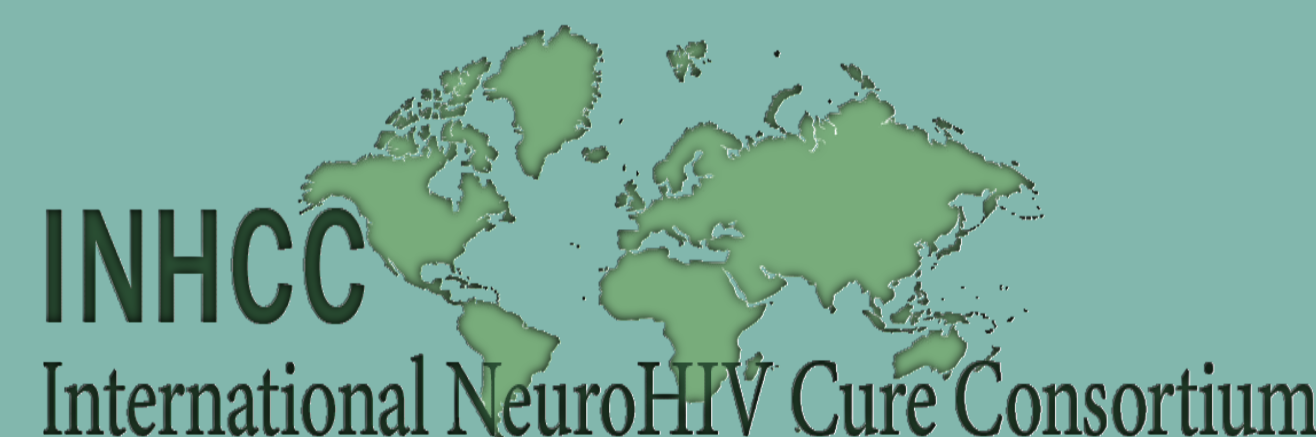


VASCULAR AGE AND COGNITIVE OUTCOMES IN AN ACUTE HIV COHORT AFTER 5.5 YEARS OF ART

Kathryn B. Holroyd MD,¹ Carlo Sacdalan MD,² Suteeraporn Pinyakorn MSc,^{3,4} Varaporn Unsombut BNS,² Somchai Sriplienchan MD, MPH,² Robert Paul PhD,⁵ Nittaya Phanuphak MD, PhD,² Denise Hsu MBBS, PhD,^{3,4} Sandhya Vasan MD,^{3,4} Serena Spudich MD,¹ Phillip Chan MBChB,¹ on behalf of the RV254/SEARCH 010 Study Team

1. Department of Neurology, Yale University, New Haven, CT, USA 2. SEARCH, Institute of HIV Research and Innovation, Bangkok, Thailand 3. U.S. Military HIV Research Program, Walter Reed Army Institute of Research, Silver Spring, MD, USA 4. Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc., Bethesda, MD, USA 5. University of Missouri, St. Louis, St. Louis, MO, USA



Abstract # 464

BACKGROUND

- Despite stable antiretroviral therapy (ART), people living with HIV (PLWH) are at significantly increased risk of lifetime cardiovascular disease (CVD)
- Persistent immune dysregulation may contribute to vascular aging & CVD in PLWH
- This study aims to evaluate the cardiovascular risk in young PLWH 5.5 years after ART initiation during acute HIV infection (AHI)

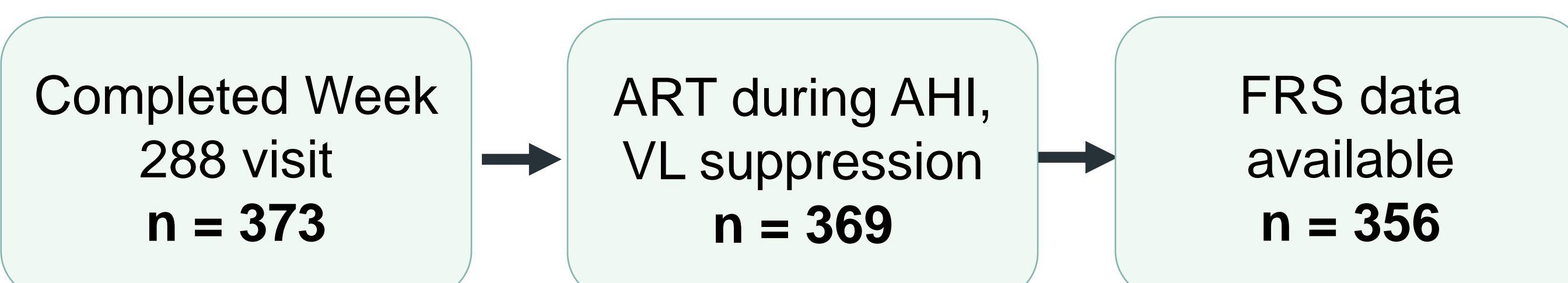
METHODS

Participants

- RV254/SEARCH010 participants who initiated ART immediately during acute HIV infection (AHI)

