

## CASE REPORT SYPHILIS WITH PALMOPLANTAR PSORIASIS MANIFESTATIONS

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### Abstract

*In the period from januari to march 2021, 2.976 cases of early syphilis were reported and 892 cases of advanced syphilis in Indonesia.<sup>4</sup>*

*Syphilis is a sexually transmitted infection caused by *Treponema pallidum*. spread by direct contact with lesions or vertically during pregnancy. The typical manifestation of syphilis is a painless papule or ulcer with a clean base. divided into 4 phases namely primary, secondary, latent and tertiary. The diagnosis of syphilis is based on serology, namely non-treponemal and treponemal tests.*

*For the treatment of syphilis, Benzathine Penicillin G can be given in the amount of 2.4 million intramuscular units in a single dose or alternative therapy can be given 2 x 100 mg doxycycline for 14 days for primary and secondary stages, 28 days for latent stages.<sup>1</sup>*

**Keywords:** *Syphilis, *Treponema pallidum* , psoriasis palmoplantar*

**INTRODUCTION**

Syphilis is an infectious disease caused by *Treponema Pallidum* which is chronic from the start and is a systemic infection in the course of the disease which can affect almost the entire body with clear clinical manifestations but there is a latent period which is completely asymptomatic, capable of resembling various diseases, can be transmitted to the fetus in the womb. and can be cured.<sup>2</sup>

Syphilis is a systemic bacterial infection caused by the spirochete *Treponema pallidum*. Because of its many protean clinical manifestations, the disease has been named "the great imitator". The origin of syphilis has been controversial and debated, and many theories have been postulated on this subject. The infection develops through four stages and can affect multiple organ systems. Fortunately, the causative organism is still sensitive to penicillin. The genus *Treponema* is a spiral-shaped bacterium with a rich outer phospholipid membrane that belongs to the order spirochetal. It has a slow metabolic rate, as it takes an average of 30 hours to reproduce.<sup>3</sup>

*Treponema pallidum* is the only treponemal agent that causes venereal disease. Other *Treponema* subspecies cause non-venereal diseases transmitted by nonsexual contact: *Treponema pertenuis* causes yaws, *Treponema pallidum endemicum* causes endemic syphilis or bejel, and *Treponema carateum* causes pinta. All treponematoses have similar DNA but differ in their geographic distribution and pathogenesis. The only host for the organism is humans, and there is no animal reservoir.<sup>3</sup>

Syphilis is considered a sexually transmitted disease, because most cases are transmitted by vaginal, anogenital and orogenital contact. Infection can rarely be acquired through nonsexual contact, such as skin to skin, or through blood transfer (blood transfusion or sharing of needles). Vertical transmission occurs transplacentally, resulting in congenital syphilis.<sup>3</sup>

According to the World Health Organization (WHO) in 2016 the incidence of syphilis is still high, reaching 5.6 million cases of syphilis in the world of adolescents and adults (ages 15-49 years). According to a report from the Ministry of Health of the Republic of Indonesia (Kemenkes RI) in Indonesia there were 7,055 new cases of syphilis in 2018 that occurred in the transgender population, male sex workers (MSM), female sex workers (WPS) and injecting drug users (IDU). In the period from January to March 2021, 2,976 cases of early syphilis were reported and 892 cases of advanced syphilis in Indonesia.<sup>4</sup>

Statistics from the Centers for Disease Control and Prevention (CDC) 2020 for primary and secondary syphilis (P&S) complicated in March and April 2020 so the number of cases fell below 2019 levels so far. Factors contributing to this change include screening uptake, limited public health resources, and fluctuating social distancing measures. However, the number of cases rose again and then surpassed 2019 proportions throughout the year. In 2020, the final number of reported cases of P&S syphilis, infectious stage, was 41,655, an increase of 6.8% from 2019. The reported incidence of syphilis cases (all stages) for 2020 was 40.8 per 100,000, representing an increase of 3, 3%. from 2019.<sup>5</sup>

