Cardiac Comorbidities in HIV: Role of Depression, Visceral Fat, Sex, and Exposure to ART

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Here: 4 subgroups of HIV patients whose cardiovascular health might benefit from your targeted intervention.

Presentation 1: Depression and HIV Are Risk Factors for Incident Heart Failure Among Veterans.*

Presentation 2: Cardiac Steatosis Increased in HIV: Related to Sex, Visceral Fat and ARV Exposure**

HIV-associated comorbidities run the gamut, and many of these are linked in overlapping and complicated relationships. Heart failure and depression are both increased in HIV, and studies have shown that those with HIV have a higher risk for cardiovascular disease. HIV-positive patients are also more prone to lay down visceral and pericardial fat, which likely also contribute to cardiac dysfunction. In addition, length of ART may also play a role.

Two presentations at CROI 2014 looked at various factors that may contribute to cardiac comorbidities experienced by HIV patients.

Jessica R. White, of the University of Pittsburgh Graduate School of Public Health, described research that looked at the link between HIV infection, heart failure (HF), and depression among a large cohort of veterans (N = 81,427) from the Veterans Aging Cohort Study. Participants were free of cardiovascular disease at study initiation: 33% were HIV-positive. They were followed from April 1, 2003, until December 31, 2009, or until an HF event or death occurred. IDC-9 codes were used to detect HIV status, major depressive disorder (MDD), and HF.

Results showed:

- 2666 HF events, of which 38% occurred among HIV-positive individuals.
- Veterans had higher risk for HF if they had MDD only (HR = 1.19; 95% CI, 1.05-1.35), HIV only (HR = 1.28; 95% CI, 1.16-1.41), or both HIV and MDD (HR = 1.68; 95% CI 1.45-1.95), compared with veterans without MDD or HIV.
- Among those with HIV, depressed veterans had higher rates of HF compared with those without depression (93.2 HF events per 1000 person-years, compared with 75.6, respectively).
- Both depression and HIV were linked to increased risk of HF. Those with both HIV and MDD were at the highest risk for HF.

Although fairly straightforward, these results highlight the importance of screening for and identifying depression among those with HIV. They provide an additional reminder and confirmation about the intimate link between mental and physical health.

In a related presentation, Julia Purdy, of the Critical Care Unit in the National Institutes of Health, Bethesda, MD, provided epidemiological data on cardiac steatosis in HIV. Her team looked at intramyocardial lipid deposition using magnetic resonance spectroscopy, and visceral fat using MRI, in 95 HIV-infected adults (mean age, 48.6 years) and 30 healthy volunteers (mean age, 46.2), matched for age, sex, and race. Serum lipids, glucose, insulin, CD4 T cell count, HIV viral load, and inflammation biomarkers were also measured. Results showed:

- A 38% increase in myocardial lipid content in HIV-positive adults, compared with healthy controls.
- HIV status (P = .03), visceral fat (P = .001), and female sex (P = .02) were significantly associated with cardiac steatosis, independent of age, smoking, and glucose and triglyceride levels.
- Years of ARV exposure were positively associated with cardiac steatosis (r = 0.27; P = .007).
- Years of ARV exposure were also associated with visceral fat volume (r = 0.31; P = .004).
These results can help to identify particular high-risk groups for cardiac steatosis among HIV-positive individuals, including women, those with increased visceral fat, and those with longer length of ART exposure. One possible explanation could be that increased visceral adiposity associated with ART exposure predisposes to laying down larger amounts of myocardial lipid, consequently increasing the risk of cardiac dysfunction among HIV patients.

**Take-Home Points**
Taken together, these relatively straightforward epidemiological studies point to subgroups among your HIV patients whose cardiovascular health might benefit from targeted intervention in your practice. These include:
- People with depression
- Women
- People with increased visceral fat
- People with longer exposure to ART

**References:**
Session TD3 Themed Discussion Tuesday, March 4, 2014: Heart Failure, Cardiac Steatosis, and HIV

Discussion Leader Wendy S. Post, The Johns Hopkins University School of Medicine, Baltimore, MD

*Presentation 1: Depression and HIV Are Risk Factors for Incident Heart Failure Among Veterans.*

Presented by Jessica R. White, University of Pittsburgh Graduate School of Public Health, with Chung-Chou H. Chang, University of Pittsburgh Graduate School of Public Health, University of Pittsburgh School of Medicine, Adeel A. Butt, University of Pittsburgh School of Medicine, Veterans Affairs Healthcare System, Pittsburgh, Hilary A. Tindle, University of Pittsburgh School of Medicine, Maria C. Rodriguez Barradas, Baylor College of Medicine, Houston, Michael E. DeBakey Veterans Affairs Medical Center, Houston, Texas, David Rimland, Emory University School of Medicine, Atlanta Veteran Affairs Medical Center, David Leaf, David Geffen School of Medicine, Los Angeles, Veterans Affairs Greater Los Angeles Health Care System, Matthew Budoff, Harbor-UCLA Medical Center, Los Angeles, Los Angeles Biomedical Research Institute, Amy C. Justice, Veteran Affairs Connecticut Health Care System, West Haven, CT, Yale University School of Medicine, Matthew S. Freiberg, University of Pittsburgh School of Medicine, Pittsburgh, PA, United States, 3Veteran Affairs Pittsburgh Healthcare System, Pittsburgh

**Presentation 2: Cardiac Steatosis Increased in HIV: Related To Gender, Visceral Fat and ARV**

Exposure, presented by Julia B. Purdy, Critical Care Medicine, National Institutes of Health, Bethesda, MD, with Chia-Ying Liu, Diagnostic Radiology Department, National Institutes of Health, Bethesda, MD, Sabrina Mangat, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, Horacio Duarte, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, Diana Thiara, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, Nancyanne Schmidt, Stony Brook University School of Medicine, Stony Brook, NY, Jamie Hur, Drexel University College of Medicine, Philadelphia, PA, Christopher T. Sibley, Diagnostic Radiology Department, National Institutes of Health, Bethesda, MD, David A. Bluemke, Diagnostic Radiology Department, National Institutes of Health, Bethesda, MD, Colleen Hadigan, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD, Critical Care Medicine, National Institutes of Health, Bethesda, MD

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