

# #871 The Changing Face of Cardiovascular Risk in HIV-infected Patients. ANRS Aquitaine Cohort, 2003

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## Objective of the study

To report on the atherosclerosis risk measured through the intima-media thickness (IMT) 36-month changes in relation to the evolution of care practices in a French cohort of HIV-infected patients.

## Patients and Methods

Patients included in the present report were those from the SUPRA Study described elsewhere [P Mercié et al., *Annals of Medicine*, 2002;34:55-63] with information available at the three scheduled visits: M0 (baseline), M12 (12 months after) and M36. Briefly, patients of the Aquitaine Cohort were included successively if they were seen in one of the five participating centres in Bordeaux (France) from September 1999 to April 2000. If patient agreed to participate to this study, IMT evaluation was performed at the three planned clinic visits. In addition to information routinely collected within the Aquitaine Cohort, more precise data about the cardiovascular risk factors were systematically recorded.

Carotid IMT was measured by B-mode ultrasonography, on the common part of the left and right carotid arteries. IMT calculation was performed semi-automatically by an IMT analysis software (version 5.0) in a "Workstation Imaging station" (IôDP, Paris, France).

## Results

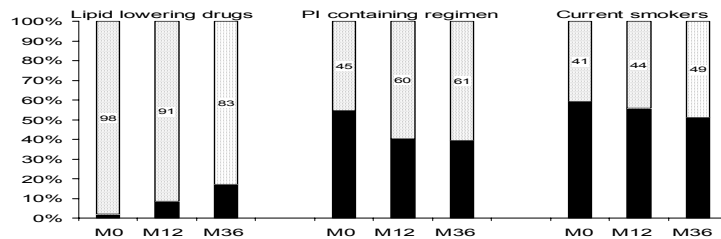
A total of 233 patients were included in the study with a median age of 44 years at baseline (Interquartile Range [IR]=39;50), 57 (25%) were women, 138 (59%) were current smokers and 74 (32%) at the AIDS stage.

At M0, 200 patients (86%) were treated by a combination of at least three antiretroviral drugs, including 127 with a PI-containing regimen; 5 patients were treated by fibrates, none by statins.

During the first 12 months, 8 new patients were treated by statins and 8 by fibrates, 42 had their antiretroviral regimen changed to stop the PI(s) and 10 patients stopped smoking (Figure 1). Thus, 63 patients benefited from at least one of these three preventive measures of the cardio-vascular risk. During the same period, serum triglycerides, LDL and total cholesterol remained stable:  $p=0.24$ , 0.75 and 0.78, respectively (Table 1). Conversely, the median IMT increased from 0.55 to 0.57 mm ( $p<0.0001$ , Figure 2).

In the following 24-month period, 52 more patients switched from a PI-containing to a PI-free regimen, 30 new patients were treated with lipid lowering drugs and 14 stopped smoking, resulting in a 36-month prevalence of 40 patients (17%) treated with fibrates and/or statins, 141 (60%) with a PI-free antiretroviral regimen and 114 (49%) who did not smoke. During the same two-year period, there was a significant decrease of total cholesterol ( $p<10^{-4}$ ), LDL cholesterol ( $p=0.05$ ) and median IMT from 0.57 to 0.53 mm ( $p<0.0001$ , Figure 2).

Figure 1. Change in prevalence of patients treated by lipid-lowering drugs (statins or fibrates), with protease inhibitor (PI)-containing antiretroviral regimen and smokers during the study period from M0 (baseline) to M36 (36 months after). Users in black and non users in grey.



## Acknowledgments

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Figure 2. Change in carotid intima-media thickness during the study period from M0 (baseline) to M36 (36 months after).

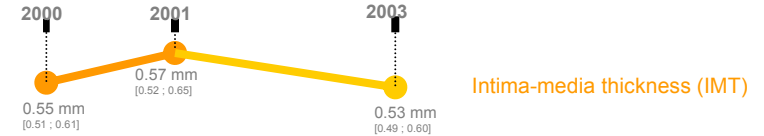


Table 1. Change in prevalence of patients treated by lipid-lowering drugs (statins or fibrates), protease inhibitor (PI)-free antiretroviral regimen, non-smokers, serum lipid levels and carotid intima media thickness (IMT) during 36 months in 233 HIV infected patients.

	M0	M12	New pts from M0 to M12		M36	New pts from M12 to M36		
	N (%)	N (%)	N (%)		N (%)	N (%)		
Pts treated by lipid-lowering drugs	5 (2.1)	20 (8.6)	16 (6.9)		40 (17.2)	30 (12.9)		
Pts treated with PI-free regimen	106 (45.5)	139 (59.7)	42 (18.0)		141 (60.5)	52 (22.3)		
Non-smokers (current)	95 (40.8)	103 (44.2)	10 (4.3)		114 (48.9)	14 (6.0)		
	M0		M12		M36		Difference from M12 to M36	
	Median [IQR]	Median [IQR]	Mean (SD)	p*	Median [IQR]	Mean (SD)	Mean (SD)	p*
Total cholesterol	5.30 [4.48; 6.10]	5.37 [4.56; 6.18]	0.08 (1.07)	0.24	5.10 [4.28; 5.80]	-0.35 (1.26)	-0.35 (1.26)	<10 <sup>-4</sup>
Triglycerides	1.66 [1.06; 2.64]	1.61 [1.02; 2.57]	0.03 (1.46)	0.75	1.60 [1.07; 2.45]	-0.09 (1.46)	-0.09 (1.46)	0.33
LDL Cholesterol	3.21 [2.49; 3.91]	3.29 [2.57; 4.07]	0.02 (0.84)	0.78	3.08 [2.41; 3.82]	-0.15 (1.01)	-0.15 (1.01)	0.05
IMT	0.55 [0.51; 0.61]	0.57 [0.52; 0.65]	0.02 (0.081)	<10 <sup>-4</sup>	0.53 [0.49; 0.60]	-0.04 (0.08)	-0.04 (0.08)	<10 <sup>-4</sup>

\* Student t-test for paired data

When analysing the association at the individual level between these interventions aiming at reducing the cardiovascular risk and IMT evolution, the only significant association was with smoking cessation ( $p=0.06$ ). Using a linear mixed model for repeated measures taking into account all three interventions, we estimated a decreasing IMT slope between M12 and M36 of  $-0.045$  (95% Confidence interval [CI]  $-0.056$ - $0.033$ ) in those without intervention compared to  $-0.086$  (95% CI  $-0.13$ - $0.043$ ) in those who stopped smoking ( $p=0.06$ ). However, the significance of this association tended to decrease when adjusting for age, gender, BMI and total cholesterol ( $p=0.11$ ). During follow-up, cardiovascular events were documented in two patients: both men, 39 and 51 years old, treated by HAART with PI, both presenting lipids disorders; one of them smoked 15 pack-years. IMT values were 0.55 and 0.57 mm at the time of coronary angioplasty that was performed in the context of angina pectoris.

## Summary

We report the change in carotid intima-media thickness (IMT) during a 36-month period in 233 HIV-infected patients. Median IMT increased from 0.55 mm at M0 to 0.57 mm at M12 ( $p<0.0001$ ) and then decreased to 0.53 mm at M36 ( $p<0.0001$ ). Prevalence of treatment with lipid lowering agents and protease inhibitor-free HAART regimen increased from 2% and 45% at M0 to 17% and 60% at M36 while the smoking prevalence decreased from 59% to 51%. Progression of atherosclerosis in HIV-infected patients can be controlled. The impact of individual measures reducing the cardiovascular risk should be further evaluated.

## Members of the Aquitaine Cohort

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