Inclusion Criteria

- Completed a week 288 visit between 05/2009 & 06/2022
- Viral suppression at week 288 (<40 copies/mL)
- Data available for Framingham Risk Score (FRS)



Framingham Risk Score (FRS) and Vascular Age

- FRS was calculated from age, sex, lipid profile, systolic blood pressure, smoking, diabetes, & antihypertensive usage at week 288
- Vascular age (VA) is defined as the age with the same predicted CV risk, but optimally-controlled risk factors
- Vascular age deviation (VAD) = VA minus Actual Age (AA)
- Higher VA & VAD indicates worse CV health

Cognitive performance (NPZ-4)

- Calculated by averaging z-scores of
 - Non-dominant Grooved Pegboard (GPB, fine motor speed)
 - Color Trails 1 & 2 (CT1&2, executive function)
 - Trails Making A (TMA, psychomotor speed)

Statistical Analysis

- Wilcoxon signed-rank test or McNemar's test were used to compare parameters at week 0 and week 288
- Linear regression model was used to assess factors associated with FRS, VA, & VAD
- Analyses were performed using StataCorp. 2019. *Stata Statistical Software: Release 16*. College Station, TX: StataCorp LLC

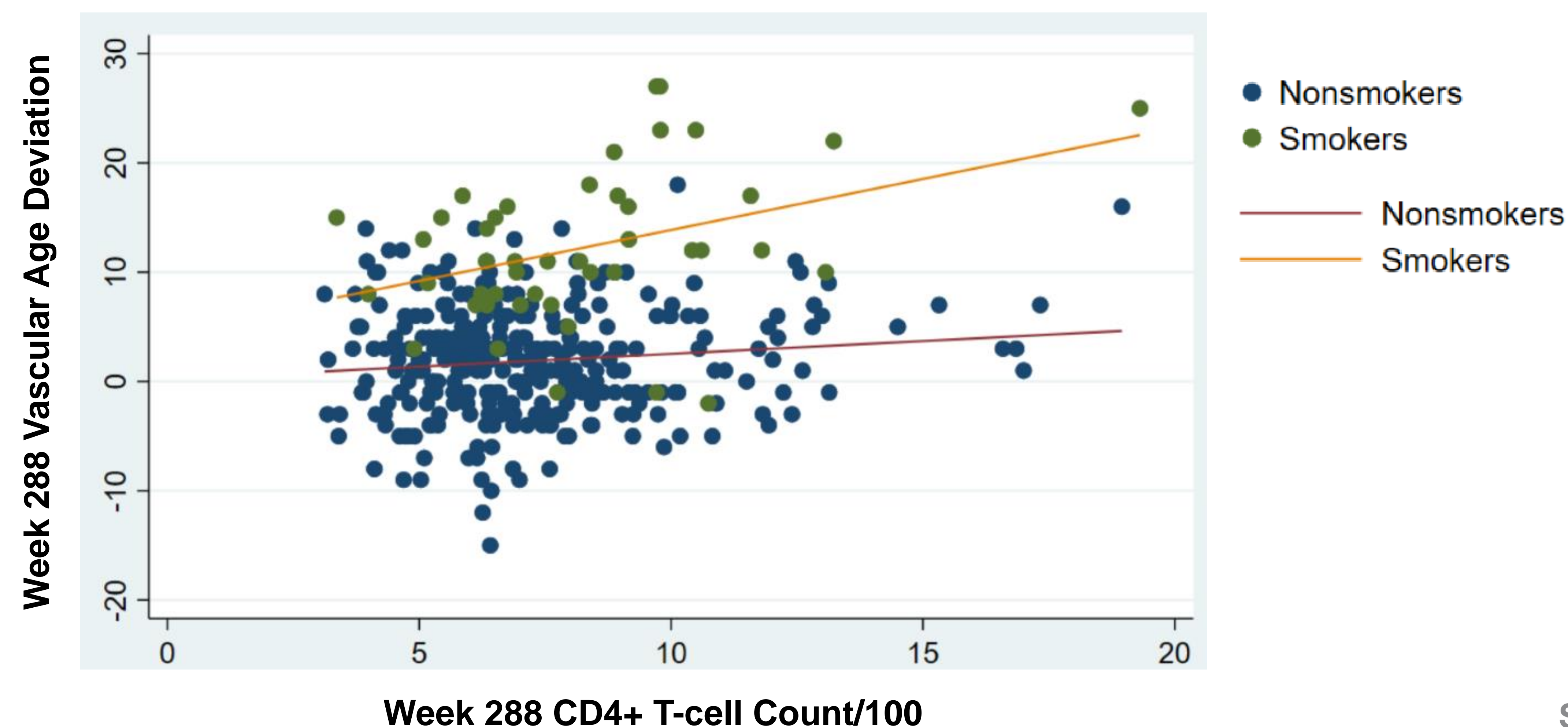
After 5.5 years of ART initiated during acute HIV, we found increased Framingham risk score based vascular age, which was associated with a higher CD4+ T-cell count.