The secondary stage of infection begins 4-10 weeks after the ulcer heals, although it varies widely and the primary and secondary stages may coincide.<sup>6</sup> The hallmark is a maculopapular rash (seen in 50-70% of patients) which can affect the palms and soles. The rash and especially the moist lesions of secondary syphilis are contagious. Given the shared epidemiology of HIV and syphilis, primary HIV infection is an important differential diagnosis in MSM presenting with a rash.<sup>7</sup>

Cutaneous manifestations are so variable that syphilis must be considered in diagnosing all skin diseases with an atypical presentation. Palmar and plantar area difficulties are very characteristic and erythematous papules with a scaly collarette are the most common presentation. Sometimes the scaling is very intense, giving the lesion a psoriasisiform aspect.<sup>8</sup>

**CASE 1**

Male, 23 years old with complaints of non-itchy red, scaly patches on the soles of the arms and legs since 1 month ago. At first it appeared a little on the arm then it increased. The reddish spots feel hot and slightly itchy and whitish scales appear like peeling skin. In addition, the patient also complained of fever and headache. The patient had no complaints like this before, and had no previous history of any illness.

The patient has a history of drug allergies, namely amoxicillin and paracetamol. Prior history of skin disorders was denied. Last history of coitus 2 years ago, MSM with ano-genital and oro-genital. Denied history of more than 1 sexual partner, denied sexual history with sex worker. History of IDU (using needles) was denied.



On the immunological examination, positive TPHA results were 1/1280, and VDRL positive 1/128. For the management of this case, doxycycline 100 mg 2x a day was given for 28 days, after which the VDRL titer was checked 1 month after the administration of doxycycline treatment.

**DISCUSSION**

In this case, including Secondary Syphilis, treatment for syphilis is by administering a single dose of Benzathine Penicillin G 2.4 million Units intramuscularly as the first option. alternative therapy that can be given is doxycycline 100 mg orally twice a day for 14 days.<sup>9</sup>

Syphilis is a sexually transmitted infection disease caused by *Treponema pallidum*, is chronic, is a systemic infection from the start, in the course of the disease it can affect almost all structures of the body, with clear clinical manifestations but there is a latent period that is completely asymptomatic, capable of resembling various diseases, can be transmitted to the fetus in the womb, and can be cured.<sup>10</sup> Recent data highlight how syphilis infection has re-emerged as a major public health problem in recent years. Most cases of syphilis occur in men who have sex with men and in HIV-positive patients. Multiple partners and unprotected sexual intercourse are frequently reported. If the primary infection is not properly diagnosed and treated, after 4-10 weeks, the disease progresses to secondary syphilis, which is characterized by systemic manifestations. Secondary syphilis, also known as “copycat”, can present itself in a number of ways, mimicking both clinically and histologically.<sup>5</sup>

*Treponema pallidum* subspecies *pallidum* is a motile, spiral-shaped bacterium for which humans are the only natural host. *Treponema pallidum* ranges in size from 5 to 16 µm in length and 0.2 to 0.3 µm in diameter. Transmission of syphilis is through sexual contact. When first contact occurs 10-90 days primary infection is characterized by a single ulcer, regular edges, clean base, there is induration, no pain, there is enlargement of regional lymph nodes. Its location is at the point of contact with a sexual partner's infectious lesions. In men it is often found on the penis (especially on the glans penis or around the coronary sulcus) and scrotum while in women it is found on the vulva, cervix, fourchette or perineum. However, ulcers can also be invisible and unnoticed by the patient. after 3-12 weeks, secondary infection occurs characterized by the presence of polymorphic, non-itchy skin lesions and lesions on the mucosa, often accompanied by generalized painless enlarged lymph nodes (lymphadenopathy). Up to 25% of cases of secondary infectious lesions of syphilis develop while the primary lesion is still present. Overlap is common in patients with HIV infection. Other manifestations of syphilis affecting the skin include nodular granulomatous and psoriasiform plaques.<sup>11</sup>



**Figure 200-31** Plaque of tertiary syphilis may be brick-red in color, covered with scales, and may be indistinguishable from psoriasis.

It is said to be Latent Infection when there are no clinical symptoms in the patient, but the syphilis serological test (TSS) is reactive, both treponemal and nontreponemal serology, and usually after more than 1 year. Early latency in syphilis can be diagnosed by finding a reactive serological test and having at least one of:

1. History of seroconversion ¼ or nonTreponemal test titer increase.
2. There are symptoms of primary or secondary syphilis.
3. Sexual partners have a history of primary, secondary or early latent syphilis
4. Reactive non-treponemal and treponemal tests from someone who has the possibility of occurring in the previous 12 months.

