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Article : OLQ50904

Creator : mcapuyan

Date : Monday June 22nd 2020

Time : 15:56:59

Number of Pages (including this page) : 4

Primary Syphilis of the Neck Mimicking a Pyodermatitis

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Abstract: The authors describe an atypical primary syphilis of the neck. The unusual clinical presentation and localization led to an initial diagnostic mistake. This case confirms the polymorphic character of syphilis. Considering the increased incidence of sexually transmitted infections worldwide, a high index of suspicion should be maintained by physicians.

CASE REPORT

Syphilis is a sexually transmitted infection (STI) characterized by mucocutaneous manifestations and possible systemic involvement. In the first stage of the disease, a chancre appears in the site of *Treponema pallidum* (TP) inoculation¹; although syphilitic chancres generally involve the genital area, some authors report almost 5% of extragenital chancres.² Herein, we describe an unusual case of primary syphilis of the neck, mimicking a pyodermatitis.

A 45-year-old man who has sex with men presented to our department with a skin lesion recently appeared on his neck. The patient reported that the lesion was mostly asymptomatic, and only mild burning and itching were triggered by contact with clothes. He had been diagnosed with HIV several years before, and he was on antiretroviral treatment; viral load was undetectable and CD4+ T-cell count was 750 cells/ μ L. His medical history revealed other previous STIs, including secondary syphilis, gonococcal urethritis, and external genital warts. On admission, dermatological examination revealed an infiltrative erythematous lesion, hard in consistency and covered by a yellowish crust, localized on the neck, more precisely in the region of the beard (Fig. 1). No other mucosal or cutaneous manifestations were observed. Considering the anatomical site, very rich in hair follicles, a diagnosis of pyodermatitis was made and amoxicillin/clavulanic acid associated with topical gentamicin was prescribed. After the first dose of systemic antibiotic, the patient came back complaining of fever, general malaise, and articular and muscular pain and attributing these symptoms to an allergic reaction; no cutaneous exanthema or angioedema was reported. Considering his history of STIs, his sexual habits (he reported multiple sexual partners and unprotected orogenital intercourse), and the drug-induced symptoms, more compatible with a Jarisch-Herxheimer reaction than with an allergy, we tested him for syphilis. Anti-TP IgM + IgG antibodies, revealed by enzyme-linked immunosorbent assay, were positive, TP particle agglutination was positive at a titer of 1:80, and rapid plasma reagin test (RPR) was reactive at a titer of 1:16 (RPR was nonreactive 6 months before our observation). Moreover, TP nucleic acid amplification test (TP-NAAT) testing from a lesional swab yielded a positive result. The

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TP-NAAT was performed using a commercial CE-marked real-time polymerase chain reaction for the 47-kDa membrane lipoprotein of TP (tpp47) gene (Sacace Biotechnologies, Como, Italy). Upon further investigation, the patient reported a vigorous sexual intercourse approximately 1 month before, causing a “love bite” on his neck in the same site of the aforementioned lesion. Based on the laboratory results, the clinical picture characterized by a single painless lesion without other dermatologic signs, the recent sexual exposure with a presumptive traumatic TP inoculation, and the supposed Jarisch-Herxheimer reaction, a diagnosis of primary syphilis was made. In accordance with the International Union Against Sexually Transmitted Infections guidelines,³ intramuscular benzathine penicillin G at 2.4 million units was administered. The lesion healed in 2 weeks leaving no sequelae, and RPR became nonreactive 3 months after the treatment.

Syphilitic chancre appears between 10 and 90 days from the infection, and it is usually described as a solitary, asymptomatic, erythematous nodular lesion, hard in consistency, superficially eroded, involving the genitalia, and self-healing in approximately 4 weeks.¹ These classic manifestations are observed in 40% of cases, whereas in the remaining cases, primary syphilis may be atypical for clinical presentation, number of lesions, and localization.⁴ Although the most frequent extragenital sites are the oral cavity and the anus, syphilitic chancres have been described everywhere in the body.⁴ In case of unusual localization, the diagnosis is difficult; when also the clinical presentation is atypical, as in our patient, who showed an infiltrative crusty lesion instead of the classic eroded nodule, the diagnosis becomes even more difficult. In our patient, secondary syphilis or impetigo associated with latent syphilis could also be hypothesized. However, the history of a love bite on the neck occurred approximately 1 month before the lesion onset; the presence of TP DNA on lesional swab and the absence of other cutaneous or mucosal lesions elsewhere made less likely the diagnosis of secondary syphilis or impetigo and supported the hypothesis of syphilitic chancre. Moreover, impetiginoid syphiloderm^{5,6} and “en plaque” secondary syphilis⁷ are usually characterized by multiple lesions.

Other cases of primary syphilis lesions occurring after love bites have been reported in the literature, either on the neck^{8,9} and on other cutaneous sites, such as the nipple.¹⁰ Furthermore, Iglesias-Plaza and Arando¹¹ reported on a primary syphilis of the neck without providing information on the possible way of transmission of TP.

In the aforementioned chancres of the neck, the diagnosis was obtained by the combination of serology with the demonstration of TP within the lesion by means of TP-NAAT¹¹ or immunohistochemical analysis on skin biopsy.^{8,9}

Syphilis is rightly known as “the great imitator” owing to the wide spectrum of possible clinical manifestations, particularly in the second stage of the disease¹²; our case fully confirms the polymorphism of syphilis. In case of extragenital primary syphilis and atypical manifestations in general, serological tests are not enough for the diagnosis; a direct diagnostic method is mandatory to correlate the clinical picture with the serological positivity. In this regard, in case of eroded or wet lesions, NAAT is preferable either to dark-field microscopy, being more sensitive and specific

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Conflict of Interest and Sources of Funding: None declared.

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Received for publication March 26, 2020, and accepted May 25, 2020.

DOI: 10.1097/OLQ.0000000000001210

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Figure 1. Atypical syphilitic chancre of the neck, manifesting as an erythematous infiltrated crusty lesion.

for every mucocutaneous site, or to histopathological examination, being less invasive and easier to perform.^{13,14} Although no TP-NAAT has been approved for use by the US Food and Drug Administration, some authors found good sensitivity (82%) and specificity (96%) of the method in patients with primary and secondary syphilis, with a concordance of 82.6% with the clinical diagnosis.¹⁵ Along with the increase of incidence registered from the 2000s, the atypical presentations are likely to become more and more frequent, so an accurate sexual anamnesis should be always collected in “at-risk population.”

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