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Predictive values of prurigo nodularis and herpes zoster for HIV infection and immunosuppression requiring HAART in French Guiana

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ABSTRACT

Prurigo nodularis and herpes zoster frequently lead to the diagnosis of HIV in tropical areas. The WHO has established a clinical definition of AIDS for undeveloped countries. Prurigo and herpes zoster are both classified as stage 2. The main objective of this study was to compare the level of immunosuppression of patients diagnosed as HIV-positive after consulting for prurigo nodularis or herpes zoster in French Guiana. A retrospective study was conducted including patients consulting at the Department of Dermatology, Cayenne Hospital (French Guiana) for prurigo nodularis or herpes zoster between 1989 and 2007 for which the systematic HIV test was positive. Demographic data and CD4 counts of both groups were compared. Analysis of 346 patients consulting for herpes zoster ($n = 192$) or prurigo nodularis ($n = 154$) led to the discovery of 129 HIV infections. The positive predictive value (PPV) for HIV positivity was 38.5% for herpes zoster and 36% for prurigo nodularis. The median lymphocyte count was 302/mm^3 in herpes zoster and 87/mm^3 in prurigo nodularis ($P < 0.001$). The PPV for having a CD4 lymphocyte count < 200/mm^3 was 26.5% for herpes zoster and 72% for prurigo nodularis. Prurigo nodularis was predictive of advanced immunosuppression. This questions the pertinence of the WHO clinical classification of AIDS. In the absence of CD4 count, the present results suggest that for patients with prurigo nodularis, antiretrovirals should be initiated without delay.

1. Introduction

French Guiana remains by far the French territory with the worst HIV epidemic. With a prevalence in pregnant women repeatedly >1%, French Guiana is, according to the WHO, in a generalised epidemic.[1] This territory presents a model of an epidemic with a health system of a rich country and infected populations that mostly live in third-world conditions.

Cutaneous manifestations associated with HIV are very common and frequently lead to the discovery of HIV infection.[2,3] These manifestations are more frequent and more severe as immunosuppression progresses.[4] The WHO has established a clinical classification of AIDS that allows the classification of certain cutaneous manifestations as stage 2 (prurigo nodularis, herpes zoster, seborrhoeic dermatitis) or stage 3 (oral candidiasis, recurrent vaginal candidiasis) in relation to their pejorative prognostic value. According to the WHO, in developing countries, in the absence of CD4 count facilities, the indication for antiretroviral (ARV) treatment starts at stage 3.[5]

Few studies have evaluated the link between the level of immunosuppression and dermatologic pathologies that

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lead to the diagnosis of HIV in undeveloped countries.[6–9] However, in undeveloped countries, cutaneous examination is of critical importance in the absence of CD4 count.

The goal of the present study was to verify the validity of the WHO classification using two common dermatoses (herpes zoster and prurigo nodularis) that frequently reveal HIV infection.

2. Materials and methods

This study was based on a retrospective analysis of prospectively registered HIV tests in the Department of Dermatology, Cayenne Hospital (French Guiana). The department has an outpatient clinic and an inpatient ward. The analysis included patients enrolled between January 1989 and December 2007.

A standardised form was filled in for every patient being tested for HIV. The forms were filled in by the prescribing physician. Informed consent was systematically collected for HIV testing.

Patients were aware that data in their medical records were subject to medical research and gave informed consent. This manuscript was based on an internal anonymous collection of patient files, which is permitted by the Commission nationale informatique et libertés.

HIV testing was systematically proposed to consulting or hospitalised patients with one of the following dermatoses: herpes zoster; prurigo nodularis; chronic herpes; oral candidiasis; Kaposi's disease; moluscum contagiosum in adults; profuse seborrhoeic dermatitis; and extensive epidermal mycosis. Only prurigo nodularis and herpes zoster were studied because the sample sizes were too small for the other diagnoses.

