Nodular secondary syphilis simulating lepromatous leprosy

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Summary
There are diverse skin manifestations of both leprosy and syphilis. These diseases can appear similar to many other dermatologic conditions as well as to systemic diseases with dermatologic signs. Nodular syphilis is an uncommon type of secondary syphilis. We present here a person from a leprosy-endemic area with diffuse nodular skin lesions of secondary syphilis who was initially suspected of having lepromatous leprosy.

Introduction
Lepromatous leprosy is characterised by diffuse skin lesions which may be macular, papular, nodular, or infiltrative. In this type of leprosy, acid-fast bacilli (AFB) are generally seen in large quantities in dermal scrapings and skin biopsies, and these patients usually present with some degree of peripheral nerve dysfunction. Syphilis is caused by infection with Treponema pallidum, which is transmitted by sexual contact, transplacentally, or contact with an active syphilitic lesion. Secondary syphilis begins two to eight weeks after the appearance of the chancre of primary syphilis with diverse cutaneous manifestations including generalised macular, papular, pustular, or vesicular lesions; condyloma lata; or pigmentary changes.

The case presented here illustrates the importance of considering alternative diagnoses in the assessment of people referred for evaluation for leprosy, and the availability of simple laboratory tests for leprosy field programs to enable this evaluation.
A 50 year old man presented to his local health post with asymptomatic skin lesions for 2 months. He was seen by a physician who suspected multibacillary leprosy and referred him to the state reference center for further evaluation. During evaluation by a leprologist at the Giselda Trigueiro Hospital in Natal, RN, Brazil, he did not report any symptoms other than the skin lesions. He denied previous genital lesions or fevers. On examination, he was found to have papular lesions on the face and many papulo-nodular lesions on the trunk, abdomen, back, and proximal upper and lower extremities (Figure 1).

The nodules were non-tender, erythematous, non-ulcerated, and of various sizes with the largest measuring 1.5 cm. Some nodules had central depressions. There were no abnormalities of the ear and no palpable nerve enlargement. Sensation and muscular strength were preserved in the hands and feet. The patient denied known contact with anyone with leprosy. The differential diagnosis included lepromatous leprosy, secondary syphilis, disseminated cutaneous leishmaniasis, and cutaneous lymphoma. Initial evaluation included skin smear for *Mycobacterium leprae* stained by modified Ziehl-Nielssen and Venereal Disease Research Laboratory (VDRL) assay to evaluate for syphilis. Skin smear was negative for AFB, which eliminated lepromatous leprosy as the diagnosis. VDRL was reactive with a high titer of 1:512, which supported the diagnosis of secondary syphilis. Serologic testing for HIV was negative. He was treated with 2.4 million units of benzathine penicillin IM weekly for two doses. He was told to advise his partner to be tested for syphilis. One month after penicillin treatment, the lesions were resolving, with residual hyperpigmentation at sites of previous nodules (Figure 2).

Despite numerous attempts to contact the patient to return for repeat HIV and VDRL testing, he was lost to follow-up.

Discussion

This patient was referred to the state Hansen’s disease (leprosy) referral centre because of disseminated nodular skin lesions. There were some factors that suggested a diagnosis other than leprosy, mainly the absence of peripheral nerve enlargement and nerve function impairment despite widespread skin disease. The reported duration of symptoms was also relatively short for lepromatous leprosy. Simple laboratory tests were useful to rule out leprosy (skin smear should show AFB in lepromatous leprosy) and strongly suspect syphilis (positive VDRL with a high titer is associated with secondary syphilis). Further support for the diagnosis of secondary syphilis was the clinical response to treatment with penicillin. This patient had regression of skin nodules within 1 month after administration of penicillin. If these lesions were due to leprosy, disseminated cutaneous leishmaniasis, or cutaneous lymphoma, penicillin therapy should not result in such rapid improvement.

Lepromatous leprosy is one condition in which people may have a false positive serological test for syphilis, referred to as a biologic false positive (BFP). This phenomenon is more common in lepromatous than in non-lepromatous leprosy. One study showed rates of VDRL positivity of 0% in healthy controls, 0% in inactive leprosy, 10% in dimorphous (borderline) leprosy, and 31% in lepromatous leprosy. Within the lepromatous leprosy group, the rate of VDRL positivity was 44% in untreated erythema nodosum leprosum (ENL) compared to 23% of those without ENL. In another study, 40% of 206 leprosy patients had
Figure 1. Appearance of macules and nodules on the trunk (upper) and back (lower) prior to beginning treatment.
Figure 2. Appearance of resolved nodules and residual hyperpigmentation and macules on the trunk (upper) and back (lower) three weeks after receiving penicillin treatment.
reactive results for the VDRL or rapid plasma reagin (RPR) tests, both non-treponemal serological tests for syphilis. Of these, 40% were positive by a treponemal test. The probability that a positive VDRL result is a true positive increases with increase in VDRL titer. Results of treponemal and non-treponemal tests for syphilis need to be interpreted with clinical correlation.

The diverse lesions that can be present in secondary syphilis have been reviewed. Nodular syphilis is an uncommon manifestation of secondary syphilis and is described primarily in case reports and case series. There are case reports of syphilis mimicking leprosy. Because of the variety of dermatologic manifestations of both secondary syphilis and leprosy, syphilis can be confused with different types of leprosy including indeterminate, borderline, and lepromatous types. It is also possible for a person to have concurrent leprosy and secondary syphilis.

The person presented in this case report had rapid resolution of nodular skin lesions within 1 month after treatment with penicillin. This response, combined with negative studies for AFB in dermal smears, supports the diagnosis of nodular-type secondary syphilis and rules out lepromatous leprosy. It is important for health professionals, especially those in leprosy field programmes, to consider a full differential diagnosis in evaluation for leprosy.

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