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### Syphilis 'The Great Imitator'

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# Syphilis 'The Great Imitator'

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## Introduction

Syphilis, a sexually transmitted disease, which is seen in many different patient populations, is on the rise in the United States. According to Chan et al. (2015), "In 2012, the Rhode Island Department of Health (RIDOH) reported 68 cases of infectious syphilis, a 300% increase from 2006. This trend is observed across the country." More recently if you live in the Columbus area you may have seen an increasing number of billboards focused directly on testing for sexually transmitted diseases and markedly focused on syphilis. Syphilis can affect patient populations across genres, ethnicities and socioeconomic backgrounds. Which in turn makes it a topic that is very transient across many nursing areas and specialties. Nurses can and should be addressing sexual health with their patients.

This topic is important especially for providers working in the emergency department because many times patients present with very vague, seemingly unrelated symptoms and as a provider you may need to find that one in a million diagnosis. As an emergency room provider you may see patients presenting with undiagnosed or mistreated symptoms that could actually be latent syphilis or unknown congenital syphilis. Mattei, Beachkofsky, Gilson & Wisco state that there are three presentations of tertiary syphilis, also known as latent syphilis, can be seen as neurosyphilis, cardiovascular syphilis, and late benign syphilis." This along with congenital syphilis can be the "good catch" or lifesaving diagnosis that can change a patient's life if the provider is able to diagnosis and provide treatment quickly.

## Signs & Symptoms

When discussing signs and symptoms of syphilis you must note that there are multiple stages of syphilis which each present differently. It is also worth mentioning that as a provider when look at signs and symptoms of syphilis many of the stages can intersect and can also happen out of the typically documented order. Primary syphilis first presents with typically one single sore known as a chancre. According to the Mayo Clinic (2014) "the chancre usually develops about three weeks after exposure. Many people who have syphilis don't notice the chancre because it's usually painless, and it may be hidden within the vagina or rectum." Patients who go in to the secondary stage may be more easily diagnosed since there are more noticeable symptoms including a full body rash. The rash can cover palms of hands and soles of feet and patients can also have wart like sores noted to mouth and genitals (mayo clinic). Other symptoms include those of many illnesses like a sore throat, fever and muscle aches. For those not diagnosis during this time can have symptoms that come and go for months even up to a year until the disease becomes latent. Once the latent stage is achieved a patient can live in that stage for many, many years and possibly never have any return of the disease or it can become tertiary syphilis also known as late syphilis.

"Most people with untreated syphilis do not develop late stage syphilis. However, when it does happen it is very serious and would occur 10-30 years after your infection began. (CDC) Symptoms in the late stage include muscle weakness, numbness, blindness and deafness and can damage many of your vital body systems. The complications can cause end stage organ failure. Again, with late stage syphilis these symptoms can be easily confused with many other illnesses especially if the patient has never knowingly been exposed to or treated for syphilis.

The final type of syphilis is congenital syphilis, which is transmitted to a fetus in utero after the fourth month of pregnancy and can also be transmitted via active lesions during childbirth (Follett, T., & Clarke, D. F.). Follett and Clarke (2011) found through their research that, "more than 50 percent of infected infant are asymptomatic at birth, making it difficult to diagnosis." Congenital syphilis that is diagnosed within the first two years of life typically presents much like the secondary stage in acquired syphilis with many different symptoms such as bony lesions, hepatosplenomegaly, anemia and jaundice (Khetarpal, Kempf, & Mostow, 2011). The late stage of congenital syphilis is diagnosed after age two and includes symptoms of deafness, dental abnormalities and bony abnormalities such as a saddle nose (Khetarpal, Kempf, & Mostow, 2011).

Table 1. Signs and symptoms of syphilis broken down by stage

|                 |   |
|-----------------|---|
| First few years | <ul style="list-style-type: none"> <li>No signs and symptoms are observed</li> </ul>  |
| Primary stage   | <ul style="list-style-type: none"> <li>Sore/chancre found in genital area; inner part of vagina in women, penis for men</li> <li>Chancres do not result in pain and will disappear without treatment</li> </ul>   |
| Secondary stage | <ul style="list-style-type: none"> <li>Skin rash - rough, red or reddish brown spots on palms of hands and bottoms of feet.</li> <li>Mucous membrane lesions throughout body without itchiness</li> <li>Fever, sore throat, headache, swollen gland, weight loss, muscle ache, fatigue</li> </ul> |
| Tertiary stage  | <ul style="list-style-type: none"> <li>Blood vessels, cardiac, nerve system problems</li> <li>Damaged internal organs</li> <li>Death cases</li> </ul>   |
| Latent stage    | <ul style="list-style-type: none"> <li>Symptoms disappear for 1-20 years</li> <li>Diagnosis through blood testing</li> <li>Relapse symptoms</li> </ul>  |

Table 2: Recommended Treatment for Syphilis, by Stage\*

| Stage                           | Treatment                        | Dose  |
|---------------------------------|----------------------------------|---|
| Early latent                    | Benzathine penicillin G          | 2.4 million units IM x 1  |
| Late latent or unknown duration | Benzathine penicillin G          | 2.4 million units IM x 3, given at weekly intervals (assuming neurosyphilis has been ruled out)                             |
| Primary                         | Benzathine penicillin G          | 2.4 million units IM x 1  |
| Secondary                       | Benzathine penicillin G          | 2.4 million units IM x 1  |
| Tertiary                        | Benzathine penicillin G          | 2.4 million units IM x 3, given at weekly intervals   |
| Neurosyphilis                   | Aqueous crystalline penicillin G | 3-4 million units IV every 4 hours or a continuous infusion, for a total dose of 18-24 million units per day for 10-14 days |

\*MMWR Recomm Rep 2006; 55(RR-11):1.

