

Malignant syphilis in a young woman: A case report

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Abstract

Malignant syphilis (MS) is a rare dermatological manifestation of secondary syphilis. This case report describes a young woman that presented with a 15-day history of generalized condyloma lata and seborrheic dermatitis-like lesions at various stages. Laboratory tests showed a toluidine red unheated serum test titre of 1:128 and *Treponema pallidum* particle agglutination positivity. Serology for HIV antibodies was repeatedly negative. MS was diagnosed according to established MS diagnostic criteria. The lesions regressed after treatment with 2 400 000 units penicillin G benzathine by intramuscular injection weekly for three consecutive weeks. MS is more frequently associated with HIV-infected patients, which makes this current case more interesting because MS in HIV-negative patients has rarely been reported.

Keywords

Syphilis, bacterial disease, sexually transmitted infection, malignant syphilis, lues maligna

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Introduction

Malignant syphilis (MS) is a rare dermatological manifestation of *Treponema pallidum* infection. It was first described in 1859 and doubts of whether it was a variant type of secondary syphilis were resolved due to Haslund and Neisser's studies published in 1897.^{1,2} The incidence rate of syphilis in Zhejiang Province, China remains high at 53.53/100 000 in 2019.³ Older men aged ≥60 years and sexually active women aged 20–34 years account for the incidence peaks.³ This case report describes a female

that presented with generalized condyloma lata and seborrheic dermatitis-like lesions at various stages. MS is most often associated with HIV-infected patients,⁴ which makes

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this current case more interesting because MS in HIV-uninfected patients has rarely been reported.^{5,6}

Case report

In September 2019, a 26-year-old female presented to the Department of Dermatology, Second Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang Province, China with a 15-day history of facial multiple painless, non-pruritic plaques. Physical examination revealed erythematous scaly plaques on the forehead, both upper eyelids (Figure 1A), lower jaw, left axilla (Figure 2A), the finger web spaces and anogenital areas. The plaques on her left axilla were producing a fish-like smell and they had ulcers in the middle. Seborrheic dermatitis-like lesions were found on the scalp and both external auditory canals. The patient reported having had unprotected sexual intercourse with her ex-boyfriend 3 months before. The patient had no medical history and was taking no medications.

Laboratory tests showed a toluidine red unheated serum test (TRUST) titre of 1:128 and *T. pallidum* particle agglutination (TPPA) positivity. Other laboratory analyses including routine blood examination and liver and kidney function tests were normal. Serology for HIV, hepatitis B and hepatitis C were negative. A chest X-ray was normal. A secretion smear test of the left axilla was performed and the result was negative of *T. pallidum* under dark field microscopy. After obtaining agreement from the patient, a lesion biopsy was taken from the left axilla and the haematoxylin and eosin staining of the biopsy showed plasma-cell rich granulation tissue.

After obtaining the patient's consent for treatment, she was treated with 2 400 000 units penicillin G benzathine by intramuscular injection weekly for three consecutive weeks. She experienced a severe



Figure 1. Representative photographs of a 26-year-old female that presented with a 15-day history of facial multiple painless, non-pruritic plaques. The images show the scaly erythematous plaques on both upper eyelids before treatment (a) and by the end of treatment (b) when all of the lesions had regressed. The colour version of this figure is available at: <http://imr.sagepub.com>.

Jarisch–Herxheimer reaction (JHR) after the first injection despite having received a prophylactic intramuscular injection of 1 ml of Diprospan® (Shanghai Schering-Plough Pharmaceutical, Shanghai, China), which included 5 mg betamethasone dipropionate and 2 mg betamethasone disodium phosphate, 1 h before the first dose of penicillin G benzathine. By the end of the treatment, all lesions had regressed (Figure 1B) except for the hyperpigmentation that remained on her lower jaw, left axilla (Figure 2B) and anogenital areas. A follow-up examination 6 months later demonstrated that her TRUST titre had decreased to 1:16 and her HIV antibodies remained negative. During this period, the patient denied any other symptoms such as headache, fever or chills, vomiting, loss of appetite, abdominal or chest pain, or hair loss.

