FACTORS ASSOCIATED WITH PSORIASIS: THE INDEPENDENT ROLE OF HLA-B*57:01

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BACKGROUND

Psoriasis is the most frequent inflammatory disease among patients living with HIV (PLHIV) with a prevalence of 2.30% in 2012 in a large French multicentre cohort.

Its prevalence significantly varies between populations and countries, with an adult prevalence ranging from 0.51% to 11.43%. HLA-B*57, an allele strongly associated with delayed HIV disease progression and abacavir hypersentivity, has also been associated with an increased risk of psoriasis, in the general population.

The aim of this study was to investigate the demographic and immunovirological characteristics associated with psoriasis, and to assess whether HLA-B*57:01 is associated with psoriasis among PLHIV followed in a large French multicentre cohort.

METHODS

Dat'AIDS is a prospective French multicentre cohort involving 23 large HIV reference centers in France (NCT number: NCT02898987). Data collection is ongoing since 2000 during clinical visits using the Nadis ® electronic medical record (Fedialis Medica).

All PLHIV followed up in the Dat'AIDS cohort from January 1, 2000 to December 31, 2018 with an available result for HLA-B*57:01 were included.

Patients with psoriasis were identified by the presence of the corresponding International Classification of Diseases, 10th revision codes.

The chronology of psoriasis diagnosis in relation to HIV infection was determined as follows:

- Concomitant if the time between the dates of diagnosis of these two pathologies was less than one year.
- Before HIV if the psoriasis diagnosis date was more than one year before the date of HIV diagnosis.
- After HIV if the psoriasis diagnosis date was notified as more than one year after the HIV diagnosis date.

Logistic regression models were used to identify associations between psoriasis (outcome variable) and explanatory variables. All factors with a p-value <0.10 by univariate analysis were included in the multivariate model.

All analyses were performed using SAS 9.4.

RESULTS

Among the 68,376 PLHIV included in the Dat'AIDS cohort during the study period, HLA- B*57:01 was available for 31,076 (45.4 %) patients.

The prevalence of psoriasis was 1.98% (95% CI 1.87-2.08) in the total population and 2.25% (95% CI 2.09-2.42, n=700) in the group with HLA-B*57-01 data.

The overall prevalence of HLA*B57:01 was 4.73% (95% CI 4.50-4.98) and differed according to place of birth, from 1,20% in West/central Africa to 6.45% in patients born in Western Europe (except mainland France) and North America.

The main characteristics of the 31,076 patients, and factors associated with psoriasis are presented in Table 1. The characteristics of the patients with psoriasis according to the chronology of psoriasis diagnosis in relation to HIV diagnosis are presented in Table 2.

Table 1: Characteristics of patients with available HLA-B*57:01 results included in the Dat'AIDS cohort and factors associated with psoriasis - univariate and multivariate analysis

	All patients	Univariate analysis			Multivariate analysis	
		Patients without psoriasis	Patients with psoriasis	P value*	OR [95% CI]	P value**
Number	31 076	30 376	700			
Male gender	68.8%	68.5%	85.1%	<0.0001	1.81 (1.46-2.24)	<0.0001
Place of birth				<0.0001		
Mainland France	53.5%	53.2%	67%		-	-
West and Central Africa	19.3%	19.7%	2.7%		0.15 (0.10-0.25)	<0.0001
Eastern and Southern Africa	1.9%	2.0%	1.0%		0.52 (0.24-1.11)	0.09
Middle East + North Africa	4.0%	4.0%	4.7%		0.92 (0.64-1.32)	0.65
Caribbean islands	2.9%	3.0%	0.4%		0.14 (0.05-0.45)	0.0008
Latin America	2.3%	2.4%	0.8%		0.31 (0.14-0.69)	0.004
East Asia + Pacific	1.6%	1.6%	1.3%		0.66 (0.34-1.29)	0.23
East. Europe + Central Asia	1.0%	1.0%	1.9%		1.39 (0.79-2.46)	0.25
West Europe + North America	3.0%	3.0%	3.1%		0.79 (0.51-1.22)	0.29
Missing place of birth	10.3%	10.1%	17.0%		1.26 (1.03-1.55)	0.03
Age at HIV diagnosis, y	34.6 ± 11.7	34.6 ± 11.7	34.5±10.9	0.9		
AIDS status	22.0%	21.9%	28.6%	<0.0001	1.19 (0.99 -1.43)	0.07
CD4+ T-cell nadir (/mm³)	264 ± 202	265 ± 202	226 ± 194	<0.0001		
CD4 nadir (<200/mm³)	41.6%	41.4%	51.0%	<0.0001	1.41 (1.19-1.67)	<0.0001
Positive HCV serology	11.8%	11.7%	20.6%	<0.0001	1.45 (1.20-1.76)	0.0001
Positive HLA-B*57:01	**4.7%**	**4.5%**	**13.4%**	**<0.0001**	**2.66 (2.12-3.33)**	**<0.0001**

