Seven-Year Progression of Coronary Artery Calcium Score in Middle-Aged Thai People Living With HIV

840

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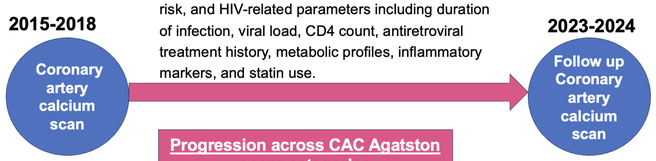
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BACKGROUND

- People living with HIV (PLWH) face an elevated risk for atherosclerotic cardiovascular disease (ASCVD).
- Coronary artery calcium (CAC) scores, a marker of subclinical atherosclerosis, strongly predict coronary heart disease (CHD) and ASCVD.
- Identifying drivers of CAC progression can guide more aggressive preventive strategies in this vulnerable population.

METHODS

- PLWH aged ≥50 years at HIV-NAT, Bangkok
- Excluding those with established CVD events
- Baseline data modelled included 10-year ASCVD risk, and HIV-related parameters including duration of infection, viral load, CD4 count, antiretroviral treatment history, metabolic profiles, inflammatory markers, and statin use.



Progression across CAC Agatston score categories
- CAC score 0 (no evidence of CAD)
- CAC score >0-99 (mild)
- CAC score 100-399 (moderate)
- CAC score ≥400 (severe)

Analysis method: Logistic regression was used to identify associations with categorical CAC score risk progression.

RESULTS

Table 1: Demographic Characteristics by CAC score progression group

Characteristic	CAC score stable N=108	CAC score progressor N=112	P-value
Sex, n (%)			<0.001
Male	49 (45.4%)	78 (69.6%)	
Female	59 (54.6%)	34 (30.4%)	
Age (years), median (IQR)	54.4 (51.5-57.2)	54.4 (51.8-59.5)	0.48
BMI (kg/m²), median (IQR)	22.6 (20.8-24.4)	23.3 (20.9-25.8)	0.13
Smoke status, n (%)			<0.001
Never smoked	88 (81.5%)	63 (56.2%)	
Ex-smoker	12 (11.1%)	32 (28.6%)	
Current smoker	8 (7.4%)	17 (15.2%)	
Alcohol Use			0.001
No	98 (90.7%)	83 (74.1%)	
Yes	10 (9.3%)	29 (25.9%)	
Diabetes, n (%)	29 (26.9%)	36 (32.1%)	0.39
Hypertension, n (%)	33 (30.6%)	46 (41.1%)	0.10
LDL-C (mg/dL), median (IQR)	128.2 (104.6-150.6)	120.8 (101.0-147.6)	0.18
Triglyceride (mg/dL), median (IQR)	134.0 (89.0-172.0)	163.0 (112.0-230.0)	<0.001
Triglyceride-glucose index, median (IQR)	8.7 (8.3-9.1)	8.9 (8.6-9.4)	<0.001
CKD (eGFR<60), n (%)	4 (3.7%)	10 (8.9%)	0.12
CD4-T cell count (cell/mm³), median (IQR)	686.5 (489.5-816.5)	614.0 (494.0-803.0)	0.37
Nadir CD4, median (IQR)	202.0 (109.0-280.0)	163.0 (65.5-235.5)	0.04
Detectable VL (>50 c/mL), n (%)	1 (0.9%)	3 (2.7%)	0.33
ARV regimen			
NNRTI, n (%)	75 (69.4%)	59 (52.7%)	0.01
INSTI, n (%)	2 (1.9%)	7 (6.2%)	0.10
PIs, n (%)	33 (30.6%)	49 (43.8%)	0.04
Specific ARV exposure			
ABC exposed, n (%)	12 (11.1%)	13 (11.6%)	0.91
Cumulative years on ABC	0.0 (0.0-4.4)	0.0 (0.0-3.5)	0.850
Cumulative years on DTG	1.0 (0.2-1.9)	1.4 (0.5-2.3)	0.120
Cumulative years on PI	9.6 (0.5-14.3)	10.1 (0.5-16.2)	0.354
Inflammatory markers			
hs-CRP, median (IQR)	1.0 (0.5-2.2)	1.3 (0.6-2.5)	0.26
IL-6, median (IQR)	5.5 (3.8-6.9)	6.0 (4.0-8.3)	0.19
Statin used during follow-up, n (%)			0.19
Never exposed	51 (47.2%)	47 (42.0%)	
Intermittently exposed	43 (39.8%)	38 (33.9%)	
Continued use	14 (13.0%)	27 (24.1%)	
10yr-ASCVD (%), median (IQR)	4.1 (1.9-8.3)	7.0 (4.8-11.8)	<0.01

Triglyceride-glucose index (TyG) index = logarithm (triglycerides (mmol/l) × glucose level (mg/dl)/2)

Half of the aging Thai PLWH in this cohort experienced categorical CAC score risk progression over a seven-year period. Smoking, obesity, and a high triglyceride-glucose index were identified as independent risk factors.

Of 220 participants, 112 (51%) experienced CAC progression over a median follow-up of 6.9 years (IQR 6.6-7.4)

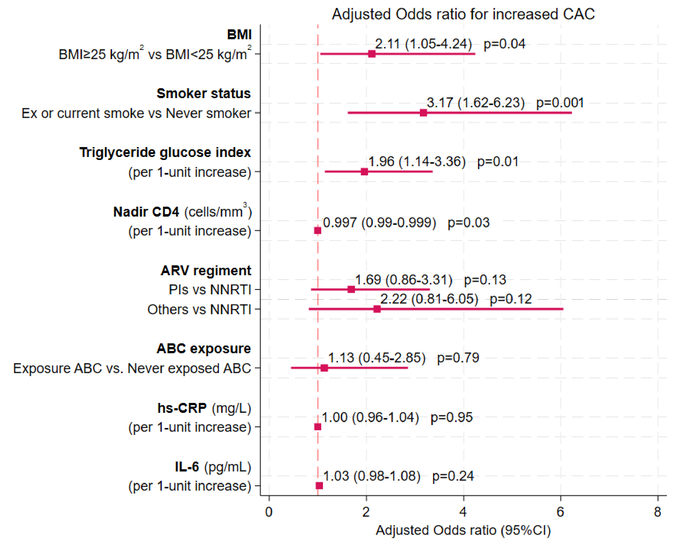
CONCLUSIONS

More than 50% of participants showed worsened subclinical atherosclerosis, with greater progression rates in those with higher baseline CAC scores. Prioritizing smoking cessation, weight management and lipid-lowering is essential to reduce CAC progression and cardiovascular risk in high-risk PLWH populations.

Table 2. Baseline and and follow-up CAC score

Baseline CAC score	Follow-up CAC score				
	0	**>0-99**	**100-399**	**≥400**	**Total**
0	63 (50.4%)	55 (44%)	6 (4.8%)	1 (0.8%)	125 (100%)
>0-99	0 (0%)	33 (45%)	32 (44%)	8 (11%)	73 (100%)
100-399	0 (0%)	0 (0%)	1 (9%)	10 (91%)	11 (100%)
≥400	0 (0%)	0 (0%)	0 (0%)	11 (100%)	11 (100%)
Total	63	88	39	30	220

Figure: Adjusted Odds Ratios for CAC Score Progression



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