

Incidence of Lipodystrophy and Glucose and Lipid Abnormalities During the Follow-up of a Cohort of HIV-Infected Patients Started on a Protease Inhibitor (PI)-Containing Regimen.

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Background

- In HIV-infected patients, since the extensive use of PI (1996)
 - 3-4 mortality and morbidity
 - numerous reports of lipodystrophy syndrome
 - clinical lipodystrophy : fat redistribution (lipodystrophy, lipohypertrophy)
 - metabolic alterations (hypertriglyceridemia, hyperglycemia, insulin resistance)
- Prevalence and incidence of the lipodystrophy syndrome over time still poorly known

Objective

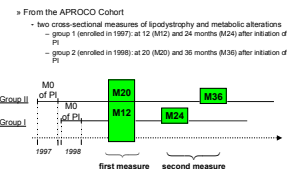
- To study
 - the natural course of lipodystrophy syndrome
 - in HIV-infected patients
 - after initiation of PI therapy

METHODS

(1) HIV-infected patients: APROCO Cohort (ANRS EP11)

- Enrollment: May 1997 - June 1998
 - n=47 French AIDS centres
 - 1172 patients started on a PI-containing regimen
 - median 30%, mean age 39 years; homosexual risk factor: 44%
 - prior antiretroviral therapy: 62%
 - mean CD4⁺: 306/mm³; mean plasma HIV RNA: 4.3 log₁₀ copies/mL
- Prospective follow-up
 - M1, M4, then every 4 months

(2) Study of lipodystrophy syndrome



(3) Evaluation of lipodystrophy syndrome

- Clinical evaluation
 - lipodystrophy according to physician assessment
 - peripheral atrophy: fat wasting in face, upper and lower limbs, prominent veins, buffalo hump
 - fat accumulation: fat accumulation in face, breast, buffalo hump, increased waist size
- Laboratory analyses
 - blood glucose, serum triglycerides and total cholesterol: after a 12h overnight fast
 - oral glucose tolerance test (75g oral glucose load)
 - glucose tolerance status evaluated according to 1998 WHO criteria

RESULTS I

Characteristics of samples

evaluated at	Group 1		Group 2	
	M12 n=293	M24 n=244	M20 n=321	M36 n=241
median CD4 ⁺ (/mm ³)	444	471	433	473
median HIV RNA (log ₁₀ cop/mL)	2.2	2.3	2.3	2.3
AIDS %	19	20	21	24
current exposure to				
d4T	71	54	62	50
RTV	10	13	19	19
median duration of ARV (months)	14	27	27	42
median duration of PI (months)	12	24	20	35

RESULTS III

Lipodystrophy syndrome

Table 1. Prevalence (proportion of patients) of lipodystrophy or metabolic abnormalities among patients evaluated at each measure.

	Group 1		Group 2					
	N*	%	M24	%	M20	M36	%	
Lipodystrophy	290	61	216	67	324	64	266	63
Isolated peripheral atrophy	290	21	214	24	323	21	253	23
Isolated fat accumulation	290	18	214	15	323	17	253	14
Mixed syndrome	290	22	214	28	323	26	253	26
Triglyceridemia ≥2.2mmol/L	268	25	190	27	294	33	228	35
Total cholesterolemia ≥5.5mmol/L	263	59	191	56	291	55	228	45
Glucose tolerance abnormalities†	252	19	160	21	272	26	205	27
Diabetes mellitus	252	4	160	6	272	10	205	10

Table 2. Incidence of lipodystrophy or metabolic abnormalities among patients free of this disorder at the first measure.

	Group 1		Group 2	
	N*	%PA	N*	%PA
Lipodystrophy	65	35	71	25
Isolated peripheral atrophy	65	20	71	12
Isolated fat accumulation	65	8	71	7
Mixed syndrome	65	7	71	6
Triglyceridemia ≥2.2mmol/L	110	15	112	18
Total cholesterolemia ≥5.5mmol/L	55	22	76	16
Glucose tolerance abnormalities†	99	14	116	14
Diabetes mellitus	120	4	140	4

* number of patients evaluated † including diabetes PA: patient-years

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RESULTS IV

Factors associated with the onset of diabetes

• Methods

- multiple logistic regression
 - Hosmer-Lemeshow backward procedure
 - among patients free of diabetes mellitus at the first measure
 - potential determinants studied: gender, age and body mass index (BMI) and insulin resistance at the first measure, history of antiretroviral treatment, Hepatitis C Virus (HCV) status

• Results (final model)

	odds ratio	95% confidence interval	p	
age	> 55 vs < 55 years	4.91	1.16-20.75	0.03
body mass index	> 25 vs < 25 kg/m ²	3.71	1.16-11.93	0.03

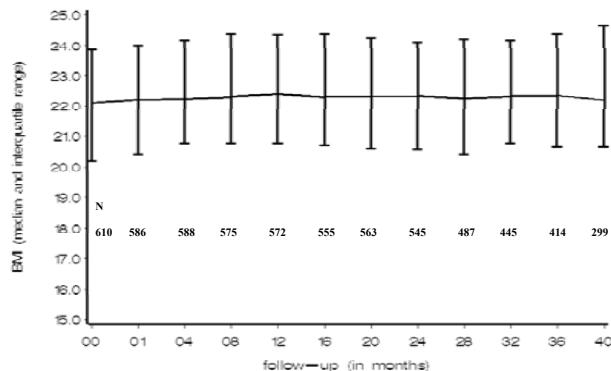
A higher age and a higher BMI were significantly associated with a higher risk of diabetes. HCV status nor any antiretroviral treatment were associated with the onset of diabetes

Discussion (1)

- Potential limitations of our study on diabetes
 - low number of cases in a relatively short follow-up
- In HIV-infected patients initially started on PI
 - over time, a majority of patients are concerned by
 - morphological signs of lipodystrophy
 - hypercholesterolemia

Discussion (2)

- Diabetes mellitus
 - prevalence increases over time
 - with a yearly incidence of 4% patient-years
 - host factors explain most of these cases
- Glucose tolerance abnormalities should be detected in the routine care management and interventions



RESULTS II: Evolution of body mass index