Diagnosis and Treatment Regimes for Syphilis  By Dr. John Bannister

Syphilis: Introduction and Review of Terminology

Introduction

Dr. John Bannister worked for 16 years as a General Practitioner (GP) in Napier and never encountered a positive serological test result for syphilis.

In contrast, one of the most common reasons GPs ring the Auckland Sexual Health Service (ASHS) is for advice about a positive serological test for syphilis. There are three main reasons for this contrast.

1. There has been an increase in the number of cases of syphilis in New Zealand in the past 10 years (1).

2. In Auckland there is a large community of men who have sex with men (MSM) and this community has the majority of cases of infectious syphilis (2, 3).

3. Auckland has a large immigrant population (4) and many immigrants come from countries with high rates of syphilis (5). Immigration requirements mean that immigrants are tested for syphilis. In addition, pregnant women in this immigrant population are likely to have serological tests for syphilis as part of a routine antenatal screen. This screening regularly unearths abnormal syphilis tests.

Etiology

Syphilis is caused by *Treponema pallidum* subspecies *pallidum*.

The serological tests for syphilis will, however, react with other treponemal subspecies (6, 7). For example one of the subspecies that will cause reactive treponemal tests is *Treponema pallidum* subspecies *pertuine*. This causes the disease Yaws, a disease of skin and bone that was quite common in the Pacific prior to 1961. Some pockets of infection still exist, including Papua New Guinea, the Solomon Islands and Vanuatu (8, 9).
This cross reactivity of the serological tests means that, strictly speaking, they are “treponemal tests” not “syphilis tests”. That said, most positive treponemal tests in New Zealand in the present day should be seen as being due to syphilis, either past or present until proven otherwise.

This case material will use the terms “syphilis tests” and “treponemal tests” interchangeably.

**Terminology**

When reviewing figure 1 it is necessary to revise the terms used to describe different stages of syphilis. This is important for two main reasons:

1. Syphilis has different treatments depending on the stage of infection.
2. Syphilis has different levels of infectivity depending on the stage of the infection.

![Image of the natural history of untreated syphilis](image-url)

*Figure 1. Natural history of untreated Syphilis (Reproduced with permission from Atlas of Sexually Transmitted Disease and AIDS. (Reference 6) Permission granted Elsevier Ltd.)*
Terms

**Primary Syphilis**

This is when the *T. pallidum* invades the dermis. The classical sign that may be present is an ulcerated lesion called a chancre. It typically appears between 9 and 90 days after exposure, with an average of 21 days (7). Although the chancre is usually on or near the genitals, it could be anywhere on the skin or a mucous membrane, including the mouth, lips or anus. Usually, however, there will be no history of a chancre. In New Zealand in 2011 there was a nationwide surveillance of all cases of infectious syphilis. This revealed that only in 20% of the total of 75 cases was a chancre present at the time of diagnosis (2). Similarly, an ASHS audit of 68 cases of infectious syphilis in 2007 showed that only 16% had ano-genital ulceration (3). Note that syphilis is readily transmitted by oral sexual intercourse. The surveillance previously mentioned found that in MSM the infection was thought to be contracted by oral sexual intercourse in 32% of cases (2).

**Secondary Syphilis.**

The treponemes rapidly disseminate around the body via the bloodstream and lymphatic system into all organs and organ systems. Secondary syphilis is the manifestation of this. Non-specific symptoms may occur at this stage such as fever, malaise and headache. A rash will commonly occur. The rash is described as being symmetrical and involving the trunk and extremities, including the palms of the hands and the soles of the feet. It is generally scaly but it may be smooth. It may be difficult to distinguish from pityriasis rosea or psoriasis (7). That said, of the 75 cases of infectious syphilis in New Zealand in 2011, only 27% had a rash at time of diagnosis and only 15% had any symptoms of being systemically unwell (2). The ASHS audit of 68 cases in 2007 revealed only 26% had a rash (3). The low frequency of a history of symptoms means serological testing is the mainstay of diagnosis. Nevertheless, syphilis should be included in the differential diagnosis of a person who is systemically unwell and/or has genital ulceration and/or has a rash. Syphilis is most infectious in the primary and secondary stages (6, 7).
**Latent Syphilis.**

A patient has latent syphilis when they have syphilis but do not have symptoms or signs. The latent period occurs after the secondary stage. If a person has latent syphilis and is known to have had the disease for less than two years, then the person will be described as having “early latent syphilis”. Despite the absence of symptoms and signs this person will still be regarded as being infectious. If a person has latent disease and has had syphilis for more than two years the person will be described as having “late latent syphilis”. This person will be regarded as having a reduced level of infectivity (6,7).

**Tertiary Syphilis.**

This is the name given to the symptoms and signs that appear after the latent period of the disease. As time progresses in the untreated patient, the disease may remain latent or it may reappear with cardiovascular, neurological, skin or bone manifestations (6, 7). Patients with certain eye, neurological or psychiatric diseases and positive treponemal serology may have neurosyphilis as part of their differential diagnosis. Investigations for neurosyphilis include an analysis of cerebrospinal fluid after a lumbar puncture. Symptoms of tertiary syphilis may develop after many years of the disease being latent (11).

In a study of untreated patients, 13% were observed to develop skin or bone manifestations, after a period of latency and 15% developed neurosyphilis and/or cardiovascular syphilis (11). In addition if syphilis is untreated there will be an expected shortening of life by approximately 20% (12).

- **Syphilis should be included in the differential diagnosis of a person who is systematically unwell and /or has genital ulceration and/or has a rash.**

**Early Syphilis**

In New Zealand a patient has early syphilis when he/she has had syphilis for less than two years. This terminology is useful because syphilis is more infectious in the first two years compared to disease older than two years (6, 7). (This two year cut
off point is somewhat arbitrary: in the USA early syphilis is defined as syphilis being present for less than one year). The term “infectious syphilis” may sometimes be used interchangeably with early syphilis. To make the diagnosis of early syphilis requires knowledge of the time of exposure and /or access to past serological test results. Very commonly this information is not available.

Late Syphilis.

A patient has late syphilis when he/she has had syphilis for more than two years. This diagnosis also requires knowledge of the time of exposure and /or access to past serological test results. Late syphilis is very unlikely to be transmitted sexually, but a pregnant woman can transmit syphilis to her fetus in utero in this late syphilis stage (10).
References


