

# Primary Syphilis: Significant Serological Response After Enhance Antibiotic Therapy Doxycycline and Benzathine Penicillin in A Month Followup

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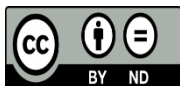


## Keywords:

Primary syphilis, Benzathine penicillin 2.4 million IU, Doxycycline, Enhance antibiotic

## ABSTRACT

*Treponema pallidum* causes syphilis, a systemic disease. In developed countries, the prevalence of syphilis is 90%. Early syphilis lesions are papules in sexual contact sites that appear 10-90 days (on average three weeks) after sexual contact. We are reporting a case of primary syphilis in a 21 years old man who was treated with enhance antibiotic therapy doxycycline and benzathine penicillin to reduce a significant syphilis titer after a month after therapy.



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## 1. Introduction

Syphilis is a systemic disease caused by *Treponema pallidum* in humans [6], [13]. *T. pallidum* is a highly motile coiled organism with tapered ends and a spiral length of 6 to 14. Bacteria have a cylindrical shape and are 6 to 15 mm long and 0.25mm wide. Syphilis is most commonly transmitted through sexual contact with infectious syphilis lesions from another person. Nonsexual contact, blood transfusions, unintentional inoculation (e.g., laboratory workers or health care workers), or intentional inoculation (e.g., tattooing) can all lead to syphilis [12], [13].

In developing countries, the prevalence of syphilis reaches 90%. According to the World Health Organization (WHO), 12 million new cases are reported each year in Africa, South Asia, Southeast Asia, Latin America, and the Caribbean. According to the Indonesian Ministry of Health's 2011 Integrated Behavioral and Biological Survey (IBBS) report, there was an increase in the incidence of syphilis in 2011 compared to 2007 [3], [11], [12].

Young men have the highest prevalence of primary and secondary syphilis (aged 20-29 years). Since 2006, most infected people have been between the ages of 35 and 59. Black people are disproportionately affected by primary and secondary syphilis (infection rate 27.9 per 100 000), which is more than five times higher than whites (5.4 per 100 000) [2].

*Treponema pallidum* is typically transmitted sexually via abrasion microorganisms in mucous membranes or skin, where it quickly enters the bloodstream and spreads to other tissues. *Treponema pallidum* can be

detected in the bloodstream of patients with all stages of syphilis using polymerase chain reaction (PCR). Early syphilis has the highest number of treponemes in the blood. Early syphilitic lesions are the most likely to transmit *Treponema pallidum*. Meanwhile, the risk of infection in exposed individuals ranges between 10% and 80% [5].

Syphilis can be difficult to diagnose in the laboratory due to the several weeks that elapse between infection and the development of an immune response [8]. Non-treponemal antibodies are detected using rapid plasma reagin (RPR), Venereal Disease Research Laboratory (VDRL), and toluidine red unheated serum tests (TRUST), whereas treponemal antibodies are detected using immunofluorescence (FTA-ABS) or hemagglutination agglutination tests. *Treponema pallidum* (TPHA) or *Treponema pallidum* agglutination (TP-PA). The nontreponemal test detects IgM and IgG antibodies against lipoidal antigens, particularly cardiolipin, which is released by damaged host cells and/or *Treponema pallidum*. The treponemal test, on the other hand, measures IgM and IgG antibodies specific for the protein *Treponema pallidum* [7], [9], [10].

A 21-year-old man who came to the Dermatology and Venereology Center for treatment was diagnosed with primary syphilis.

## **2. CASE REPORT**

An 21-years-old man who works as a student admitted the skin and genital medicine centre. For five days, the patient has complained of genital sores, which began as redness and progressed to wet, painless, and non-itchy sores. The previous history of the same disease, history of sexual contact with female friends 1 month ago, history of changing sexual partners denied, patient not married, the previous history of taking amoxicillin 500 mg three times one tablet per day for three days with no improvement.

The results of the physical examination revealed that the patient's general condition was good, with compliments consciousness and vital signs within normal limits. An ulcer with a clean pink base was discovered during a venereological examination of the penile area.

This patient was diagnosed with primary syphilis and chancroid based on his history and physical examination (mole ulcer).

Routine blood, urine, VDRL (Venereal Disease Research Laboratory), TPHA (*Treponema Pallidum* Haemagglutination Assay), and rapid Human Immunodeficiency Virus (HIV) tests were used as support. Routine blood and urine tests yielded normal results: reactive VDRL 1:16, reactive TPHA 1: 1280, and non-reactive rapid HIV test.

This patient was diagnosed with primary syphilis based on his history, physical examination, and investigations. This patient was given doxycycline 100 mg twice daily for fourteen days. The wound had dried up by the seventh day of control. After completed doxycycline in a couple of weeks. Benzathine Peniciline 2.4 million single doses IU was given.

There were no complaints on the 38th control day, and laboratory tests for VDRL and TPHA control were performed. The VDRL examination yielded reactive 1:4 and reactive TPHA 1:40 results.