Late latent syphilis is diagnosed with latent syphilis patients who do not fall into this category. Tertiary syphilis, although not a grade of syphilis, the CDC defines tertiary syphilis as clinical. Management and follow-up of syphilis, Penicillin G is recommended intramuscularly at a dose of 2.4 million single dose units. Alternative therapy can be given doxycycline 100 mg twice a day for 14 days. Erythromycin 4x500 mg orally for 14 days for pregnant women with primary and

secondary syphilis, or 30 days for latent syphilis (very low quality evidence, conditional recommendation)<sup>3</sup> Clinical and serological evaluation of therapy is carried out at 1, 3, 6 months and 12, 18, and 24. He was said to be cured if the VDRL or RPR titer decreased 4-fold within 6 months after treatment. If there is a 4-fold increase in the VDRL or RPR titer, then reinfection should be suspected.<sup>10</sup>

Although the local inflammatory response elicited by spirochetes is thought to be the root cause of all clinical manifestations of syphilis, the mechanisms leading to tissue damage, as well as host defenses that ultimately gain control over the bacteria, are unclear. The reluctance of *T. pallidum* to culture in vitro and the consequent inability to utilize genetic techniques to characterize virulence determinants remain major obstacles to progress. Moreover, the fragility and low protein content of their outer membranes have confounded attempts to characterize surface-exposed molecules. Finally, murine models that are fluid for dissecting host response and protective immune components are also lacking.<sup>12</sup> Because of its varied and often subtle manifestations that can mimic other infections, syphilis has earned the name "Great Mimicker" or "Great Imitator". Patients with primary syphilis present with a single ulcer (chancre) or multiple lesions on the genitals or other body parts involved in sexual contact and regional lymphadenopathy 3 weeks post-infection, these are usually painless and heal spontaneously. Resolution of the primary lesion is followed 6–8 weeks later by secondary manifestations, which may include fever, headache, and a maculopapular rash on the flanks, shoulders, arms, chest, or back and which often involves the palms and soles. When signs and symptoms subside, the patient enters a latent phase, which can last for years.<sup>12</sup>

In this case, the patient complained of non-itchy, scaly reddish spots on the soles of the arms and legs since 1 month ago. At first it appeared a little on the arm then it increased. The reddish spots feel hot and slightly itchy and whitish scales appear like peeling skin. In addition, the patient also complained of fever and headache.

Due to multiple clinical presentations, a biopsy is usually performed and the diagnosis is made, as in our case. The histological characteristics of secondary syphilis are highly variable and show epidermal and/or dermal changes. In general, the inflammatory reaction acquires a lichenoid (lichen planus type) and/or psoriasiform (psoriasis type) pattern. Findings with a psoriasiform lichenoid aspect, as observed in our case, show dense mononuclear infiltrates extending into the deep dermis. The infiltrate consists of lymphocytes, macrophages, plasmacytes, neutrophils and eosinophils in varying proportions. Associated vascular changes include vascular proliferation, protrusion of endothelial cells under light, associated with perivascular infiltration. Specific Wharthin-Starry stain (silver stain) can identify treponemes in the tissue.<sup>12</sup>

The mucocutaneous manifestations of syphilis, other than the primary syphilitic chancre, are called "syphilids". Several case reports of psoriasis simulating secondary syphilis are available in modern biomedical databases. Some of these patients were initially treated as psoriasis until a final diagnosis of syphilis was reached. Solak et al. reported the case of a 43-year-old male patient with syphilide psoriasiforme who was misdiagnosed and treated as palmoplantar psoriasis for 2 years. Likewise with Gianfaldoni et al. describes the case of a 45-year-old male patient who was initially diagnosed and treated as palmoplantar psoriasis prior to diagnosis.<sup>6,13</sup>

