The prevalence and risk factors for peripheral artery disease in chronic kidney disease in HIV infected persons

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BACKGROUND

Cardiovascular disease is an important cause of morbidity among an aging HIV population. Despite the current evidence and known risk factors it is still challenging to determine to what extent HIV infection increases risk of peripheral artery disease (PAD) in comparison to general population. Here we examined the association between HIV infection, PAD and chronic kidney disease (CKD) in predominantly male HIV-infected persons compared with uninfected population. We also analyzed risk factors related to PAD.

MATERIALS AND METHODS

The cohort was comprised of 191 persons ≥18 years old: 50 HIV-infected patients from the University Hospital for Infectious Diseases (UHID) in Zagreb and 141 non-HIV-infected patients from the Nephrology and Dialysis Department, Riuniti Hospital, Italy. HIV care in Croatia is centralized and all people living with HIV are treated at the UHID. Included were HIV-infected patients from February 1st 2018 to September 30th 2019, and non-HIV-infected patients from September 4 th 2007 to March 18 th 2019. CKD was defined as an eGFR of less than 60 ml/min/1.73m2 on at least 2 occasions 90 days apart. PAD was assessed using duplex color Doppler and was defined as having focal or diffuse medial or intimal calcifications in iliac, common femoral, superficial femoral or tibial artery, diagnosed by grey scale vascular ultrasound. PAD was also considered present if there were hemodynamically significant stenosis or occlusion.

RESULTS

Of 191 participants 57.6% (110/191) were male with median age of 51 (IQR: 42-57) years. 50 were HIV-infected (25 had CKD) and of 141 non-HIV-infected 68 had CKD. The prevalence of PAD was 76% (19/25, HIV+ CKD-yes), 32% (8/25, HIV+ CKD-no), 22% (15/68, HIV- CKD-yes) and 14% (10/73, HIV- CKD-no). Both HIV infection and CKD were associated with PAD (Table). Multivariable analysis showed a significant interaction of body mass index (BMI) and CKD indicating that patients with CKD had more frequently PAD than those without CKD up to a BMI of 30 kg/m2.

CONCLUSIONS

HIV-infected persons have PAD more frequently than non-HIV-infected patients and CKD worsens the findings. HIV infection and CKD are independent risk factors for ultrasound defined PAD.

Table. Crude and adjusted odds of peripheral atherosclerosis by patient characteristics in HIV–infected (n=50) and non–HIV–infected (n=141) participants.

	Crude analysis [a]		Multivariate analysis[b]	
	Odds ratio (95% confidence interval)	*P*	Odds ratio (95% confidence interval)	*P*
Female *vs* male	0.21 (0.09–0.50)	<0.001	0.27 (0.09–0.82)	0.021
Current smoker *vs* non-smoker	0.66 (0.32–1.37)	0.268	0.75 (0.29–1.95)	0.551
BMI per 5 kg/m²	0.73 (0.49–1.10)	0.135		
HIV–positive *vs* HIV-negative	4.73 (2.07–10.77)	<0.001	5.62 (1.67–18.94)	0.005
CKD yes *vs* no	4.16 (1.88–9.18)	<0.001	5.70 (1.69–19.25)[c]	0.005
Hypertension yes *vs* no	2.28 (1.08–4.84)	0.031	2.19 (0.65–7.44)	0.208
Diabetes yes *vs* no	1.21 (0.39–3.76)	0.747	1.41 (0.31–6.46)	0.656

aAdjusted for age (significant) and one characteristic.
bAdjusted for age, gender, current smoking status, BMI, HIV-status, CKD, hypertension and diabetes.
cThere was a significant interaction of BMI and CKD indicating that patients with GFR < 60 mL/min/1.73 m² had more frequently peripheral atherosclerosis than those with an GFR ≥ 60 mL/min/1.73 m² up to a BMI of 30 kg/m2. The values in the table present the OR and 95% CI at 25 kg/m2 whereas the OR at 30 kg/m2 and above showed no difference. BMI, body mass index; CKD, chronic kidney disease