

A pemphigus-like presentation of secondary syphilis



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INTRODUCTION

Syphilis is known as the *great mimicker* because of its variable clinical manifestations. Diffuse symmetric papulosquamous eruption is the most common presentation of secondary syphilis.¹ Skin bullae and vesicles have been reported in the congenital form but, to our knowledge, have not been previously documented in adults. We report an adult male with secondary syphilis presenting with pemphigus-like lesions.

CASE REPORT

An 18-year-old African American man with Fitzpatrick skin type V and a past medical history of atopic dermatitis presented to the emergency department with a rash that started approximately 4 days earlier on the buttocks and subsequently spread to the rest of the body. The rash was pruritic and burning, with a clear exudate. He reported blurry vision lasting for approximately 1 month, bilateral knee pain, and malaise. He denied fevers, chills, chest pain, loss of hair, cough, sore throat, headache, or shortness of breath and had no history of herpetic oral lesions, dysuria, penile discharge, or recent international travel. He acknowledged being sexually active with 1 same-sex partner but denied that his partner had any similar lesions. The patient denied taking any medication, including recreational drugs.

On physical examination, there were diffuse eroded erythematous scaly plaques with scalloped borders, as well as several vesicles and bullae on his arms, trunk, penis, buttocks, and legs (Fig 1, A-D). The patient's palms and soles showed scales with subtle dusky purpuric macules (Fig 1, E and F). No

Abbreviations used:

Dsg: desmoglein
 PCR: polymerase chain reaction
 RPR: rapid plasma reagin

intraoral lesions were noted. Diagnostic cultures and serologic tests were performed, including rapid plasma reagin (RPR), fluorescent treponemal antibody absorption, chlamydia DNA polymerase chain reaction (PCR), gonorrhea DNA PCR, HIV, herpes simplex virus, and viral and bacterial cultures. Anti-desmoglein (Dsg)/indirect immunofluorescence, enzyme-linked immunosorbent assay for IgG against serum Dsg1 and Dsg3, and cutaneous immunofluorescence were performed, the results of which were all found to be within normal ranges. A 4-mm punch biopsy of perilesional vesicular skin from the upper medial portion of the right thigh was submitted for treponemal immunohistochemistry staining. Ocular examination ruled out ophthalmic manifestations of neurosyphilis. The patient was treated with 1 dose of intramuscular penicillin G benzathine. On follow-up examination, he showed improvement of his symptoms, and all lesions appeared to be healed, with postinflammatory hyperpigmentation.

Serum workup gave the following results:

- Serum testing resulted in reactive RPR, RPR titer/fluorescent treponemal antibody absorption of 1:128, and reactive *Treponema pallidum* particle agglutination.
- Dsg1: 3 (normal is < 18 U/ml)
- Dsg3: 1 (normal is < 19 U/ml)

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Fig 1. Clinical pictures of dermatologic presentation to the emergency department. **A**, Eroded erythematous scaly plaques with scalloped borders and a few vesicles on the posterior upper portion of the left arm. **B**, Eroded erythematous scaly plaques with scalloped borders and a few vesicles on the right buttock. **C**, Eroded bullae and erythematous scaly plaques with scalloped borders and a few vesicles on the right leg. **D**, A close-up image of a vesicle with surrounding erythema on the upper portion of the left thigh. **E** and **F**, Dusky violaceous macules with subtle desquamation on the palms and soles.

- Cutaneous immunofluorescence results:
 - Cell surface antibody IgG: negative
 - Basement membrane IgG: negative
 - Monkey esophagus: negative
 - Human salt-split IgG: negative

Fig 2 shows H&E staining of the 4-mm punch biopsy sample from the medial posterior portion of the right thigh, and Fig 3 shows the results of immunohistochemistry staining for *T pallidum*.

At a follow-up visit 2 months after the initial workup, the patient's lesions were resolving, with diffuse postinflammatory hyperpigmentation. No new lesions have been noted since treatment. Follow-up RPR titer was 1:8.