The patient gave written informed consent to publish the clinical details and accompanying images. The study was approved by the Human Research Ethics Board of the Second Affiliated Hospital, Zhejiang University School of Medicine (no. 2020-620) and was conducted

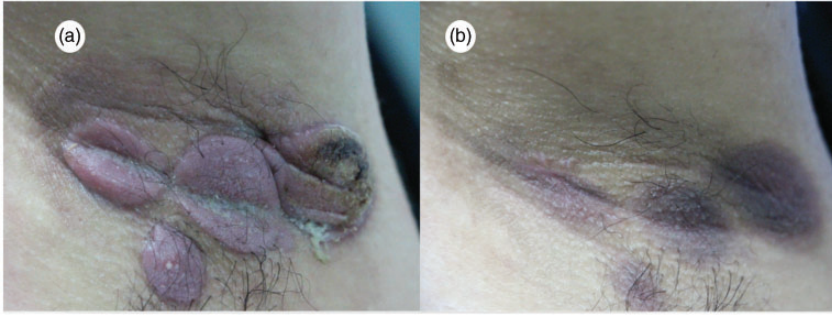


Figure 2. Representative photographs of a 26-year-old female that presented with a 15-day history of facial multiple painless, non-pruritic plaques. The images show the left axillary lesions before treatment (a) and the hyperpigmentation that remained by the end of treatment (b). The lesions ranged from 6 mm to 23 mm in diameter. The colour version of this figure is available at: <http://imr.sagepub.com>.

according to the principles of the Declaration of Helsinki. All patient details have been de-identified. The reporting of this study conforms to CARE guidelines.⁷

Discussion

Malignant syphilis is a variant type of secondary syphilis commonly seen in HIV-positive patients, rarely occurring in immunocompetent patients.⁵ The pathogenesis of MS is still not fully understood. It is believed that the immunosuppression due to HIV infection or comorbidities such as diabetes mellitus, alcoholism, drug abuse, psoriasis or hepatitis, enables *T. pallidum* to become more malignant.⁸ The depletion of CD4+ T cells as a consequence of the HIV infection or other comorbidities leads to a greater action of cytotoxic T cells and neutrophils on the skin, which further distinguishes MS from conventional syphilis with a competent immune.^{8,9} Humoral immunity also appears to be involved in the pathogenesis of MS and a functional defect may be responsible.¹⁰ However, in this current patient, she didn't report any comorbidities or consumptive disease, so common immune deficiencies were not detected. The reason for her developing MS remains unknown.

Clinically, MS lesions start as polymorphous papules that evolve into nodules, pustules, typically ulcers and are sometimes covered by a rupioid crust.¹¹ In addition, MS typically involves the trunk and extremities,¹¹ but barely the head and neck.¹² Associated systemic symptoms are common, such as fever and arthralgia, myalgia, headache and photophobia.⁸

This current patient was diagnosed as having MS based on the following diagnostic criteria:¹³ (i) explosive generalized lesions distribution; (ii) extremely high TRUST titre and the confirmed presence of *T. pallidum* by TPPA; (iii) JHR following treatment; (iv) dramatic response to anti-syphilis therapy. The diagnosis of MS is mostly based on the clinical features and experimental findings. Skin biopsy is not an essential element of the diagnosis because spirochetes are generally sparse in lesions. However, skin biopsy is recommended to exclude other bacterial, fungal and mycobacterial infections. It is reported that the most common histological feature of MS is lymphohistiocytic dermal infiltrate with plasma cells.^{8,14} A secretion smear test can be used to directly observe *T. pallidum* under dark field microscopy, but *T. pallidum* could not be detected in this manner

in the current case as previously reported.¹⁵ Other methods to identify *T. pallidum* include immunohistochemistry and silver stains, but they are not routine procedures.¹⁶

The treatment regimen for MS is recommended as 2 400 000 units penicillin G benzathine by intramuscular injection weekly for three consecutive weeks or daily intravenous injection of an aqueous solution of penicillin.¹⁴ For those allergic to penicillin G, ceftriaxone, doxycycline and minocycline could be alternative treatment options.^{8,16} JHR has been reported in a small number of patients with MS, both HIV-infected and HIV-negative patients,¹⁴ and prophylactic corticosteroids were not able to fully prevent it,¹⁴ as seen in the current patient.

In conclusion, this current case report describes a young HIV-negative woman with MS. She barely had any risk factors despite having had several sessions of unprotected sexually intercourse with her ex-boyfriend. The type of MS and its great ability to mimic other conditions can pose a challenge to dermatologists and general physicians, so one should always bear in mind this rare cutaneous presentation of syphilis during differential diagnosis, especially in those populations that have high risk factors. It also highlights the need for multidisciplinary collaboration because there is a possibility of neurosyphilis¹⁷ or otosyphilis.¹⁸ Furthermore, the incidence of syphilis remains serious worldwide. It is important to consider the possibility of a syphilitic infection so that early serum tests such as TRUST and TPPA can be used during diagnosis and evaluation of treatment response.

Author contributions

J.Q.C. designed the study and wrote the manuscript. Y.L.C and X.Y.M. performed the clinical evaluation of the patient and determined the clinical diagnosis and treatment. X.Y.M. edited the manuscript. All authors have read and approved the final version of the manuscript.

Declaration of conflicting interests

The authors declare that there are no conflicts of interest.

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