syphilis usually appears 6 to 8 weeks** after the appearance of the primary chancre. As the pathogen spreads into the bloodstream, a host of systemic symptoms may occur, including an influenza-like illness of body aches, fever, fatigue, and headache. While the exanthem of secondary syphilis is traditionally described as a nonpruritic, papular eruption involving the trunk, extremities, face, palms, and soles, a number of cutaneous manifestations are possible, including localized alopecia and syphilids.² In addition, a number of atypical cases are described in the literature, although none has described an urticarial variant, as seen in our case.

The differential included urticaria and lupus erythematosus

The differential diagnosis for our patient included urticaria, telangiectasia macularis eruptiva perstans, subacute cutaneous lupus

erythematosus, and mycosis fungoides. All of these conditions can be distinguished from secondary syphilis by serology and/or biopsy.

■ **Urticaria** is a common dermatologic problem with numerous etiologies. It presents as pruritic raised edematous erythematous wheals that blanch with pressure. Although it affects 15% to 25% of the general population at least once in their lives,³ it may progress to life-threatening anaphylaxis. Isolated acute urticaria usually responds to oral antihistamines.

■ **Telangiectasia macularis eruptiva perstans** is a form of cutaneous mastocytosis that appears as persistent macules that are red to brown and may exhibit telangiectasia.⁴ Systemic disease may be evaluated using serum tryptase levels. Patients without systemic disease are managed with oral antihistamines.

■ **Subacute cutaneous lupus erythematosus (SCLE)** often presents precipitously as erythematous maculopapular lesions that may coalesce into annular or papulosquamous plaques.⁵ It has a predilection for sun-exposed areas and is more common in women.⁵ Multiple drugs have been associated with SCLE, including phenytoin, calcium channel blockers, and thiazide diuretics.⁶ Treatment consists of discontinuing the offending drug (if one is identified), avoiding (or protecting against) sun exposure, and using topical corticosteroids, oral corticosteroids, and/or antimalarials.

■ **Mycosis fungoides** is a form of primary cutaneous T-cell lymphoma that more commonly affects males.⁷ It begins as erythematous pruritic patches that typically involve the sun-spared areas of the lower abdomen and proximal extremities; it progresses slowly.⁷ As lesions develop into plaques, they may appear psoriasiform. Treatment depends on the stage of the disease and ranges from topical corticosteroids to systemic radiation and chemotherapy.⁸

Serology greatly aids diagnosis

If syphilis is not treated during the primary stage, it may progress directly into latency or into the second stage of infection. Preventing progression into late findings hinges upon proper diagnostics. While the initial suspicion should begin with history and physi-

TABLE

Syphilis treatment by stage of infection¹²

| Stage | Time since exposure | Treatment |
|------------------------------|--|--|
| Primary | 10-90 days | Adults Benzathine penicillin G 2.4 million units IM in a single dose Children Benzathine penicillin G 50,000 units/kg IM up to the adult dose of 2.4 million units in a single dose |
| Secondary | 4-10 weeks | Adults See above Children See above |
| Early latent | After primary or secondary stages, <1 year | Adults See above Children See above |
| Late latent | >1 year of no symptoms | Adults Benzathine penicillin G 7.2 million units total, administered as 3 doses of 2.4 million units IM each at 1-week intervals Children Benzathine penicillin G 50,000 units/kg IM up to the adult dose of 2.4 million units, administered weekly for 3 weeks |
| Tertiary | Months to years | Adults See above |
| Neurosyphilis (at any stage) | Any time after infection | Aqueous crystalline penicillin G 18-24 million units/d, administered as 3-4 million units IV every 4 hours or continuous infusion, for 10-14 days Alternative Procaine penicillin 2.4 million units IM once daily <i>plus</i> probenecid 500 mg orally 4 times a day, both for 10-14 days |

IM, intramuscular; IV, intravenous.

cal examination, serology is most frequently used to confirm the presence of *Treponema pallidum*.

It may take as long as 3 weeks after the appearance of the primary chancre for serology to become positive.⁹ During this interval, directly visualizing the pathogen via dark-field microscopy may be useful. Following this interval, nontreponemal serology such as the RPR and venereal disease research laboratory (VDRL) are frequently used as the initial serology. These rapid tests detect the antibody to cardiolipin and are relatively inexpensive.

Infection is confirmed with specific treponemal tests, including the fluorescent treponemal antibody absorption (FTA-abs), treponemal enzyme immunoassay, and

treponemal particle agglutination tests. These tests are specific for *T pallidum* and confirm a positive RPR or VDRL. However, specific treponemal tests will not differentiate syphilis from nonvenereal treponematoses such as Bejel, Yaws, and Pinta.¹⁰

The common belief is that nontreponemal tests may become negative after successful treatment, and treponemal tests will remain positive indefinitely after successful treatment. However, a study found that 28% of patients treated during primary syphilis and 44% of patients treated during secondary syphilis had positive nontreponemal tests 3 years after treatment.¹¹ In the same study, nearly a quarter of patients treated during primary syphilis no longer had positive FTA-abs 3 years after treatment.¹¹

CONTINUED

Penicillin remains the first-line treatment

Once the presence of *T pallidum* is confirmed, treatment depends on the stage of infection (TABLE). In nonallergic patients, benzathine penicillin G is the standard of care. It should be administered as a single intramuscular (IM) dose of 2.4 million units during primary, secondary, and early latent syphilis¹² (strength of recommendation [SOR]: C). Late latent and tertiary syphilis require 3 to 4 weeks of penicillin therapy that is usually achieved with 3 weekly IM injections of 2.4 million units benzathine penicillin G¹² (SOR: C). Owing largely to the selective permeability of the blood-brain barrier, neurosyphilis requires a larger dose of 3 million to 4 million units intravenous aqueous crystalline benzathine penicillin every 4 hours for 10 to 14 days¹² (SOR: C).

Penicillin desensitization should be considered in penicillin-allergic patients, particularly in those who are pregnant or have HIV infection.¹²

Treatment success can be determined by a 4-fold decline in RPR/VDRL titer over a period of 3 to 6 months after treatment. During the first 24 hours after initial treatment, patients may develop an acute febrile illness known as the Jarisch-Herxheimer reaction. This is largely the result of massive lysis of the pathogen, spilling large quantities of inflammatory cytokines into the bloodstream.¹³

Our patient's symptoms resolved with penicillin

Given the nebulous history of exposure, we treated the patient as having late latent syphilis (rather than secondary syphilis) and administered 2.4 million units benzathine penicillin G IM weekly for 3 weeks. After this treatment course, the pruritic lesions resolved and the patient's RPR titer dropped to 1:8 in 3 months.

Our case demonstrates a unique atypical presentation of secondary syphilis. To our knowledge, there is no mention of secondary syphilis mimicking urticaria in the literature. The pruritus that accompanied the lesions was also atypical; however, one study noted 42% of patients experience this symptom in secondary syphilis.¹⁴ Fortunately, serological studies confirmed the diagnosis and the patient's symptoms resolved with standard therapy. JFP

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Strength of recommendation (SOR)

- A** Good-quality patient-oriented evidence
- B** Inconsistent or limited-quality patient-oriented evidence
- C** Consensus, usual practice, opinion, disease-oriented evidence, case series

> To our knowledge, there is no mention of secondary syphilis mimicking urticaria in the literature.

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