DISCUSSION

Syphilis is diagnostically challenging because of its diverse dermatologic presentations, which can mimic other diseases. Our case, in which a patient presented with bullae and vesicles, illustrates an

additional variant of syphilis that closely simulates diseases such as pemphigus and bacterial superinfections such as impetigo. The atypical presentations of syphilis can mislead the clinician and delay medical workup, diagnosis, and treatment. There is a rare variant of syphilis known as *syphilitic pemphigus*² that primarily presents with bullous lesions on the palms and soles. However, our adult male patient presented with pemphigus-like skin lesions that included vesicles and bullae on the torso, which have not previously been reported in secondary syphilis. These lesions are morphologically similar to pemphigus foliaceus, and the histopathology resembled pemphigus vulgaris. The serum workup showed no correlation with any pemphigus diseases.

Secondary syphilis is diagnosed based on positive serologic test results. Biopsy of syphilitic lesions with immunohistochemistry staining for *T pallidum* helps dermatologists with the diagnosis. In our patient, the immunohistochemistry stain result was negative,

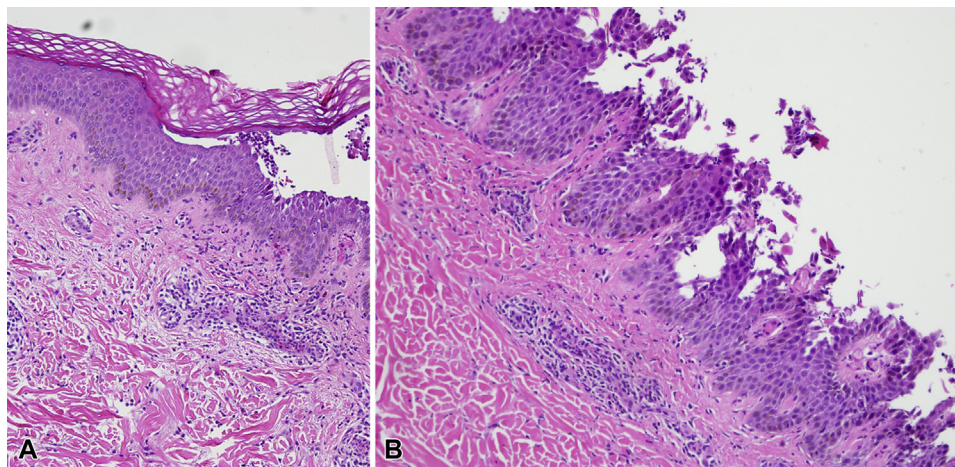


Fig 2. **A** and **B**, H&E of a 4-mm punch biopsy sample from the medial posterior portion of the right thigh, showed a subcorneal acantholytic vesicle containing neutrophils. The underlying superficial dermis contains a perivascular infiltrate of lymphocytes, neutrophils, and occasional eosinophils. Differential diagnoses included pemphigus foliaceus, subcorneal pustular dermatosis, IgA pemphigus, bullous impetigo, and acute generalized exanthematous pustulosis.

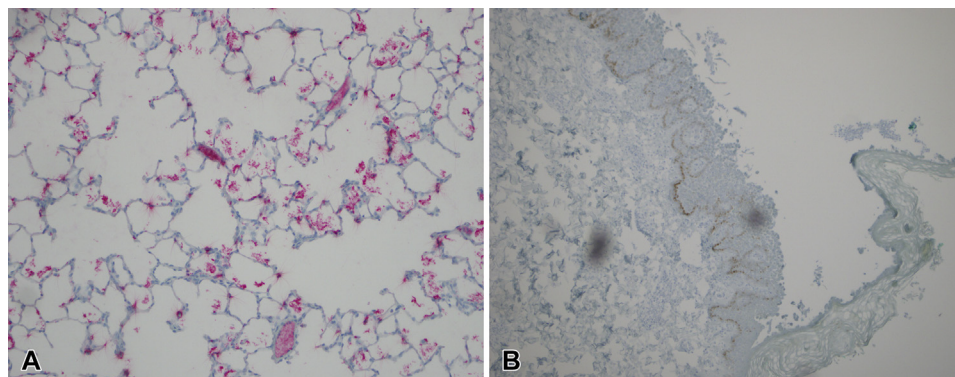


Fig 3. The result of immunohistochemistry staining for *Treponema pallidum* was negative. **A**, Laboratory positive control sample. **B**, Patient sample.

