Thick Scaly Plaques on the Wrists, Knees, and Feet

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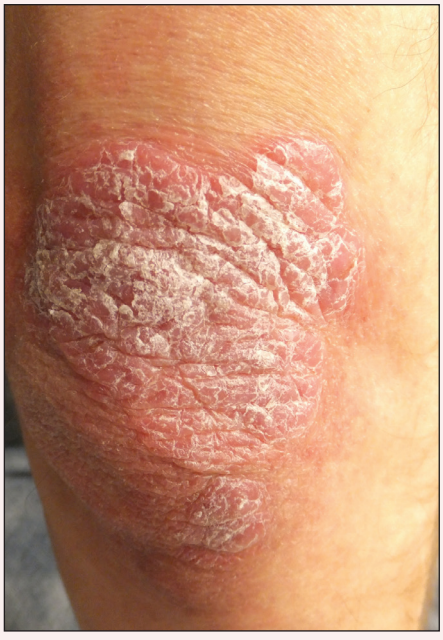

A 34-year-old man presented with thick scaly plaques on the wrists, knees, and feet of 2 years' duration. He had seen several dermatologists, and despite the use of topical steroids, he had no improvement.

What's the diagnosis?

a. eczema
b. lichenoid drug eruption
c. lichen planus
d. psoriasis vulgaris
e. secondary syphilis

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The authors report no conflict of interest.
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The Diagnosis: Secondary Syphilis

Syphilis, known as the great mimicker, has a wide-ranging clinical and histologic presentation. There can be overlapping features with many of the entities included in the differential diagnoses. As our patient exemplifies, clinicians and pathologists must have a high index of suspicion, and any concerning features should lead to a more in-depth patient history, spirochete stains, and serologic testing.

Our patient was seen by several dermatologists over the course of 2 years and therapy with topical steroids failed. He was eager to pursue more aggressive therapy with methotrexate, and a punch biopsy was performed to confirm the diagnosis of psoriasis prior to initiating treatment. Hematoxylin and eosin staining results on low power can be seen in Figure 1A. Medium-power view demonstrated vacuolar interface dermatitis (Figure 1B) with psoriasiform epidermal hyperplasia with slender elongation of rete ridges; neutrophils in the stratum corneum; endothelial cell swelling (Figure 1C); and mixed infiltrate with high plasma cells (Figure 1D), lymphocytes, and histiocytes. Although the biopsy results were psoriasiform, there was high suspicion for syphilis in this case. Additional staining for spirochetes was performed with syphilis immunohistochemical stain[1] (Figure 2), which revealed spirochetes present on the patient's biopsy, confirming the diagnosis of syphilis. Warthin-Starry stain also can be performed to confirm the diagnosis.

