Non-sexually transmitted acquired syphilis in a three-year-old boy

Sir,

Syphilis in children is not only a medical, but also a social problem that has been largely ignored in the past. The number of new cases per year remains quite remarkable, with 90% occurring in low- and middle-income countries.[1] Moreover, syphilis continues to be one of the major causes of stillbirths and mortality among neonates.[2] Approximately, 40% of children with syphilis progress to tertiary syphilis if not treated, a rate which is relatively greater than that observed in adults and leads to multisystem involvement.[3] Here, we present a unique case of syphilis to alert clinicians as to the potential for unusual manifestations associated with this condition.

A three-year-old boy presented with asymptomatic erythematous plaques on trunk and extremities including palms that had been present for one month. Some lesions showed targetoid morphology. No mucosa was involved. His anthropometric indices were normal. A diagnosis of erythema multiforme was made. He was treated with oral antihistamines and topical steroids but showed no improvement. The skin lesions continued to increase in number and size, developed scaling and showed a psoriasiform morphology [Figures 1a and 1b]. He also developed fever along with painless lymphadenopathy in axillary and inguinal areas. Those lymph nodes were hard and mobile. He was given ibuprofen for three days with which the fever subsided. The neurology, otology and ophthalmologic examinations were normal. There was no history suggestive of genital or extragenital chancre. No scar suggestive of a healed chancre was found. No history of blood transfusion was reported. A detailed clinical examination of the child showed no evidence of sexual abuse. His mother denied history of syphilis during pregnancy. Her primary screening tests for syphilis (rapid plasma reagin) and human immunodeficiency virus at six weeks and 32 weeks of gestation were negative.

Complete blood count assay revealed, white blood cell count of 11290/mm^3 (4000–10000/mm^3), red blood cell count of 2870/mm^3 (4000–4500/mm^3) and haemoglobin 6.9 g/dL (12–14 g/dL). Liver and renal function tests were normal. Serology for human immunodeficiency virus was negative. *Treponema pallidum* particle agglutination, 19s-immunoglobulin M-*Treponema pallidum* particle agglutination and rapid plasma reagin (with a titre 1:32) were positive. His mother gave a history of macular rash that appeared on her anterior thoracic region three months ago. At that time, evaluation revealed a positive serology for syphilis (*Treponema pallidum* particle agglutination and rapid plasma regain [titre 1:128]). Serology for human immunodeficiency virus was negative. She was diagnosed with secondary syphilis in the local hospital and her skin lesions disappeared after 2.4 million IU of intramuscular injection of benzathine penicillin once a week for three weeks.[4] She admitted to an extramarital sexual encounter during the past year on further questioning. It was also revealed that she used to feed the child with food pre-chewed by her. Serology of the patient's father was negative. Histopathological examination of a skin biopsy from one of the erythematous plaques on his left leg revealed hyperkeratosis, focal vacuolar degeneration of the basal cell layer and lymphocyte infiltrates around vessels of the dermis [Figure 2].

The child was diagnosed to have developed acquired syphilis and received a weekly administration of intramuscular benzathine penicillin (50,000 IU/kg) for three weeks according to the Chinese syphilis treatment guidelines of 2009.[4] After three months, the lesions subsided with hyperpigmentation. A repeat rapid plasma reagin test was negative. During his follow-up after 12 months, no relapse of the disease was observed and lab tests were normal/negative.

Acquired syphilis in children is often attributable to sexual abuse. However, non-sexual transmission such as kissing, breastfeeding, handling, administration of pre-chewed food or sharing contaminated utensils may also be routes for acquired syphilis in children and represent routes that are generally difficult to identify.[5] For many years, people have focused on syphilis as a sexually transmitted disease, ignoring syphilis transmitted through non-sexual contact. There are many publications about non-sexually transmitted syphilis in the

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Figure 1a: Erythematous plaques on the trunk

