

# Back to Basics: An Uncommon, Unrelated Presentation of a Common Disease

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A 30-year-old man presented for evaluation of a cough productive of green sputum, along with mild chest discomfort, malaise, and generalized myalgia.



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**T**he early initial ulcerative lesion (chancre) caused by *Treponema pallidum* infection, has a median incubation period of 21 days (primary syphilis). When untreated, second-

ary syphilis will develop within weeks to months and is characterized by generalized symptoms such as malaise, fevers, headaches, sore throat, and myalgia. However, the most characteristic finding in secondary syphilis remains a rash that is classically identified as symmetric, macular, or papular, and involving the entire trunk and extremities, including the palms and soles.

When secondary syphilis is left untreated, late syphilis or tertiary syphilis can develop, which is characterized by cardiovascular involvement, including aortitis, gummatous syphilis (granulomatous nodules in a variety of organs but typically the skin and bones), or central nervous system involvement.<sup>1-3</sup> The following case describes a patient with nondescript symptoms, including malaise and cough, who had a characteristic rash of secondary syphilis that was diagnosed and treated in our Houston-area community hospital.

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## Case

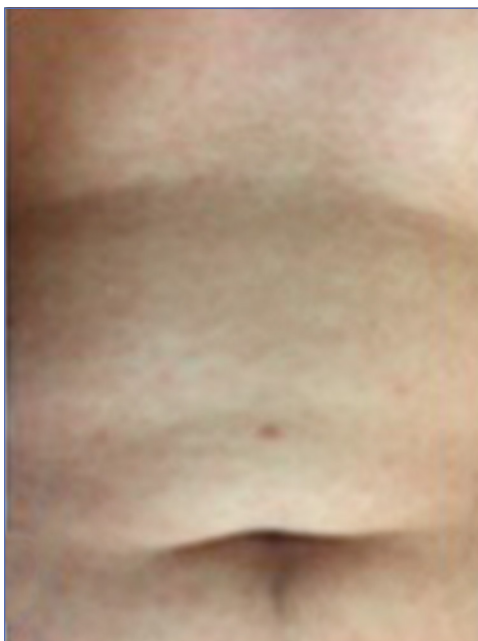
In late autumn, a 30-year-old man presented to our community ED for evaluation of a cough productive of green sputum along with mild chest discomfort, malaise, and generalized myalgia, which were intermittent over the course of the past month. The patient denied rhinorrhea, fevers, chills, dyspnea, or any other systemic complaints. He also denied any sick contacts, but noted that his influenza vaccine was not up to date.

The patient denied any remote or recent medical or surgical history. He further denied taking any medications, and noted that his only medical allergy was to penicillin. His family history was noncontributory. Regarding his social history, the patient admitted to smoking one pack of cigarettes per day and to a daily alcohol intake of approximately one 6-pack of beer. He also admitted to frequently smoking crystal methamphetamine, which he stated he had last used 2 days prior to presentation. The patient said his current chest pain was similar to prior episodes, noting that when the pain occurred, he would temporarily stop smoking crystal methamphetamine.

His vital signs at presentation were all within normal limits. The cardiopulmonary and abdominal examinations were largely unremarkable. Physical examination revealed a diffuse, nontender non-pruritic violaceous papulosquamous rash over the anterior and posterior torso that spared the palms and soles; there were no vesicles, bullae, petechiae, purpura, or evidence of cellulitis (**Figure 1**).

Plain chest radiography, electrocardiogram, complete metabolic panel, complete blood count, B-natriuretic peptide, and troponin levels were all unremarkable. Due to the presence and nature of the patient's rash, a rapid plasma reagin (RPR) screen was also taken, the results of which were reactive.

On further questioning, the patient admitted to having multiple female sexual partners with whom he used barrier protection sporadically. A more detailed



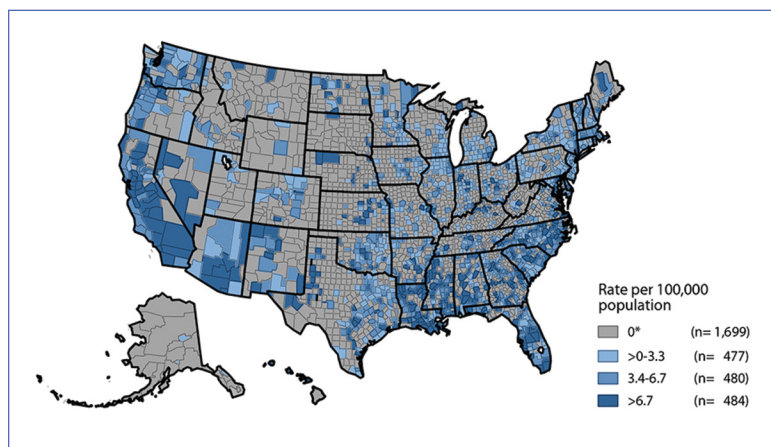
**Figure 1.** Photo shows papulosquamous rash across the patient's torso.

physical examination revealed multiple painless ulcerations/chancres over the penile shaft and scrotum, without urethral drainage or inguinal lymphadenopathy. The patient denied dysuria or hematuria.