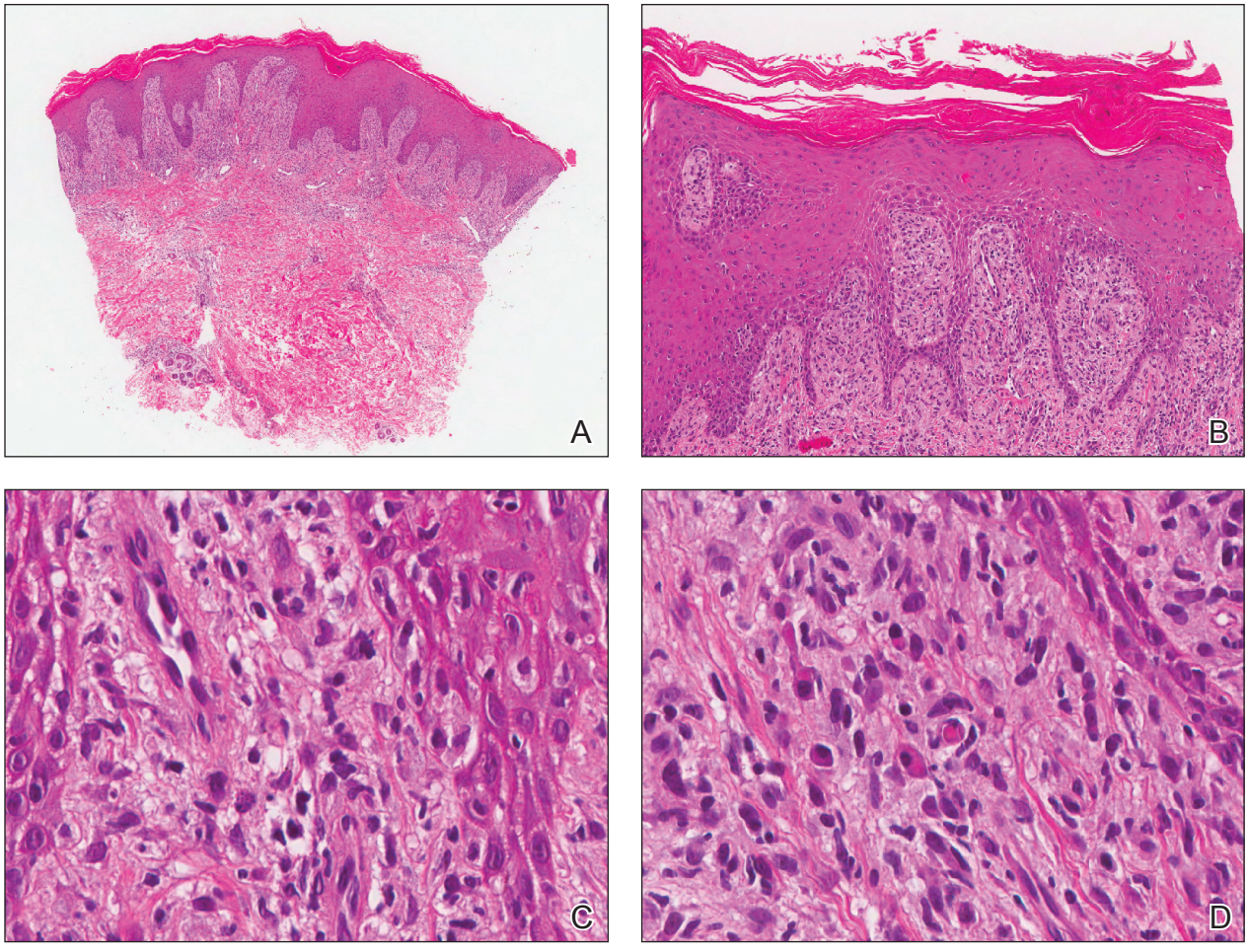

Figure 1. Punch biopsy results revealed psoriasiform epidermal hyperplasia (A)(H&E, original magnification ×100), vacuolar interface dermatitis (B)(H&E, original magnification ×200), and endothelial cell swelling (C)(H&E, original magnification ×400). High plasma cells can be seen within the mixed infiltrate (D)(H&E, original magnification ×400).

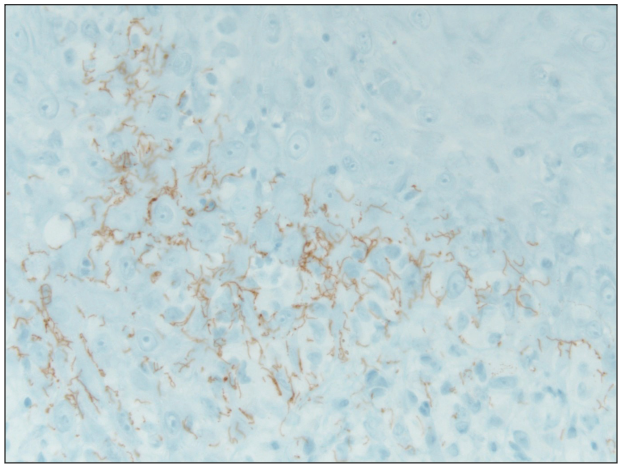

Figure 2. Immunohistochemistry for *Treponema pallidum* revealed an infiltrate of spirochetes (original magnification ×400).

Based on histologic features, the differential diagnosis includes psoriasis vulgaris, eczema, lichen planus, or lichenoid drug eruption. Psoriasis vulgaris displays regular psoriasiform epidermal hyperplasia with hypergranulosis and confluent parakeratosis. The elongated rete pegs are broad rather than slender.[2] Neutrophils are present in the stratum corneum. In contrast, eczematous dermatitis is characterized by epidermal hyperplasia, spongiosis, parakeratosis, and eosinophils. Lichen planus classically displays a brisk bandlike lymphocytic infiltrate that closely abuts or obscures the dermoepidermal junction. Parakeratosis, neutrophils, and eosinophils should be absent. The rete pegs taper to a point, similar to a sawtooth, while they are long and slender with syphilis, similar to an ice pick. Although lichenoid drug eruption presents with interface dermatitis, parakeratosis, and eosinophils, the epidermis is hyperplastic without the slender elongation of rete pegs seen in syphilis.

Further workup with serologic testing demonstrated that the patient had a syphilis IgG titer of greater than 8.0 (reactive, >6.0), indicating the patient had been infected.[3] Reactive syphilis IgG, a specific treponemal test, should be followed with a nontreponemal assay of either rapid plasma reagin (RPR) or VDRL test to confirm disease activity, according to recommendations from the Centers for Disease Control and Prevention,[4] which represents a change to the traditional algorithm that called for screening with a nontreponemal test and confirming with a specific treponemal test. The patient had a positive RPR and quantitative RPR titer was found as 1:2048, indicating that syphilis was active or recently treated. Testing for human immunodeficiency virus (HIV) revealed a quantitative RNA polymerase chain reaction of 145,000 copies/mL and a CD4 count of 18 cells/μL (reference range, 533–1674 cells/μL).

The patient initially was treated for latent syphilis with 3 doses of intramuscular penicillin G benzathine 2.4 million U once weekly for 3 weeks. Due to his high RPR titers and low CD4 count, a lumbar puncture was later pursued, which revealed positive results from a cerebrospinal fluid (CSF)–VDRL test, confirming a diagnosis of neurosyphilis. Although a positive CSF-VDRL test is specific for the diagnosis of neurosyphilis, the sensitivity of the CSF-VDRL test against clinical diagnosis is only 30% to 70%.[5] Intravenous aqueous penicillin G 4 million U every 4 hours was started for 14 days for neurosyphilis. One month following the completion of the intravenous penicillin, the rash completely resolved. The patient was in a 10-year monogamous relationship with a man and did not use condoms. Typically, signs and symptoms of secondary syphilis begin 4 to 10 weeks after the appearance of a chancre. However, the classic chancre of primary syphilis among men who have sex with men may go unnoticed in those who may not be able to see anal lesions.[6] Also, infection with syphilis increases the likelihood of acquiring and transmitting HIV. All patients diagnosed with syphilis should have additional testing for HIV and other sexually transmitted diseases.

For patients with a history of thick scaly plaques on the wrists, knees, and feet resistant to topical steroid therapy, dermatologists should maintain a high index of clinical suspicion for syphilis.

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