which was inconsistent with the serologic data. However, in a comparative study by Müller et al³ of *T pallidum* using immunohistochemistry, PCR, and focus-floating microscopy, 55% of samples tested positive with the immunohistochemistry detection technique for secondary syphilis, which was less than with PCR and focus-floating microscopy. That study suggests that the detection of *T pallidum* by immunohistochemistry is not the most sensitive approach. Another study⁴ that compared immunohistochemistry and PCR techniques for the detection of *T pallidum* showed false negative results, despite the high sensitivity of immunohistochemistry ranging from 74% to 94%. Sensitivity was 92% when both immunohistochemistry and PCR were combined.

Staphylococcus and *Streptococcus* species are bacteria that can cause superinfections on the skin

that manifest as impetigo. The clinical manifestation of impetigo usually present as nonbullous or bullous forms. Characteristically, they appear as 2- to 4-mm vesicles or pustules that progress to the typical honey-crusted papules. They could also present as small vesicles that enlarge to 1- to 2-cm bullae and progress into eroded scaly lesions. The clinical presentation of the lesions from our patient also simulated lesions that present in impetigo. This motivated us to obtain a bacterial culture of a pustule to rule out this differential diagnosis; the culture result was negative.

Rarely, congenital syphilis can present with acantholytic lesions. In a case report by Kim et al,² congenital syphilis has presented as a generalized bullous and pustular eruption with desquamation at birth. Similar to our patient, they also visualized neutrophilic infiltration on dermatopathology

analysis. It is possible that the same process occurs in some patients with adult syphilis, similar to lesions found in congenital bullous syphilis. For example, a case report by Miller⁵ described a 37-year-old man with a pustular lesion on his penile shaft that tested positive for *T pallidum*. The rare manifestation of pustular secondary syphilis also presented itself in 3 individual patients.⁶ Another case report by Mignogna et al⁷ described anti-Dsg/indirect immunofluorescence and enzyme-linked immunosorbent assay for IgG against Dsg1 and Dsg3 in an adult patient who had secondary syphilis with oral pemphigus vulgaris–like lesions. In our patient, the skin lesions and dermatopathologic analysis showed a pemphigus-like presentation of secondary syphilis. This case focuses on the possibility that some cases of adult bullous disease diagnosed as an autoimmune mucocutaneous blistering disease, such as pemphigus vulgaris, may be misdiagnosed and may represent secondary syphilis.

REFERENCES

1. de Carvalho Fagundes FN, Simos JP, Pereira Magnago AG, de Sousa Brito Xavier MH. Annular and arcuate syphilis: an uncommon presentation of disseminated secondary syphilis. *Dermatol Online J*. 2018;24(4):1-4.
2. Kim JK, Choi SR, Lee HJ, Kim DH, Yoon MS, Jo HS. Congenital syphilis presenting with a generalized bullous and pustular eruption in a premature newborn. *Ann Dermatol*. 2011;23(Suppl 1):S127-S130.
3. Müller H, Eisendle K, Bräuninger W, Kutzner H, Cerroni L, Zelger B. Comparative analysis of immunohistochemistry, polymerase chain reaction and focus-floating microscopy for the detection of *Treponema pallidum* in mucocutaneous lesions of primary, secondary and tertiary syphilis. *Br J Dermatol*. 2011;165:50-60.
4. Buffet M, Grange PA, Gerhardt P, et al. Diagnosing *Treponema pallidum* in secondary syphilis by PCR and immunohistochemistry. *J Invest Dermatol*. 2007;127(10):2345-2350.
5. Miller RL. Pustular secondary syphilis. *Br J Vener Dis*. 1974;50:459-462.
6. Kazlouskaya V, Wittmann C, Tsikhanouskaya I. Pustular secondary syphilis: report of three cases and review of the literature. *Int J Dermatol*. 2014;53:e428-e431.
7. Mignogna MD, Fortuna G, Leuci S, Mignogna C, Delfino M. Secondary syphilis mimicking pemphigus vulgaris. *J Eur Acad Dermatol Venereol*. 2009;23(4):479-480.