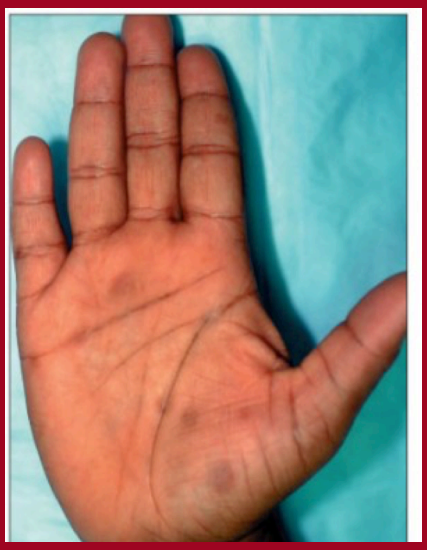
AUGUST 2015 VOLUME 2 ISSUE 1

EM CASE OF THE WEEK

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE



Syphilis was previously referred to as the great imitator because of its many manifestations. The rash may not seem significant at first glance, but is very important to recognize due to possible late manifestations of the disease.

EM CASE OF THE WEEK

EM Case of the Month is a monthly "pop quiz" for ED staff. The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

"The Great Imitator"

A 19 y/o female with no PMH presents to the ED with a 2 week complaint of rash. The rash is non-pruritic, non-painful, and involves the palms and soles bilaterally. Patient denies additional skin findings. She is sexually active with one male partner and does not use condoms. Denies history of STDs, lymphadenopathy, fevers, chills. On PE she is afebrile and her vitals are within normal limits. She has diffuse <1cm flaky macules on the palms and soles bilaterally. What test is the best screening test for diagnosis of this patient's rash?

A. Non-tremonemal test – either RPR or VDRL

B. Treponemal-specific test – Enzyme Immunoassay for IgG, T. pallidum hamagglutination test, microhemagglutination test, FTA-Abs, ELISA

C. Dark-light microscopy obtained from scraping the lesion

D. HIV test

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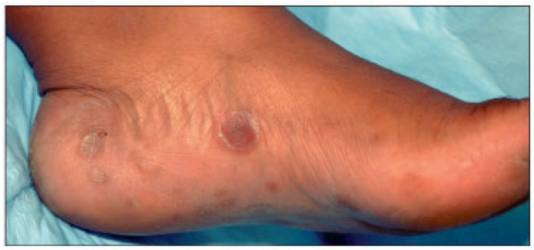

Take Home Points

- Syphilis is caused by the spirochete *T. pallidum*.
- There are many different manifestations of syphilis infection.
- The fastest growing group of new infections occur in men who have sex with men.
- All patients with newly diagnosed syphilis should be screened specifically for HIV and other STIs.
- PCN is the treatment of choice for all stages of infection. It MUST be used in the pregnant patient, even if the patient has an allergy.
- Treponemal tests will often remain positive for life, so treatment response should be monitored with serial RPR or VDRL titers or to assess for re-infection. The titer values for each test are not interchangeable.

Syphilis

The correct answer for this particular manifestation of the disease is A.

Syphilitic infection leads to the production of Abs that non-specifically react to cardiolipin. This reaction is the basis for non-treponemal tests such as RPR and VDRL. Our patient has the rash characteristic of secondary syphilis, but patients who are newly infected may have a false-negative non-treponemal test due to slow immune response to infection. Additionally, high viral titers can "block" the Ag-Ab reaction, also leading to false negative results. Patients with Lupus or Lyme disease may have false-positive results due to production of Abs against cardiolipin that may be present in those disease states, as well.

Treponemal tests are generally used as confirmatory tests and oftentimes remain positive for life even after treatment. Therefore, in a population who may be susceptible to reinfection, quantitative non-treponemal tests should be used to assess titers.

Dark-field microscopy is time-consuming and if negative, must remain negative on three separate scrapings to qualify as a negative result. However, it is the most specific test for patients with active chancre or condyloma latum.