IM, intramuscular; IV, intravenous



Table 2. Treatment plans for syphilis

## Underlying Pathophysiology

Syphilis is caused by the spirochete bacteria *T pallidum* and the pathophysiology is complex due to the fact that the body's immune system can cause the bacteria to lay dormant for years. According to Euerle, (2014) "*T pallidum* rapidly penetrates intact mucous membranes or microscopic dermal abrasions and, within a few hours, enters the lymphatics and blood to produce systemic infection." These bacteria then migrate to near by endothelial cells and multiply causing an immune response. Chancres, painless ulcers, are then noted due to infiltration of sites with CD4+ and CD8+ T lymphocytes, macrophages and a few plasma cells (Lukehart). The body's cell-mediated and humoral immune response take over to control the lesions but are unable to clear the body of all bacteria which is what allows the secondary stage to occur. The bacteria then is able to rapidly multiple and spread throughout the body causing the many vague signs and symptoms such as fever, generalized aches and rash seen with secondary syphilis. Euerle (2014) states, "During secondary infection, the immune reaction is at its peak and antibody titers are high."

The body is unable to become completely immune to *T pallidum* and can remain dormant in the body many years later causing a recurrence known as tertiary syphilis. There are three forms of tertiary syphilis, gummatous syphilis, cardiovascular syphilis and neurosyphilis. Gummatous syphilis is said by Euerle (2014) "the syphilitic infiltrate reflects a delayed-type hypersensitivity response to *T pallidum*, and in certain individuals with tertiary syphilis, this response by sensitized T lymphocytes and macrophages results in gummatous ulcerations and necrosis." These gummatous ulcerations cause lesions, growth and destructions to skin, bone and soft tissue. Cardiovascular syphilis occurs most times more than 10 years after the initial infection; the most common complication is the formation of an aneurysm on the ascending aorta from chronic inflammation causing breakdown of the small blood vessels in the area (Euerle 2014). There are many different types of neurosyphilis but the most commonly known form is syphilitic meningitis, caused by the syphilis bacteria entering the central nervous system. It is important to note, "syphilitic meningitis is an early manifestation, usually occurring within 6 months of the primary infection (Euerle 2014)." Patients will present with the typical signs of meningitis of stiff neck, headache, nausea and vomiting, however these symptoms may resolve. Knudsen (2014) states "the meningitis may be self-limiting, but untreated active infection can continue and be re-expressed later as a more severe form of neurosyphilis."

## Significance of Pathophysiology

The CDC said it best (2014) "Syphilis has been called 'the great imitator' because it has so many possible symptoms, many of which look like symptoms from other diseases." It is important for healthcare providers to know how syphilis works in the body so that they can be alert to the fact that a patient presenting with seemingly unrelated, vague complaints could have a serious, previously undiagnosed sexual transmitted disease. This disease is able to mask itself as many different non-critical illnesses such as chronic headaches or a contact dermatitis. Patients can often present with allergic reaction type symptoms once the disease has already moved to the secondary phase. Syphilis that goes undiagnosed at this point in time could cause irreversible damage down the road if the patient converts to tertiary syphilis.

## Conclusion

"Despite cost-effective screening and inexpensive treatment, reemerging epidemic proportions of infectious syphilis have been reported globally over the past decade causing substantial morbidity (Mayer & Mimiaga, 2011)." Advanced practices providers have a unique opportunity to create a personal relationship with patients and should take advantage of that to have meaningful conversations about overall health of mind, body and spirit as well sexual health. Providers need to take the time to make patients feel comfortable enough to have these deeply personal conversations that could potentially save their life. One bad decision in picking a sexual partner as a young adult can be harmful to your long-term health, but it doesn't have to be.

## Implications for Nursing Care

Syphilis is important for providers to know about because though it can cause potentially life threatening complications it is easily treatable. As providers most of the patients that you will encounter have been or are currently sexually active. It's so important for providers to speak with their patients about high-risk sexual behaviors, practices of safe sex and the importance of ongoing STD testing if not in a monogamous relationship. Healthcare providers have ample opportunity to have honest and open conversations about sexual health. Syphilis is easily treatable and patients need to be educated on the fact that if diagnosed early there should be no long-term effects of the STD. Education needs to be a key focus of our nursing care with all patients in regards to all aspects of their personal health and safety.

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