Results are expressed as mean (± standard deviation) or n (%).
*Student t for quantitative variables and Chi square for qualitative variables
** multivariate logistic regression model

HLA-B*57:01 was linked with psoriasis diagnosis among PLHIV, independently of their geographic origin.

Other factors associated with psoriasis were male gender, place of birth, CD4+ T-cell nadir and positive HCV serology.

Table 2: Characteristics of the 700 PLHIV with psoriasis according to the chronology of psoriasis diagnosis in relation to HIV diagnosis

	Psoriasis before HIV N=115 (19.6)	Psoriasis concomitant to HIV N=119 (20.3)	Psoriasis after HIV (> 1 year) N=352 (60.1)	P value
Male gender	85.2	84.0	83.2	0.88
Place of birth				0.08
Mainland France	78.3	63.9	61.9	*0.006
West + Central Africa	1.7	5.9	2.6	
East + Southern Africa	0.9	0.8	1.1	
Middle East + North Africa	5.2	5.0	4.8	
Caribbean islands	0.0	0.8	0.3	
Latin America	0.0	1.7	0.6	
East Asia + Pacific	0.9	2.5	1.4	
East Europe + Central Asia	0	2.5	1.7	
West Europe and North America	4.3	5.9	4.5	
Missing place of birth	8.7	13.4	22.7	
Age at psoriasis diagnosis, y	24.3 ± 12.7	37.4 ± 11.4	43.1 ± 10.5	< 0.0001
Age at HIV diagnosis, y	37.4 ± 10.8	37.2 ± 11.4	32.1 ± 10.1	< 0.0001
AIDS status	14.8	34.5	32.4	0.0006
CD4+ T-cell nadir (/mm3)	305 ± 212	194 ± 189	194 ± 154	<0.0001
CD4 nadir< 200/mm3	33.0	58.8	55.6	<0.0001
Under cART at psoriasis diagnosis****	-	29.4	69.9	< 0.0001
Undetectable HIV RNA at psoriasis diagnosis	-	14.7	58.5	< 0.0001
CD4 count (/mm³) at psoriasis diagnosis	-	341 ± 296	482 ± 307	< 0.0001
Positive HCV serology	12.2	11.8	29.0	< 0.0001
Positive HLA-B*57:01	**22.6**	**10.1**	**11.6**	**0.005**

*: Missing data: n=114; **: Mainland France versus all other places of birth ; ***: only in patients with a diagnosis of psoriasis concomitant with, or after HIV diagnosis ; ****: combined antiretroviral therapy
Results expressed as mean (± sd) or %. Student t for quantitative variables and Chi square for qualitative variables

CONCLUSIONS

PLHIV carrying HLA-B*57:01 have around a 3-fold increased risk of psoriasis.

This association might provide a possible explanation for the observed differences in psoriasis prevalence between ethnic groups.