RESULTS

HIV parameters and CVD risk factors at baseline (pre-ART AHI) & week 288 visit

N=356	Baseline median (IQR)	Week 288 median (IQR)
HIV parameters		
Age (AA, year)	26 (23, 32)	32 (28, 37)
Sex, male, n (%)	347 (98)	-
CD4+ T-cell count (cells/mm ³)	369 (266, 493)	676 (564, 847)
CD8+ T-cell count (cells/mm ³)	515 (341,862)	630 (470,797)
CD4/CD8 ratio	0.71 (0.42, 1.00)	1.11 (0.91, 1.36)
Plasma HIV RNA (log ₁₀ cps/ml)	5.94 (5.33, 6.74)	-
Plasma HIV suppression, n (%)	0 (0)	356 (100)
Cardiovascular parameters		
Hypertension, n (%)	7 (2.0)	17 (4.8)
Diabetes Mellitus, n (%)	1 (0.3)	3 (0.8)
Hyperlipidemia, n (%)	4 (1.1)	40 (11.1)
Smoking, n (%)*	36 (17.1)	45 (12.6)
Total cholesterol (mg/dL)	172 (152, 196)	200 (175, 230)
High density lipoprotein (mg/dL)	38 (32, 45)	49 (42, 57)
Systolic Blood Pressure, mmHg	117 (108, 125)	122 (112, 130)
Diastolic Blood Pressure, mmHg	74 (67, 81)	76 (71, 83)
Framingham Risk Score (FRS)	-	2 (0,5)
10-year Cardiovascular risk (%)	-	2.3 (1.6, 3.9)
Vascular age (VA, year)	-	34 (30, 40)

Higher CD4+ T-cell count is associated with increased VAD at week 288



SUMMARY OF FINDINGS

- At week 288, the median 10-year CV risk of RV254 participant was **2.3%** (IQR 1.6,3.9%, "low risk" ≤10%)
- Only one clinically significant CV event occurred (embolic stroke) during the study period
- The median actual age (AA) was **32** (IQR 28,37) & vascular age (VA) was **34** (IQR 3,40) years (**p<0.001**)
 - VA > AA in **232 (65%)** of participants (median VAD 3, IQR(-1,7) years)
- CD4+ T-cell count increased with VAD (b[95%CI]: 0.5 years [0.3-0.7] per 100 CD4+ T-cell, **p<0.001**)
 - Smoking was associated with a higher CD4+ T-cell count in previous reports
 - After stratification for smoking status, CD4+ T-cell count remained independently associated with VAD (**p<0.05**)
- VA, VAD, and FRS were not associated with NPZ-4
 - There was an unexpected, weak association between higher VAD & better z-GPB (b[95%CI]: 0.5 [0.01-1.02], p=0.045)

CONCLUSIONS

- In young PLWH after 5.5 years of ART initiated during AHI, 10-year CV risk was low & CVD events were rare
 - VA > AA in the majority of participants
 - Higher CD4+ T-cell count was associated with higher VAD regardless of smoking status
 - Vascular risk did not correlate with cognitive performance

NEXT STEPS

- Compare FRS results with matched chronic HIV cohort participants
- Evaluate blood markers of endothelial dysfunction at AHI & week 288

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DISCLAIMER

The views expressed are those of the authors and should not be construed to represent the positions of the U.S. Army, the Department of Defense, the National Institutes of Health, the Department of Health and Human Services, or the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. The investigators have adhered to the policies for protection of human subjects as prescribed in AR-70-25