The distribution and character of syphilis varies. Syphilis has a generalized and symmetrical distribution although localization to the palms and soles or genitals is common. Pruritus may or may not be present. Mucocutaneous eruption is the most common of secondary syphilis. It classically presents in a diffuse, symmetrical pattern involving the trunk and extremities, including the palms and soles, with 0.5–2 cm macules or papules that are red-brown ("copper-colored" or "ham-colored") and scaly. Consistent with the syphilitic moniker "The Great Mimician", mucocutaneous eruptions of secondary syphilis often deviate from this classic morphology. Psoriasiform, follicular, pustular, lichenoid, nodular, or annular morphologies have all been reported. In addition, mucocutaneous eruptions may be inconspicuous and thus overlooked by patients and clinicians.<sup>6</sup>

Serological tests can be used to diagnose all stages of syphilis. They consist of treponemal tests (TT) such as the Treponema pallidum particle agglutination test (TPPA) or IgM/IgG enzyme immunoassay (EIA) tests and non-treponemal (anti-cardiolipin) tests (NTT) such as rapid plasma reagin (RPR) or laboratory tests. venereal disease research (VDRL) (the NB VDRL test is no longer widely available in the UK). TT is often the first to become positive (from two weeks after infection) and usually remains positive for life. NTT is performed quantitatively and is used to monitor treatment response. They provide an indication of the stage of the disease because higher titers are associated with a more active (early) infection and lower titers indicate a more quiescent (latent) or previously treated infection. NTT is subject to biological false positives (pregnancy, recent vaccination, autoimmune disease) and false negatives (at very high titers due to the prozone phenomenon). It is also important to note that NTT may be negative early in the primary infection.<sup>7</sup>

Treatment depends on the stage of the disease:<sup>3</sup>

- Primary, secondary, or early latent syphilis is treated with a single intramuscular (IM) dose of benzathine penicillin G 2.4 million units.
- Neurosyphilis treated with IV aqueous penicillin G 18-24 million units daily for 14 days. Alternative regimens are procaine penicillin G 2.4 million units IM once daily AND probenecid 500 mg orally 4 times daily for 10-14 days.
- Tertiary and latent syphilis and HIV-infected patients should be treated with penicillin benzathine G 2.4 million units IM weekly for three weeks.

- Alternative therapies include doxycycline 100 mg orally (PO) twice daily for 14 days or ceftriaxone 1 to 2 gm IM or intravenously (IV) daily for 10 to 14 days or tetracycline 100 mg PO 4 times for 14 days. Azithromycin is no longer recommended due to reports of resistance.

The Jarisch-Herxheimer reaction is a syndrome that occurs 12 hours after therapy, then disappears spontaneously within 24-36 hours. This reaction is a significant side effect that can occur with any syphilis antibiotic therapy but is most common after penicillin use. Occurs in 1/3 to 2/3 of primary and secondary syphilis patients treated with penicillin. Manifestations include fever, rash, malaise, headache, mucocutaneous lesions, painful lymphadenopathy on pressure, sore throat, and myalgias. It is seen in 10% to 35% of patients and is usually self-limited. The Jarish-Herxheimer reaction is not a hypersensitivity reaction but the presence of cytokines triggered by dead *T. Pallidum* lipoproteins, so that penicillin therapy does not need to be stopped. This reaction is thought to result from the release of lipoproteins, cytokines and immune complexes from the dead organism. Paracetamol and ibuprofen can overcome complaints.<sup>14</sup>

After treatment needs to be evaluated. Titers tend to decrease over time even without treatment, but successful therapy accelerates the rate of antibody decline. Serological cure was defined as seroconversion (from positive to negative) or as a 4-fold decrease (or two dilutions) of NNT antibody titers 6 to 12 months after therapy for early syphilis and 12 to 24 months for late syphilis. A 4-fold or more decrease in titer is generally associated with younger age, higher baseline nontreponemal titers, and earlier stage of syphilis. Treatment failure was defined as a  $\geq 4$ -fold increase in nontreponemal titers after treatment in the absence of reinfection. Correctly treated patients, with a  $\leq 4$ -fold decrease in titer and not likely to develop a new infection, are known as serological non-responders. Serofast status concerns patients with persistent reactive NTT despite adequate treatment without seroconversion after an initial reduction of  $\geq 4$ -fold.<sup>15</sup>

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