HIGH PLASMA APOE IN PEOPLE WITH HIV COMPARED WITH UNINFECTED CONTROLS

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BACKGROUND

High levels of apolipoprotein E (apoE) in plasma are associated with increased risk of cardiovascular disease and all-cause mortality in the general population.

APOE gene polymorphism accounts for 15-25% of variability in plasma apoE, but levels of plasma apoE still vary between individuals with the same *APOE* genotype.

AIMS

- **To assess if HIV is an independent risk factor for high plasma apoE**
- **To determine HIV related risk factors for high plasma apoE.**

METHODS

We included 661 people with HIV (PWH) frequency matched 1:1 on age and sex with controls from the general population. Only people of Danish ancestry were included to minimize differences in APOE genotypes.

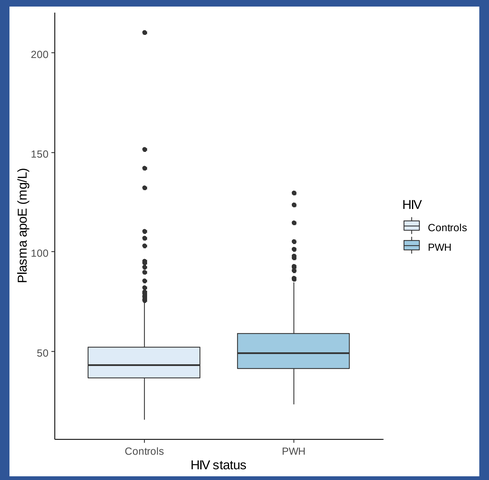
Both PWH and controls underwent physical examination, filled out extensive questionnaires and had blood samples drawn according to the same study protocol.

High plasma apoE was defined as apoE levels above the 9th decile.

The association between plasma apoE and HIV status was explored using both linear and logistic regression models adjusted for age, sex, body mass index, hypertension, diabetes, smoking, alcohol consumption and plasma lipids.

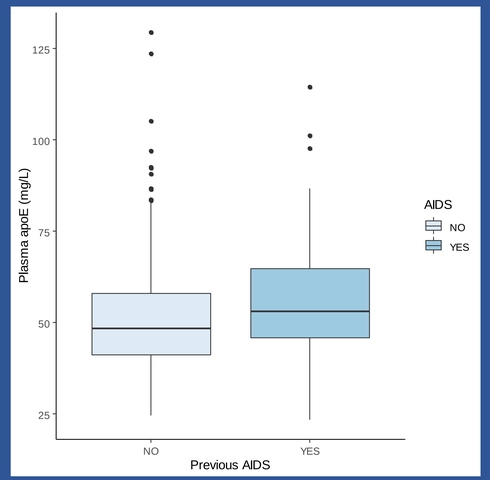
In PWH, linear and logistic regression models were used to determine HIV-specific risk factors for high plasma apoE.

HIV status was an independent risk factor for high plasma apoE



In linear models for potential risk factors, PWH had 6.6 mg/L higher plasma apoE compared with controls [95%CI: 5.1 to 8.1 mg/L], *p*<0.001.

Previous AIDS was the only HIV-related risk factor for high plasma apoE



In linear models adjusted for sex and age, previous AIDS was associated with 4.50 mg/L higher plasma apoE [95% CI: 1.52 to 7.48 mg/L], *p*=0.003

CLINICAL CHARACTERISTICS	PWH N = 661	Controls N = 661	P-value
Age, years, median [IQR]	51 [44, 60]	51 [44, 58]	0.89
Male, n (%)	589 (89)	589 (89)	1.00
Hypertension, n (%)	289 (46)	372 (58)	< 0.001
Diabetes, n (%)	30 (5)	22 (3)	0.31
BMI, g/m^2, median [IQR]	24 [22, 27]	26 [24, 29]	< 0.001
Smoking status			
▪ Current, n (%)	204 (31)	97 (15)	<0.001
▪ Former, n (%)	236 (36)	221 (33)	
▪ Never, n (%)	221 (33)	343 (52)	
High alcohol consumption, n (%)	71 (12)	69 (11)	0.58
Lipid-lowering therapy, n (%)	95 (14)	64 (10)	0.03
Total cholesterol. mmol/L, median [IQR]	4.9 [4.1, 5.6]	4.9 [4.3, 5.7]	0.17
LDL-C, mmol/L, median [IQR]	2.8 [2.2, 3.5]	2.9 [2.3, 3.5]	0.02
HDL-C, mmol/L, median [IQR]	1.1 [0.9, 1.4]	1.2 [0.9, 1.5]	0.17
Triglycerides, mmol/L,median [IQR]	1.7 [1.2, 2.6]	1.6 [1.0, 2.5]	< 0.001
hsCRP, mg/L,median [IQR]	1.2 [0.6, 2.6]	0.9 [0.5, 2.0]	< 0.001

CHARACTERISTICS OF PWH	
Time with HIV, years, median [IQR]	14 [7, 22]
Current CD4, median [IQR]	700 [530, 900]
CD4 nadir <200, n (%)	257 (40)
Current viral load < 50 copies/mL, n (%)	626 (95)
Current cART use	656 (99)
▪ PI use, n (%)	199 (30)
▪ NRTI, n (%)	625 (95)
▪ NNRTI, n (%)	318 (48)
▪ INSTI, n (%)	201 (30)
Exposure to old ART	359 (54)
▪ Atavudine, n (%)	102 (15)
▪ Zidovudine, n (%)	341 (52)
▪ Didanosine, n (%)	100 (15)
Previous AIDS, n (%)	107 (16)

RESULTS

- High plasma apoE was defined as plasma levels above 66.2 mg/L.
- PWH had higher odds of high plasma apoE with adjusted odds ratio (OR) 2.55 [1.63 to 3.99], p<0.001. ORs were similar for males and females in sex-stratified analyses.
- Previous AIDS was associated with higher odds of high apoE (OR 1.78 [1.03 to 3.06], p=0.04) in unadjusted analysis, but not in adjusted models.
- CD4 nadir, detectable viral load, and exposure to old generation anti-retroviral therapy was not associated with plasma apoE levels.

CONCLUSIONS

PWH had higher concentrations of plasma apoE compared with uninfected controls even after adjusting for plasma lipids.

Higher plasma apoE was associated with previous AIDS defining disease, but not when adjusting for other potential risk factors.

Further studies are needed to elucidate the clinical impact of high plasma apoE in PWH.

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