Ventricular Arrhythmia Prevalence and Frequency: The Multicenter AIDS Cohort Study (MACS)

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BACKGROUND

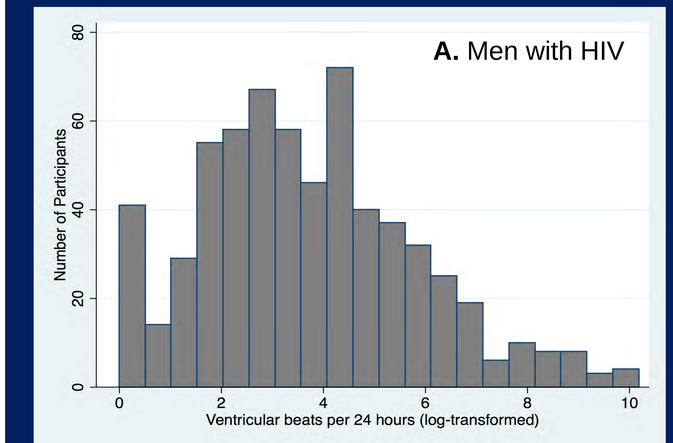
- **People with HIV (PWH) have ↑ risks for myocardial scar, heart failure (HF), and sudden cardiac death (SCD).**
  - → **PWH: 1.3-2x risk for adjudicated HF (single-center) and admin code-based HF (multicenter)**
    Feinstein MJ et al JAHA 2018 (10.1161/JAHA.118.00985); Freiberg MS et al JAMA Cardiol. 2017 (10.1001/jamacardio.2017.0264);
  - → **PWH have 3-6x higher likelihood of non-ischemic myocardial fibrosis/scar compared with non-HIV controls**
    Luetkens JA et al Circ CV Imaging 2016 (10.1161/circimaging.115.0040091); Holloway CJ et al Circulation 2013 (10.1161/circulationAHA.113.001719); Ntusi N et al Circ CV Imaging 2016 (10.1161/circimaging.115.004430)
  - → **PWH have 2x more post-MI/ischemic scar than HIV-**
    Feinstein MJ et al J Am Coll Cardiol 2016 (doi: 10.1016/j.jacc.2016.07.771)
- **Ventricular myocardial scar is a common substrate for unstable ventricular arrhythmias resulting in SCD.**
- **Few data exist regarding the prevalence and morphology of ventricular arrhythmias among PWH.**
- **In a single-center study, we found that worse HIV control was associated with higher odds of ventricular tachycardia or ectopy (VT/VE) among PWH**
  Meyer A et al J Int Assoc Provid AIDS Care 2019 (doi: 10.1177/2325958219852123)

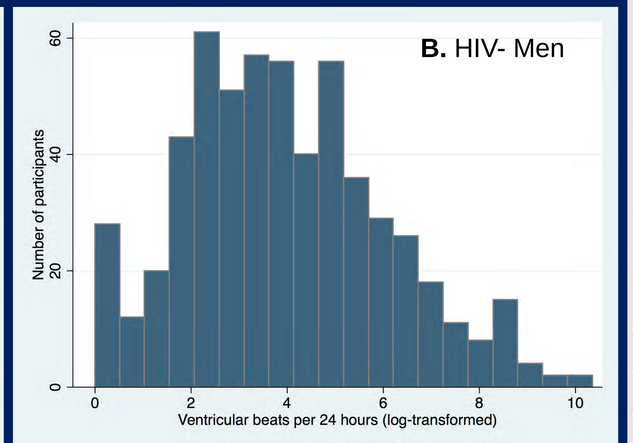
METHODS

- We evaluated prevalence of ventricular ectopy and arrhythmias among men with HIV (MWH) and HIV- men in the MACS
- Inclusions: 666 MWH and 586 HIV- men who undersent continuous ambulatory ECG monitoring (Ziopatch® by iRhythm) for a median of 12.7 days (IQR 5.7-13.8 days)
  - MWH: (mean age 54.4 ± 11.1 years, 51.3% white, 31.1% black, 46.2% current smokers, 15.6% diabetic, last CD4 count mean 720 ± 308, and 80.7% with last HIV RNA (viral load) undetectable)
  - HIV- men: (mean age 60.5 ± 11.7 years, 72.3% white, 19.2% black, 54.4% current smokers, 14.3% diabetic)
- Primary endpoint and analysis: Occurrence of any VT/VE by HIV serostatus
  - Logistic regression: Adjustment for site, age, race, smoking and substance use, BMI, hypertension, DM
- Secondary endpoint and analysis: Total number of ventricular ectopic beats per 24 hours by HIV serostatus
  - Logistic regression: Adjustments as above
- Additional analyses of primary endpoints: among MWH, by nadir CD4 count and peak VL

The prevalence and frequency of ventricular ectopic/arrhythmic beats did not differ significantly by HIV serostatus in the MACS. Among men with HIV, lower CD4 nadir was associated with borderline-significantly more ventricular beats.

Figure. Ventricular ectopy frequency (1A and 1B) for men with and without HIV





VE/VT Burden: Percentiles (Ventricular Beats/24h)

1st %ile: 0
5th %ile: 0
10th %ile: 1.5
25th %ile: 8.3
50th %ile: 33.2
75th %ile: 157.1
90th %ile: 716.5
95th %ile: 2135
99th %ile: 9044

RESULTS

- Raw data
  - Any VT/VE: 336 MWH (50.4%) had any VT/VE; 325 HIV- men (55.9%)
  - VT lasting ≥10 beats: 19/336 MWH and 24/586 HIV- men (p=0.22)
  - Only 1 sustained VT event in entire cohort
- **Primary and Secondary Analyses**
  - **VT/VE for MWH vs. HIV- men: aOR=1.17 (95% CI 0.82-1.68; p=0.39)**
  - **Adjusted # beats/24h: 123 more for MWH (95% CI -107, 354, p=0.29)**
- Within-HIV analyses
  - Lower CD4 nadir: borderline-significant (adjusted) more ventricular beats/24h
    - Per 100 cells/mm^3 lower CD4 count: 86 more beats (-8, 107; p=0.07)
  - No association of peak VL with ventricular beats

CONCLUSIONS

- In a cohort of men with HIV and HIV- controls, HIV serostatus was not associated with different prevalence or frequency of ventricular ectopy or arrhythmias
- Among men with HIV, lower CD4 count was associated with a borderline significantly higher number of ventricular beats per 24 hours

ACKNOWLEDGEMENTS

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