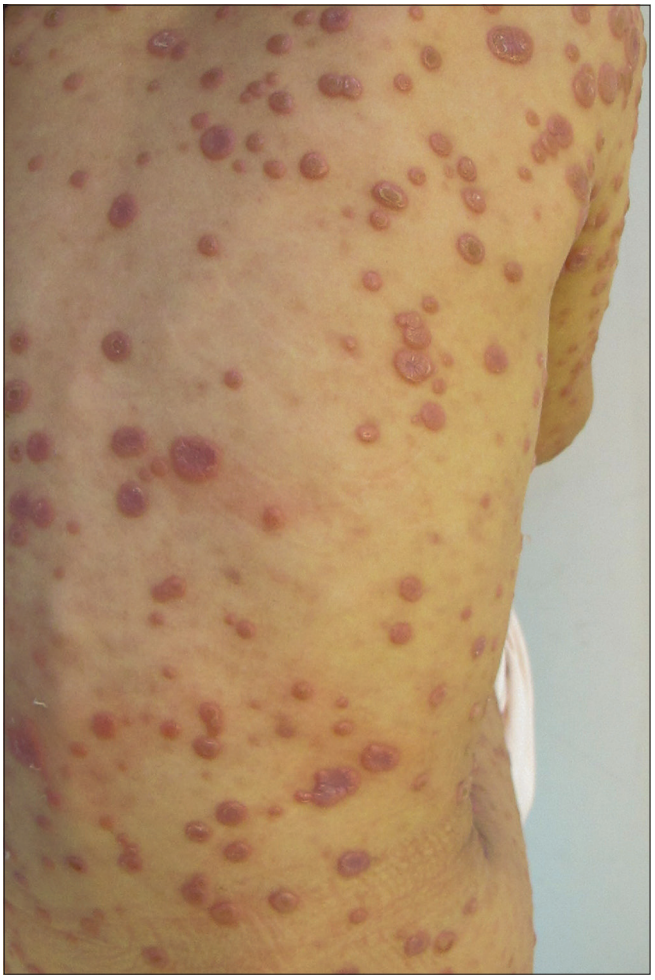

Figure 1b: Erythematous plaques on the back

literature.[5-9] Meanwhile, most of them were misdiagnosed at the early stage of the disease due to the lack of history of sexual contact and sexual abuse. In our case, spoon-feeding with food pre-chewed by the infected mother may be the route of infection. Accordingly, the diagnosis of secondary syphilis in children is challenging not only due to its rarity but also its ability to mimic many other conditions and difficult to determine a history of exposure to *Treponema pallidum*.

It is interesting to note that our patient presented with erythema multiforme-like lesions with targetoid morphology in the early stage of the disease. Pathological results of cases with erythema multiforme-like syphilis do not necessarily present with typical characteristics of secondary syphilis like swelling and proliferation of endothelial cells and perivascular plasma cell infiltration.[10] *Treponema pallidum* may be found in the skin lesions of secondary syphilis by some detection methods such as dark-field microscopy, silver staining, immunofluorescence, rabbit infectivity test or polymerase chain reaction. In addition, it has been reported that *Treponema pallidum* with abundant macrophages were found in erythema multiforme-like lesions and that might be caused by direct spirochete invasion.[11,12]

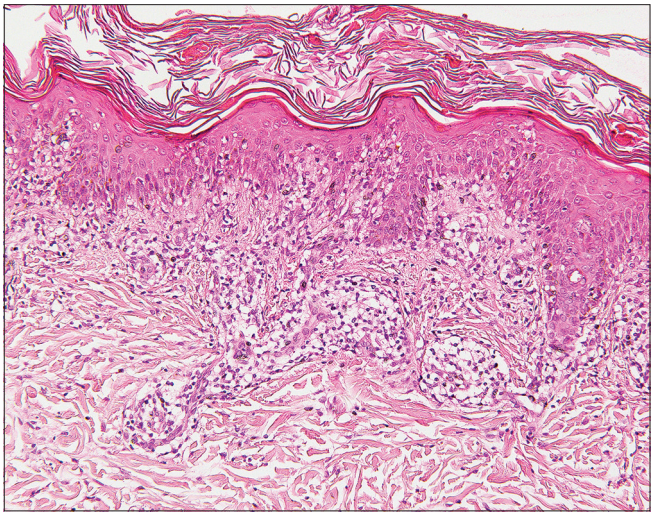

Figure 2: Hyperkeratosis, focal vacuolar degeneration of the basal cell layer, and lymphocyte infiltrates around vessels in the dermis (haematoxylin and eosin, ×200)

Here, we would like to remind the clinicians not to neglect the non-sexually transmitted acquired syphilis in suspected patients without a history of sexual contact, such

as children and bed-ridden patients. Moreover, patients with syphilis should be educated regarding both the sexual and the non-sexual modes of disease transmission so that the transmission of infection through either route can be prevented.

Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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