Since the patient was allergic to penicillin, he was given a single oral dose of azithromycin 2 g, and started on a 2-week course of oral doxycycline 100 mg. Further laboratory studies included gonorrhea and chlamydia cultures, both of which were negative. He was instructed to follow-up with his primary care physician for extended sexually transmitted infection (STI) panel-testing, including HIV, hepatitis, and confirmatory syphilis testing. Unfortunately, it is not known whether the patient complied with discharge instructions as he was lost to follow-up.

## Discussion

Diagnostic algorithms for syphilis, one of the best studied STIs, have changed with technological advancement, but diagnosis and treatment for the most part has remained mostly the same. The uniqueness



**Figure 2.** Primary and secondary syphilis—rates of reported cases by county, United States, 2016.<sup>7</sup>

of this case is really focused around the patient's chief complaint. While it is classic to present with malaise, headache, and rash, our patient complained of cough productive of sputum with chest pain—a rare presentation of secondary syphilis. The fortuitous key finding of the truncal rash directed the emergency physician toward the appropriate diagnosis.

#### Diagnosis

In the ED, where patients such as the one in our case are often lost to follow-up, and consistent infectious disease and primary care follow-up is unavailable, prompt treatment based on history and physical examination alone is recommended. Patients should be tested for syphilis, as well as other STIs including chlamydia, gonorrhea, hepatitis, and HIV as an outpatient. In addition, any partners with whom the patient has had sexual contact within the last 90 days should also undergo STI testing; sexual partners from over 90 days should be notified of the patient's status and evaluated with testing as indicated.<sup>4</sup> All positive test results should be reported to the Centers for Disease Control and Prevention (CDC).<sup>5</sup>

#### Nontreponemal and Treponemal Testing

For patients with clinical signs and symptoms of syphilis, recommended laboratory

evaluation includes both nontreponemal and treponemal testing. Nontreponemal tests include RPR, venereal disease research laboratory test, and toluidine red unheated serum test. Treponemal tests include fluorescent treponemal antibody absorption, microhemagglutination test for antibodies to *T pallidum*, *T pallidum* particle agglutination assay, *T pallidum* enzyme immunoassay, and chemiluminescence immunoassay. Patients who test positive for treponemal antibody will typically remain reactive for life.<sup>5,6</sup>

In the setting of discordant test results, patients with a nonreactive treponemal result are generally considered to be negative for syphilis. Discordant results with a negative nontreponemal test are more complicated, and recommendations are based on symptomatology and repeat testing.<sup>5</sup>

#### Treatment

When a patient has a positive nontreponemal and treponemal test, treatment is usually indicated. As with the patient in this case, treatment is always indicated for patients who have no prior history of syphilis. For patients who have a history of treated syphilis, attention must be given to titer levels on previous testing and to patient symptomatology.

The treatment for early (primary and secondary) syphilis in patients with no penicillin allergy is a single dose of penicillin G benzathine intramuscularly, at a dose of 2.4 million U. Alternative regimens include doxycycline 100 mg orally twice daily for 14 days, and azithromycin 2 g orally as a single dose; however, there is an association of treatment failure with azithromycin due to macrolide resistance.<sup>5</sup> The patient in this case received empiric treatment targeting syphilis, gonorrhea, and chlamydia.

#### Conclusion

Ten years ago, the rates of primary and secondary syphilis were low, leading the infectious disease community to believe that preventive efforts had been effective. According to the CDC, however, “[cur-

rent] rates...are the highest they have been in more than 20 years.”<sup>5</sup> **Figure 2** demonstrates the geographic distribution of syphilis cases in the United States in 2016.<sup>7</sup>

Heightened concern has prompted the CDC to promote the theme “Syphilis

Strikes Back” in April 2017, which was STI Awareness Month.<sup>8</sup> Identification of disease is critical in the ED, especially when a previously common disease has become uncommon, like the resurgence of syphilis we are now seeing.

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