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Syphilis in Men that have Sex with Men

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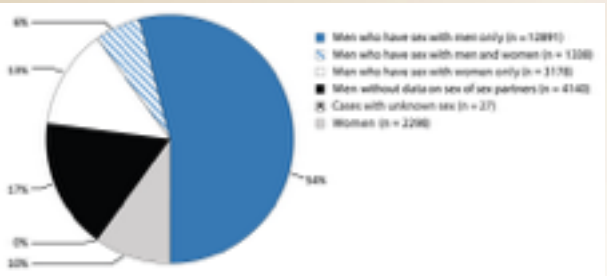
Introduction

Syphilis rates in the United States hit their nadir in the 1960's and 1970's with almost complete disappearance during the 1980's in conjunction with the onset of the human immunodeficiency virus outbreak (Read et al, 2015). This dramatic fall was a direct consequence of the introduction of penicillin in the 1940's, but since this decline a widely documented reemergence in endemic levels has been seen across the country (Petrosky et al, 2016). Recent rates in men have jumped from 3 per 100,000 to 9.8 per 100,000 (Petrosky et al, 2016) in a two year span, an alarming increase, which has alerted public health officials across the United States to investigate the trends. One prevalence factor was sexual habits, the most common of which was men who have sex with men (MSM). MSM individuals accounted for 61% of all primary and secondary syphilis diagnoses in 2014 (Cantor et al, 2016). "Syphilis is a chronic, systemic, infectious disease caused by sexual or vertical transmission of the bacterium *Treponema palladium"* (Cantor et al, 2016). Testing, education and public knowledge surrounding syphilis had not been a common theme in health curriculum and primary care prior to the reemergence in the early 2000's. Known as "The Great Pretender," syphilis can present as a common mucosal lesion without subjective knowledge and can progress to a systemic rash sometimes associated with dermatologic causation (Clement et al 2014). Early detection and treatment is key and syphilis is easily treated upon diagnosis and staging with a correlating dose of commonly accessible antibiotics. If undetected, up to two thirds of individuals progress to a late stage of disease which greatly increases the risks of irreversible cardiac and nervous system damage (Clement et al, 2014). It is important to understand the pathophysiology and epidemiology of syphilis to appropriately educate and prevent future infections within the public and most importantly, high risk populations.

Underlying Pathophysiology

Treponema pallidum is an elusive bacteria that, due to its inability to grow in culture, little pathophysiology is truly understood. Growth characteristics and metabolism of the bacterium are some of the essential pieces not fully understood. Initial stages of infection occur after T pallidum has gained access to subcutaneous tissues via compromised epithelial tissue most commonly the rectum, vagina, penis and the oral cavity (Cheeks et al, 2016). The spirochete is slow to divide but is still able to evade initial host immune response and establish the initial chancre. During this early stage some organisms have been found to establish local infection within regional draining lymph nodes and then subsequently disseminate (Shiliah et al, 2017). Within the blood and skin, innate and adaptive cellular immune responses can be seen (Shiliah et al, 2017). Within the chancre leukocytes can be found and are eventually replaced by T lymphocytes which is the normal host immune response. Upon acquisition, *T. palladium* generates a humoral immune response where by multiple antibodies can be detected early in the infection (Cantor et al, 2016). The immune response to *T pallidum* is somewhat paradoxical due to the resolution of the primary chancre all the while diffuse distribution of spirochetes leading to advanced disease i.e. tertiary and secondary (Cantor et al, 2016).

Table 1. Infection distribution by sex and sexual behavior (CDC, 2017).



Significance of Pathophysiology

Understanding what minimal information we know about the pathophysiology regarding syphilis is important in the recognition, diagnosis and treatment of this infection. Having a strong breadth of knowledge will allow the practitioner to acutely recognize the need to for further testing and investigation. Appropriate health history should initiate suspicion, especially in regard to sexual health history. Syphilis is primarily sexually transmitted and certain sexual behaviors place individuals at a higher risk for acquisition (CDC, 2017). Men that have sex with men bear a large burden of disease probability (Cheeks, 2016) and accounted for 61% of all primary and secondary syphilis diagnoses in 2014 (Cantor et al, 2016). Having this epidemiological information at hand would quickly narrow down the possibilities when a patient presents with the "The Great Pretender." A thorough physical assessment will key in the provider to any chancre or rash with the understanding that some chancres present in areas not easily visualized (Wagenlehner, 2016). An astute practitioner will know how to mesh together the vague presentation that is syphilis and quickly treat the infection so that it does not advance to late disease a cause irreversible damage.

