

Prevalence of Dyslipidaemia and Diabetes Mellitus in People Living with HIV and possible Association with Antiretroviral Drug Regimen: An 8 Year Follow-up Study

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Background

For comprehensive care in people living with HIV (PLWHIV), not only antiretroviral therapy, but also detection and treatment of metabolic risk factors like type 2 diabetes mellitus (DM2), and dyslipidaemia are crucial. It was the aim of the study to assess the development of DM2 and dyslipidaemia prevalence in PLWHIV 8 years after a baseline examination. In the baseline examination two thirds were found to have an impaired lipid profile, and half of the participants showed an increased insulin resistance. Furthermore, a clear correlation between the use of protease inhibitors (PI) and pathologic blood lipids was found [1].

Materials and Methods

Participants in the baseline study (2013) of one extramural HIV treatment centre in Vienna were recruited for follow-up (2021). Dyslipidaemia and DM2 were indicated, if either the diagnoses was recorded in the patients' charts, OR the participant received lipid lowering or antidiabetic drugs OR there were suspicious laboratory findings (LDL-level >130 mg/dl OR an HDL-level <40 mg/dl OR a triglyceride level >150 mg/dl) for dyslipidaemia, and fasting blood sugar (FBS) > 125 mg/dl for DM2.

Results

From the initially included 421 participants, 341 (81%) participated in the follow-up. Mean age at baseline was 41.4 years, 5.3% were female. At baseline, the proportion treated with nucleoside reverse-transcriptase inhibitors (NRTI), non-nucleoside reverse-transcriptase inhibitors (NNRTI), PI, integrase nuclear strand transfer inhibitors (INSTI), and entry inhibitors were 88.3%, 56.4%, 25.0%, 5.6%, and 0.6%, and the corresponding proportions at follow-up were 97.2%, 33.9%, 0.3%, 31.9%, and 0.6% (P<0.001 for each category except entry inhibitors). Prevalence of dyslipidaemia was 73.6% at baseline and 71.4% at follow-up (P=0.504), and of DM2 1.9% at baseline and 5.3% at follow-up (P=0.017), for more details see table 1. Mean values for plasma lipids did not change significantly in the cohort, however, mean values for FBS changed from 84.1 to 78.0 mg/dl (P<0.001).

Table 1: Prevalence of dyslipidaemia and type 2 diabetes mellitus (DM2), based on different diagnostic measures in 360 PLWHIV at baseline and after eight years follow-up.

	Baseline	Follow-Up
Dyslipidaemia*	73.6	71.4
Abnormal lipid blood findings**	69.3	63.5
Diagnosis of dyslipidaemia	47.8	31.9
Lipid lowering drugs	12.8	15.3
Dyslipidaemia (diagnosis OR abnormal lipid blood findings, N=263/257) but no lipid lowering drugs	83.3	78.6
Type 2 diabetes mellitus***	1.9	5.3
FBS > 125 mg/dl	1.4	3.1
Diagnosis of DM2	1.1	4.2
Antidiabetic medication	0.8	3.3
DM2 (diagnosis OR FBS > 125 mg/dl, N=7/19) but no antidiabetic medication	57.1	36.8

*Dyslipidaemia according to abnormal lipid blood findings OR diagnosis in the patients' charts OR lipid lowering drugs

** LDL-cholesterol >130 mg/dl OR HDL-cholesterol < 49 mg/dl OR triglycerides > 150 mg/dl

***Fasting blood sugar (FBS) > 125 mg/dl OR diagnosis in the patients' charts OR antidiabetic medication

In patients treated with PI at baseline, the change in FBS was 83.8 vs. 78.6 mg/dl, P=0.005, and for triglycerides 163.1 vs. 144.2 mg/dl, P=0.042, none of them were treated with PI any more at follow-up. Prevalences of dyslipidaemia and DM2 at baseline and follow-up, based on antiretroviral medications are shown in tables 1 and 2.

At baseline, 49.7% of the population (46.1 % of those without DM2) were affected from insulin resistance. Of the 166 subjects with insulin resistance and no DM2 at baseline, 7 persons (3.9%) developed DM2 within the following 8 years. The corresponding figures in those 171 subjects who were not affected from insulin resistance of DM2 at baseline were 6 persons (3.5%).

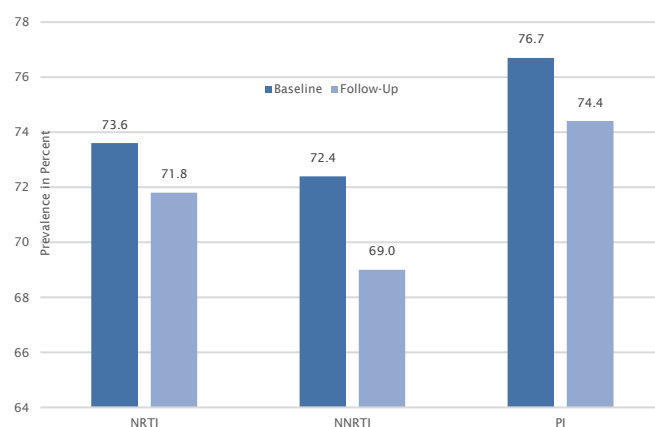


Figure 1: Prevalence of dyslipidaemia (lipid lowering drugs OR diagnosed dyslipidaemia according to charts OR blood findings for HDL-cholesterol below, or LDL-cholesterol or triglyceride above the normal range) at baseline and after 8 years follow-up, in PLWHIV treated with various categories of antiretroviral therapy at baseline

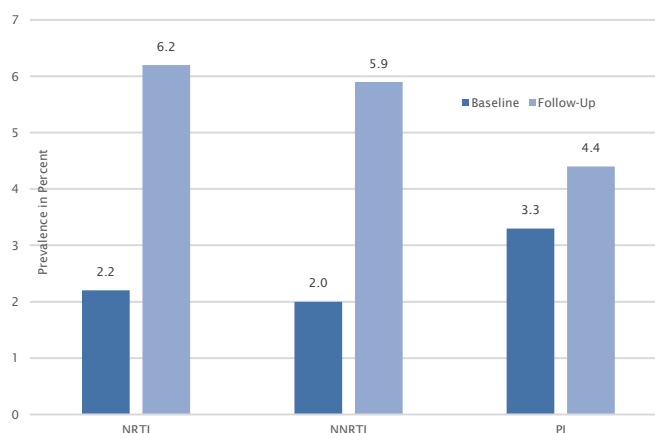


Figure 2: Prevalence of type 2 diabetes mellitus (antidiabetic medication OR diagnosed diabetes mellitus according to charts OR blood findings for FBS above the normal range) at baseline and after 8 years follow-up, in PLWHIV treated with various categories of antiretroviral therapy at baseline

Conclusions

Metabolic risk factors in PLWHIV remain a major challenge for comprehensive care. Prevalence of DM2 increased rapidly in 8 years, while prevalence of dyslipidaemia remained stable. Although there were more people detected with DM2 at follow-up, the mean values for FBS were lower, probably because DM2 was more often detected, treated, and FBS under control. Metabolic changes attributable to PI seem to be reversible after change of the therapeutic regime.

Acknowledgement

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Reference

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