Syphilis

by Dylan Eastland

Syphilis; Etiological agent- *Treponema pallidum* (2).

Transmission:

Through contact with mucous membrane or compromised skin during sexual activity or child birth (2).

Reservoirs:

Only humans have been proven to be a natural reservoir.

General Characteristics:

Gram-negative spirochete. While syphilis is the most notable disease cause by *Treponema pallidum* it is not the only one. There exists three subspecies of *Treponema pallidum*; pertenue, carateum, and endimecum, which are themselves the source of the diseases Yaws, Pintaa, and Bejel (1). It is distinguished from these subspecies because it alone causes to neurological disease (3). Due to the spiraling shape that syphilis takes on it can be exceedingly difficult to detect by normal means which is why often goes undetected until it’s later stage symptoms appear. Dark field microscopy is required for a quick detection and can produce results within ten minutes of acquiring a sample. Some non-treponemal tests, such as Rapid Plasma Regain or Venereal /disease Lab Reports, can give accurate results from 78% up to 100% depending on the stage and do so by the detecting of treponema induced anti-cardiolipin antibodies (4).

Signs and Symptoms:

Syphilis has an incubation period of about three where an asymptomatic patient will enter the first stage of the disease. Primary symptoms are normally limited to a number of painless lesions, or chancres, at the sight of exposure and are usually found at the genitalia. These can heal in a matter of weeks but will give way to the secondary stage 4 to 10 weeks after exposure if left untreated. This stage can see the beginning of a myriad of symptoms including skin rash, meningismus, meningitis, and such constitutional central nervous system involvement as to
induce headaches. Next is the latent stage, which is defined the point in time when serological tests can prove infection. Latent syphilis can vary in its incubation period, but all infection will be considered latent if they have been ongoing for at least two years. Due to latent stage syphilis's asymptomatic nature many mistake this for a regression in illness. If nothing is done to treat the illness in the meantime then 3 to 15 years after infection the host will begin to express symptoms of the tertiary stage of syphilis. Tertiary syphilis is divided into three separate forms depending on how the symptoms progress. The first, gummatous syphilis, occurs on average fifteen years after exposure and is characterized by soft tumor-like balls of inflammatory tissue, known as chronic gummas, which not only very tremendously in size but can occur anywhere in the body. These give the infected the famous appearance of dissolving features and gaping lesions that we see referenced throughout literature and medicine since the mid fourteen hundreds and most often occur in the skin, bones, and liver. Neurosyphilis is diagnosed as an infection involving the central nervous system in the form of syphilitic meningitis or as late meningo-vascular syphilis. Neurosyphilis occurs 4 to 25 years after initial infection and can cause balance issues, pain in the extremities, seizures and on rare occasions a condition known as Argyll Roberts pupils. The final category, cardiovascular syphilis, occurs 10 to 30 years after infection and can lead to syphilitic aortitis which may cause later aneurisms. Apart from the four stages is congenital syphilis which occurs during birth from an infected mother. Two thirds of infected infants are born asymptomatic and later develop the rash, neurosyphilis hepatosplenomegaly, and pneumonitis that is associated with congenital syphilis (3). Untreated Syphilis can be fatal at any time between 3 to 40 years after the initial exposure (5).

**Historical Information:**

Syphilis was presented in Europe before discovered in the Americas by Eurfirst introduced to Europe from the Americas by the like of Columbus, Magellan, and Spanihs explorers. the actual bacteria *Treponema pallidum* was discovered In 1905 Fritz Schaudin and Erich Hoffman. Later, In 1906, the first test mfor syphilis was made by August von Wasserman. Paul Ehrlich then discovered an arsenic based medicine that he named salvarsan and referred to as a “magic bullet” against syphilis during the same time period.(7)

**Virulence Mechanisms:**

*Treponema pallidum* lacks the virulence factors that account for the deadly nature of other bacteria such as fimbriae, capsules, enzymes, or M proteins that help with
them enter the body. Apart from these they also do not exhibit antigenic variation. However, due to the morphology of *T. pallidum* it has a distinct advantage in remaining a chronic infection despite macrophage activity. TROMPs, *T. pallidum* rare outer membrane proteins are currently being studied for this. (6)

**Treatment and Control:**

Your average regiment of penicillin is more than adequate for all stages of syphilis. Ceftriaxone, or doxycycline can also be used in place of penicillin in extenuating circumstances. You average antibiotic is more than enough for congenital syphilis as well. Regular STD screening and treatment of sexual partners does well in diminishing the disease but the best way of control is abstaining from sexual encounters until you or your partners condition improves as well as the regular use of prophylactics (8).

**Prevention and Vaccine Research:**

Vaccines for syphilis are currently being researched. Human trials have yet to begin because of the bacterium *T. pallidum* and its complex characteristics.

**Local Cases and Outbreaks:**

Statistics for Austin Travis County syphilis have been reported to have peaked in 2008 with 91 cases then a slight decline to 83 cases in 2010. Infection rates of syphilis in Travis county are considered to be dropping every year unlike other STD's such as HIV.

**Statewide Cases and Outbreaks:**

in 2003 Primary and secondary syphilis rose from 650 cases to a high of 1,644 cases in 2009 then fell to 1,231 in 2010. African-Americans seemed to be the most effected race, far outnumbering all other when census data was taken. Among those infected men seemed to be twice or even three times as likely to be carriers in most reports. Infection rates were their highest for 20-24 years old in Texas followed by the 25-29 year old demographic, then comes the 30-34 year olds. Congenital syphilis increased from 65 cases in 2004 to 124 cases in 2008 with a minor drop in cases up to the present (9).

**Cases and Outbreaks for the United States:**

According to CDC reports we are seeing a decrease in cases for the first time in a decade with 13,774 cases reported in 2010. This same data also indicates a rise in prevalence amongst young black men (9).
Cases and Outbreaks for the World:

It is estimated by the World Health Organization that over 12 million new cases of syphilis occur each year. Amongst these 12 million are 1 million babies per year that are killed by congenital syphilis. More is being done every year in terms of spreading information, making safer sex more available, and even making testing more affordable to developing nations. (8).

Works Cited:


