Poster # 797

Kidney Dysfunction and Markers of Inflammation in the Multicenter AIDS Cohort Study

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Background

- **HIV-infected individuals are at higher risk for kidney disease compared to -uninfected**
- **We investigated whether the inflammation related to HIV contributes to kidney dysfunction among HIV-infected men**

Study Population

- **There were 434 HIV-infected (HIV+) men on HAART and 200 HIV-uninfected (HIV-) men from the Multicenter AIDS Cohort Study (MACS) with:**
  - **Directly measured glomerular filtration rate (GFR; using iohexol plasma disappearance)**
  - **Available data on inflammatory biomarker levels within 5 years of GFR measurement**

Figure 1. Percentile box plots displaying the distribution of glomerular filtration rate and urine protein to creatinine ratio among the sample of HIV+ and HIV- men from the MACS

Kidney /Comorbid Outcomes

- **Low kidney function: GFR ≤90 ml/min/1.73m²**
- **Hyperfiltration: GFR ≥140 ml/min/1.73m² for men 40 years of age and younger, subtracting 1 ml/min/1.73m² for each year over age 40**
- **High urine protein: uPCr >200 mg/g**
- **Diabetes, hypertension and hepatitis C virus (HCV) infection: two previous reports in any year**

Inflammatory Biomarkers: Measures and Methods

- **12 inflammatory biomarkers were included:**
  - **C-Reactive Protein (CRP), soluble TNF-receptor 2 (sTNFr2), Soluble Interleukin 2-receptor-α (sIL2rα), soluble gp130 (sgp130), soluble CD27 (sCD27), Monocyte Chemoattractant Protein-1 (MCP1/CCL2), Interferon γ-Induced Protein 10 (IP10/CXCL10), TNFα, Interleukin-6 (IL6), soluble CD14 (sCD14), Interleukin-8 (IL8/CXCL8), and Interleukin-10 (IL10)**
- **Exploratory Factor Analysis (EFA): levels of the 12 inflammatory biomarkers were assumed to be indicators of unique inflammatory processes. EFA was used to estimate weighted linear combination of the biomarkers variables that represented underlying inflammatory process.**

Unique Inflammatory Processes

- **3 inflammatory processes were identified with EFA:**
  - **Process 1: sTNFr2, sIL2rα, sgp130, sCD27, and sCD14.**
  - **Process 2: IL6, CXCL8 and TNFα.**

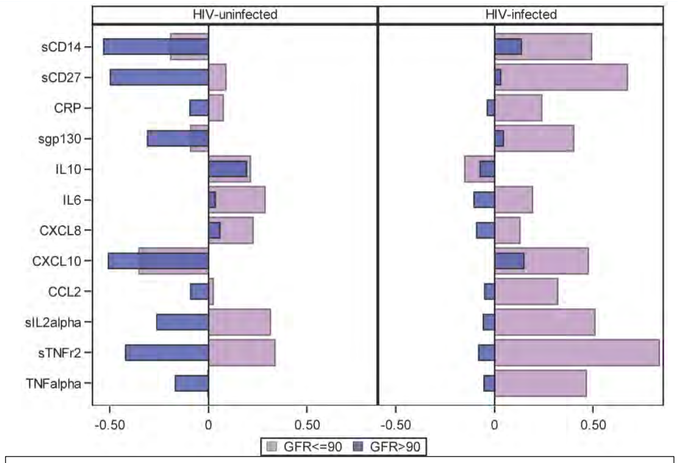


Figure 2. Standardized biomarker profiles showing the average standardized levels of the 12 inflammatory biomarkers stratified by HIV-serostatus and GFR

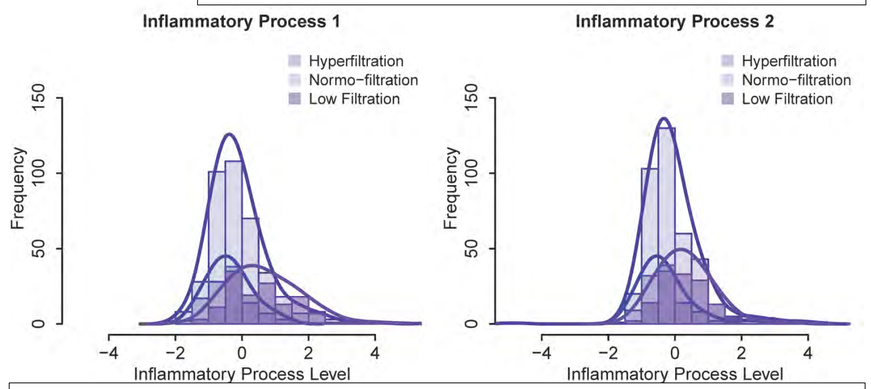


Figure 3. Distribution of inflammatory process levels for the two inflammatory processes, stratified by kidney function (in ml/min): low - ≤90, normo – 90 to 140, hyper - ≥140 with adjustment for age

Kidney Outcomes and Inflammatory Processes

- **Models: The levels of inflammatory processes from EFA were predictors in logistic regressions**
  - **Models were adjusted for age >50 years, black race and HIV positive serostatus**
- **Process 1: related to a higher odds of low GFR(OR=2.0), high urine protein (OR=2.3), diabetes (OR=1.6), hypertension (OR=1.3), HCV (OR=1.9) and a lower odds of hyperfiltration (OR=0.5)**
- **Process 2: only significantly related to a lower odds of HCV (OR=0.5)**

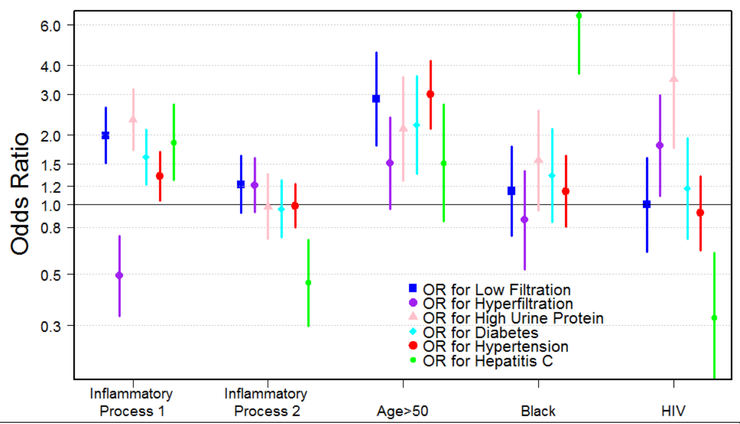


Figure 4. Results from adjusted logistic regressions showing the estimated odds ratios for the associations between the levels of the two inflammatory processes and six outcomes

Conclusions

Higher circulating levels of inflammatory biomarkers suggestive of to immune activation processes among HIV-infected men may partially explain their higher burden of kidney dysfunction compared to uninfected persons

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