Prurigo nodularis is characterised by pruritic nodules that usually appear on the arms or legs. Patients often present with multiple excoriated lesions. The cause of prurigo nodularis is unknown. In this study, the diagnosis of prurigo nodularis was clinical; biopsy is performed if the diagnosis is uncertain.

The following information was systematically recorded at the time of the HIV test prescription: motive for prescription; date of prescription; geographic origin; sex; age; and site of prescription. The form was subsequently completed when test results (two ELISAs and Western blot) and CD4 counts were received. This analysis describes the characteristics of both groups of patients (i.e. prurigo nodularis and herpes zoster). Demographics, geographical origin, median CD4 count at the time of HIV diagnosis, the positive predictive value (PPV) for being HIV-positive and PPV for having a CD4 count <200/mm^3 were calculated.

The comparative analysis focused on different variables (demographic, geographic, median CD4 count) for both groups of patients. At the time of diagnosis, the symptoms were purely dermatological (herpes zoster or prurigo nodularis) and there were no opportunistic infections. Thus, according to the WHO these patients were at stage 2. The majority of patients were seen as outpatients and did not have any indication for hospitalisation, except hyperalgic zoster or ferocious pruritus. There were no stage 3 or 4 patients.

Data were entered and analysed using Epi Info 6.04 (CDC, Atlanta, GA, USA). Student's *t*-test was used for normally distributed variables, and Mann–Whitney *U*-test was used for non-normal distributions. For qualitative variables, the χ^2 test was used. *P*-values of <0.05 were considered significant.

3. Results

In total, 410 patients received a prescription for an HIV test, of which 346 actually took the test. Inclusion criteria are detailed in Figure 1. Table 1 shows the characteristics of the HIV-positive patients who were analysed.

Seventy-four herpes zoster patients were HIV-positive and six were excluded as their CD4 counts were not available. Thus, the analysis took place on 68 cases. The PPV of herpes zoster for being HIV-positive was 38.5% (excluding those who were not tested). The PPV of herpes zoster for having a CD4 count <200/mm^3 was 26.5%.

Fifty-five prurigo nodularis patients were HIV-positive and five were excluded as their CD4 counts were not available. The analysis thus took place on 50 cases. The PPV of prurigo nodularis for being HIV-positive was 36% (excluding patients who were not tested). The PPV of prurigo nodularis for having a CD4 count <200/mm^3 was 72%.

The duration of evolution of prurigo nodularis could only be obtained for 26 patients and it was 16 weeks for patients with a CD4 count <200/mm^3 ($n = 18$) and 23 weeks for those with a CD4 count ≥200/mm^3 ($n = 8$) ($P = 0.69$).

Table 1 summarises the comparison between groups. A significant difference ($P < 0.05$) was found between HIV-positive patients with prurigo nodularis and those with herpes zoster for CD4 count and age. Herpes zoster did not appear to be influenced by CD4 counts, whereas prurigo nodularis appeared at a stage of advanced immunosuppression.

4. Discussion

Most dermatological studies in Africa and in tropical areas rely on systematic examination of known HIV-positive patients who are routinely followed. They are thus mostly prevalence studies.[3,9,10] Studies of HIV testing oriented by dermatologic manifestations are much rarer. The characteristics of prurigo nodularis as an orientation towards HIV testing are mostly studied in tropical areas because this dermatosis is often associated with mosquito bites and is much rarer in temperate zones.

Four studies looked at the PPV of prurigo nodularis for HIV seropositivity. In the different studies, the PPV varied from 0% (USA, Haitian patients) to 79% in Haiti (S. Landesman, personal communication, 1987).[11–13] In the current study, the PPV of prurigo nodularis for being HIV-positive was 36%.

The PPV of herpes zoster for being HIV-positive was 38.5% in this study. In the literature, the PPV varies from 3.7% (Brazil) to 95% (India).[11,14–18] The PPV increases with the HIV prevalence in the study area. In Africa, the high prevalence of HIV leads to a high PPV for dermatoses associated with HIV. The PPV also increases when the