

Cutaneous papules in a patient with acquired immunodeficiency syndrome

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Abstract

During the past decade or so, the incidence of syphilis has increased in most parts of the world. In some urban regions, a coinfection with human immunodeficiency virus is disclosed in nearly 50% of the cases. Owing to the polymorphism of the lesions, the clinical diagnosis may be puzzling. The homing patterns and migration paths of *Treponema pallidum* in the skin during early syphilis represent the preliminary steps preceding dissemination to other organs. Immunohistochemistry directed to *T. pallidum* is a convenient means for reaching the diagnosis and for exploring the dissemination process. The present case illustrates the dermal clustering and the vascular spread of *T. pallidum* in a woman with acquired immunodeficiency syndrome.

Introduction

A number of skin disorders have been described in patients with acquired immunodeficiency syndrome (AIDS). Among them, secondary infections are common, but their incidence has decreased considerably following the introduction of combined therapies targeted to the human immunodeficiency virus (HIV). Some clinical presentations may be puzzling, particularly in secondary syphilis exhibiting lesions showing a marked tendency to polymorphism. The histopathological examination often proves to bring about the diagnosis.

Design and Methods

A 29-year-old woman with a three-year history of AIDS presented with polymorphic papules on the face and abdomen. The lesions reaching 0.5-1.5 cm in diameter had been present for about two months. They were diagnosed tentatively as pityriasis rosea, pityriasis lichenoides, and secondary syphilis. The skin lesions were asymptomatic but the patient

complained of discrete malaise, stiff neck, myalgia headache, and mild fever. A biopsy specimen was taken from a papule on the abdomen. A series of 5- μ m thick sections were cut from the formalin-fixed paraffin-embedded biopsy. An immunohistochemical assessment was performed using a rabbit polyclonal antibody directed to *Treponema pallidum* (1:200 Biocare Medical, Walnut Creek, CA, USA). This antibody is highly sensitive for detecting spirochetes in human tissues. The avidin-biotin peroxidase method was performed as previously described.^{1,2} A one-hour incubation time was used with the *T. pallidum* antibody. The EnVision (Dakopatts, Glostrup, Denmark) polymer-based revelation system and Fast red (Dakopatts) staining were used. Negative immunohistochemical controls were performed by omitting or substituting the primary and the secondary antibodies in the laboratory procedure.

Results

The dermoepidermal junction contained a band-like infiltrate composed mostly of lymphocytes, histiocytes, and plasma cells. A deeper cell infiltrate of similar composition extended along the microvasculature, hair follicles, and sweat glands. Endothelial cells appeared plump. Immunohistochemistry demonstrated innumerable *T. pallidum* in the dermis. The

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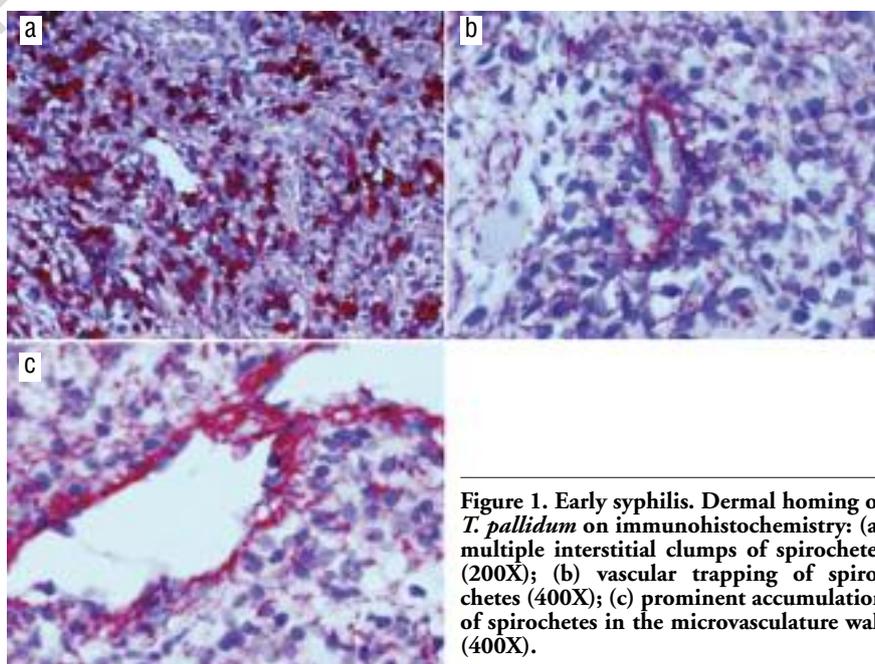


Figure 1. Early syphilis. Dermal homing of *T. pallidum* on immunohistochemistry: (a) multiple interstitial clumps of spirochetes (200X); (b) vascular trapping of spirochetes (400X); (c) prominent accumulation of spirochetes in the microvasculature wall (400X).

typical spiral, corkscrew, and threadlike spirochetes were highlighted by the red chromogen, and the contrast with the clear background was striking (Figure 1a, b, c). Their presence inside the lichenoid infiltrate was associated with a dense superficial and deep perivascular cuff of spirochetes. The latter slender spirochetes were clustered in the dermal stroma (Figure 1a) and in rims confined to the perivascular areas (Figure 1b, c). In addition, some *T. pallidum* were evident in the cytoplasm of cells, particularly endothelial cells (Figure 1c). A few of these spirochetes protruded into the vascular lumen. None of the negative controls showed spirochete immunoreactivity.

Discussion

In the present case, skin immunohistochemistry shed some light on the diagnosis of syphilis in an AIDS patient and showed the dermal homing and the microvascular tropism of *T. pallidum*. It is acknowledged that during a five-year period after inoculation, *T. pallidum* spreads to every organ. Then the disease is intermittently contagious. Later syphilis usually becomes dormant or latent for many years. A long time later, it commonly re-emerges as a chronic and deadly illness. At any stage in its evolution, syphilis may mimic a number of other unrelated diseases.

During the past decade, a sizable proportion of the population with syphilis corresponded to gay men coinfecting with HIV.^{3,4} When the clinical diagnosis of syphilis is not established, a

skin biopsy sometimes is submitted to the dermatopathologist without any relevant information. At the conventional histological examination, the diagnostic clues for syphilis are not always obvious because the disease presentation depends on both the host immunological response to the infection and the diverse angioinvasive propensity of the *T. pallidum* strains.⁵ An appropriate silver stain revealing spirochetes may remain negative or doubtful. Indeed, the histochemical silver stain may be difficult to interpret owing to heavy background staining.¹ Immunohistochemistry using an antibody directed to *T. pallidum* was reported to improve the histological diagnostic accuracy of syphilis.^{1,2,6,7} The present finding was assumed to illustrate the migration of *T. pallidum* toward the microvasculature during early syphilis.

In summary, *T. pallidum* were abundant and heavily clustered in some specific portions of the skin. The peculiar homing of *T. pallidum* in the skin appears quite specific as it has not been reported for any other infectious microorganism.

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