Patient should also be tested for HIV. This is because new research has shown that dendritic cells involved in clearing syphilitic infections have a higher likelihood of carrying HIV co-receptors, making patients with syphilis more susceptible to HIV infection.

Discussion:
As of 2013, Broward County was ranked #10 and Miami-Dade County #5 in new syphilis cases, hence the recent billboards that we all have seen around the area. This is particularly concerning considering that in 2000, infection rates were at an all-time low, with the CDC attempting to formulate a plan for eradication.

Because of this large increase in number of patients, it becomes important as clinicians to recognize the multitude of signs and symptoms that a patient may present with.

Primary infection usually presents after a window period of approximately 10-90 days after exposure with a painless chancre that heals within 3 weeks. There may be possible lymphadenopathy. This chancre may or may not be confined to the genital area, and is often unnoticed.

Secondary infection progresses from untreated primary infection six to eight weeks after the chancre appears. The characteristic rash involves the trunk, face, and extremities and is maculopapular in nature. However, like our patient above, a papulosquamous rash on the palms and soles may be the only presenting symptom. There are not many rashes that present on the palms and soles, so this is an important finding.

Syphilis can then become latent and remain latent for life. Neurosyphilis is generally considered part of tertiary syphilis, but symptoms can actually present at any stage of infection. Other manifestations of tertiary syphilis include cardiac/aortic involvement and formation of gummas in any organ system.

Treatment

The treatment of syphilis is easy to remember since it is the same medication for each stage.

- First line treatment for primary, secondary, and early latent infection is Benzathine PCN G 2.4 million units x1.
- Late latent and tertiary infection receives that same dose, except q 1 week x3.
- For neurosyphilis, crystalline PCN G 18-24 million units daily for 10-14 days is used.

Follow-up

Once a patient is diagnosed with syphilis, quantitative titers should be obtained if not done so already, so that treatment response can be monitored. Patients should follow-up at both 6 and 12 months to verify fourfold decrease in titers and treatment success. Patients with continued clinical signs and symptoms or an increase in titer should be treated again. Most patients titers revert to negative after treatment, but this is more likely with low initial titers and earlier stage of infection. Of note, treponemal-specific tests are likely to remain positive for life and should therefore not be used to assess treatment response.

Rapid Testing

In December of 2014, the FDA approved a rapid finger-stick test that can be used in high-volume, high-risk settings to test for syphilis. The results take 12 min and can be performed in the presence of the patient. Just like rapid HIV tests, the results must be followed up by a confirmatory test. Additionally, they are not helpful for patients who are being tested for reinfection.

I believe the idea is for HIV rapid-testing and Syphilis rapid-testing to be run concurrently. While RPR is much more cost-effective in a setting like BHMC where we have easily-accessible lab resources, we might not be running these tests as often as we should in the emergency room. We could re-address the whole argument of emergencies are emergencies, but we are often the only connection to healthcare that many of our patients see. The whole idea of bringing rapid-testing to Broward may be something to look into.

Mattei PL, Beachkofsky TM, Gilson RT, Wisco OJ. Syphilis: A Reemerging Infection. *Am Fam Physician* 2012;86(5):433-440.

Brown, D. Diagnosis and Management of Syphilis. *Am Fam Physician* 2003;68:283-290.

Uptodate: Pathophysiology, transmission, and natural history of syphilis

Vickerman P, Peeling RW, Terris-Prestholt F, et al. Modelling the cost-effectiveness of introducing rapid syphilis tests into an antenatal syphilis screening programme in Mwanza, Tanzania. *Sexually Transmitted Infections*. 2006;82(Suppl 5):v38-v43. doi:10.1136/sti.2006.021824.

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ABOUT THE AUTHOR:
This month's case was written by Dana Sweeney. Dana is a 4th year medical student from NSU-COM. She did her emergency medicine rotation at BHMC in August 2015. Dana plans on pursuing a career in Internal Medicine after graduation.