**Figure 1.** Ulcer within sulcus coronarius penis with slight erythematous base

**Figure 2.** Control day 7 ulcer have already healed

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### 3. DISCUSSION

In this case, a 21-year-old male presented to the skin and genital medicine centre with complaints of genital sores that began as redness and progressed to wet sores that were neither painful nor itchy. According to the literature, young men (20-29 years old) have the highest level of primary and secondary syphilis, but since 2006, it has been found that those aged 35-59 years are the most commonly infected [2]. *Treponema pallidum* replicates at the site of initial infection every 30-33 hours, inducing a local inflammatory response that causes cancer three to six weeks after infection [5].

In this case, the patient had never had the same disease before, and he had sex with a female friend 1 month ago. According to the literature, syphilis is most commonly transmitted through sexual contact, and when people come into contact with infectious syphilis lesions from others, papules will appear 10-90 days (mean 3 weeks) after intercourse [11- 13].

Physical examination results revealed a good general condition, composmentis consciousness, and vital signs within normal limits. An ulcer with a clean pink base was discovered during a venereological examination of the penile area. According to the literature, there is a shallow ulcer with a clean bottom in primary syphilis. The initial syphilis lesion is a papule that grows 0.5-1.5 cm in diameter and becomes ulcerated after about a week, producing a chancre typical of primary syphilis, a slightly elongated and rounded ulcer, 1-2 cm wide with a narrow margin. Ulcers with a smooth bottom, no discharge, and no pain [6], [11].

Routine blood and urine laboratory examinations were within normal limits, with reactive VDRL immunoserology results of 1:16 and TPHA results of 1: 1280. According to the literature, laboratory

diagnoses in syphilis patients are VDRL or RPR (rapid plasma regain). Treponema pallidum EIA test, FTA (fluorescent treponemal antibody) or TPHA test (T treponema pallidum haemagglutination Assay), and PCR are the specifics [10]. Serological testing is still used in laboratories for diagnosis, but it is only relatively sensitive for detecting late-stage syphilis. A positive serology test can also indicate a previous infection. The PCR test, on the other hand, is very sensitive and specific and can be used to detect T. pallidum infection in primary lesions [7].

The rapid HIV test laboratory examination was found to be non-reactive. According to the literature, all patients with syphilis should be tested for HIV. Syphilis and HIV, syphilis causes genital ulcers and lesions, which can increase the risk of HIV transmission and acquisition by acting as a portal of entry for the HIV virus. By increasing viral load, syphilis complicates the clinical course of HIV. It has also been linked to higher rates of treatment failure in HIV patients [1].

Chancroid was used as a differential diagnosis in this case (mole ulcer). Chancroid (molecular ulcer) is a sexually transmitted infection that causes a painful ulcer at the site of inoculation, typically on the external genitalia, as well as suppurative regional lymphadenopathy (It is usually found in the anogenital region and is frequently associated with inguinal or bubonic adenitis). Chancroid has also been linked to an increased risk of HIV/AIDS transmission. Haemophilus ducrey, a gram-negative, facultative anaerobic bacterium, is the cause [11], [13].

This patient was treated with doxycycline 100 mg twice daily for fourteen days. The lesions were dry on the seventh day of control. Benzatin Penicillin (BP) 2.4 million single dose IU was administered after fourteendays of therapy. There was a study enhanced antibiotic treatment for syphilis that first group received standard therapy BP and the second group received enhanced therapy BP plus doxycycline and ceftriaxone. In second group gave 100% serological improvement compared first group 68% serological improvement after 12 month followup [4]. During the treatment there was no complication related syphilis in the second group, but in the first group there was 1 case of neurosyphilis.

Prednisolone 20mg daily for three days, beginning on the first day of BP administration, to prevent Jarisch-Herxheimer reaction [6], [12]. After primary and secondary syphilis treatment, approximately one-third to two-thirds of patients experience a reaction characterized by cold, fever, arthralgia, consecutive headache, and transient lesions. This is referred to as the Jarisch-Herxheimer reaction. This reaction occurs presumably after administration of benzathine penicillin, which activates cytokine stimulation, tumor necrosis factor (TNF), interleukin 6 (IL 6), and interleukin 8 (IL 8), resulting in inflammation, which usually occurs within 24 hours of BP administration [8], [12]. This patient did not have a Jarisch-Herxheimer reaction after receiving BP, and he did not exhibit any clinical symptoms.

The patient had no complaints on the 37th day of control, and laboratory tests for VDRL and TPHA control were performed. The VDRL reactive 1:4 and TPHA reactive 1:40 results. According to the literature, a fourfold decrease in VDRL titers over three to six months is required for primary and secondary syphilis treatment to be successful. In this patient there was serologically improvement after one month treatment, its still more research about efficacy of continuation antibiotic therapy doxycycline and benzathine penicillin in providing serological achievement level after one month therapy.

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