Signs & Symptoms

Treponema pallidum is an anaerobic bacterium comprised of helically coiled cells and falls within the order spirochaetales. The tightly coiled cells cause the bacteria to have a telephone cord or corkscrew shape with distinct axial filaments (flagella) that differ from most other bacterial flagella and contribute to their shape (CDC, 2016).

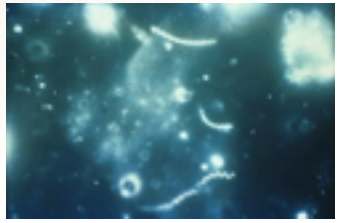
When observing the signs and symptoms of syphilis it is best to also understand the various stages of the infection.

Primary syphilis is the initial stage of infection where, most often, the hallmark chancre can be found at the site of initial entry. The chancre can be found in places not easily visualized such as the rectal and vaginal tissues. The chancres are most commonly round, firm and painless and appear for approximately 2-6 weeks and can go unnoticed. These chancres are where primary syphilis is spread from person to person. If unnoticed the syphilis infection transitions into the secondary stage (Jansen et al, 2015).

Secondary syphilis develops as a rash. The rash can develop while the primary chancre is still visible. The most common rash develops on either the palms of the hands or soles of the feet. This rash can extend to the entirety of the body (diffuse) and is not commonly itchy (Diesterheft et al, 2016). The rash is rough and red to reddish-brown, circular spots that can be distinct or discreet. In addition to the rash, large raised gray to white lesions called condyloma lata can develop in the warm moist areas of the body. The rash is often accompanied by systemic fever, lymphadenopathy, alopecia, sore throat, weight loss, fatigue and weakness (Wagenlehner et al, 2016).

Latent syphilis is a period of time where there are no signs or symptoms. Either early latent (occurring within 12 months) or late latent (occurring after 12 months).

Tertiary and Neurosyphilis are late stages of the disease when neurological, cardiovascular and gummatous disease processes are present. Neurosyphilis is when the spirochete enters the cerebrospinal fluid and causes neurological symptoms of headache, light headedness, vision and balance deficits (Wagenlehner et al, 2016). Tertiary syphilis cause dilation of the ascending aorta and aortic valve regurgitation. Gammas are another sign of tertiary syphilis and can also develop anywhere externally or internally. Gammas are heaped granulomatous lesions that vary in shape from round to irregular.



Above: Dark field microscopy of T. palladum (CDC, 2017)

Right: Secondary syphilis chancre on penis. (CDC, 2017)

Above: Secondary syphilis chancre of the tongue. (CDC, 2017)

Nursing Implications

The advance practice nurse must develop a strong foundational health assessment to best serve the diverse presentation of syphilis. In high risk patient populations, such as men that have sex with men (MSM) it is essential to collect a thorough health history with emphasis on sexual practices. Sexual health histories can present certain cultural boundaries that the provider must traverse in order to collect an accurate report (Stahlman et al, 2015). Physical assessment of individuals may not yield a convincing finding of symptomatology so the provider must know how to best proceed when suspicion remains. Laboratory testing can be done for either non-treponemal or treponemal but more than one type of laboratory test must be preformed to definitively diagnose since serologic testing can be associated with false positives (CDC, 2017). Darkfield microscopy can also be performed if a chancre is present for sampling and if the technology is readily available. The most powerful skill to possess in the care of a syphilis patient is prevention. Syphilis is completely preventable and can be avoided with regular testing and open sexual health dialogue. Education throughout the care of the patient can build rapport and allow the patient to open up to the provider in regards to their sexual health.

Conclusion

The current epidemiological climate of syphilis is "that no country has yet been able to successfully control syphilis among MSM, even in countries with high income and substantial resources, and clearly new strategies are urgently needed" (Read et al, 2015). Advance practice nurses must take on a level of responsibility in the combating of the newly endemic levels. Being a front line provider in the role of primary care, it is essential to possess adequate knowledge and skill when dealing with any infectious disease. Prevention and screening are essential in the elimination of syphilis from a population but these are not easily employed in high risk populations. The advance practice nurse must accurately identify these populations and provide high quality, culturally competent care. In doing so, rapport building will commence and appropriate patient provider relationships can result. With much room for improvement in the knowledge base and infection rates of syphilis, advance practice nurses must take the lead in identifying trends, documenting findings and accurately diagnosing and staging the infection. Adhering to current research can help control the infection but more evidence is necessary to eliminate this disease from these high risk populations.

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