Key Summary of Conference Abstract

High Levels of Myeloperoxidase Are Similar Across ASCVD Risk Groups and Are Associated with Markers of Liver Fibrosis and Kidney Function in a Workforce Population

Background

- Myeloperoxidase (MPO) is a biomarker of oxidative stress. High blood levels of free MPO are associated with risk of cardiovascular disease (CVD).[1]
- The clinical value of measuring MPO as a prospective biomarker of CVD risk in populations is not well understood.
- **Objective:** This study examined the frequency of high MPO levels among 10-year atherosclerotic cardiovascular disease (ASCVD) risk groups, and the association of high MPO levels with liver fibrosis scores and kidney disease biomarkers across ASCVD risk groups.

Methods

- The study population included participants in an employer-sponsored annual health assessment between August 2020 and March 2021.
- Free MPO levels were measured by immunoassay.
- The proportion of participants with high MPO levels (>540 pmol/L) was examined across 10-year ASCVD risk groups: low (<7.5%), intermediate (7.5% to 20%), high (>20% or prevalent disease).
- The associations of high MPO levels with nonalcoholic fatty liver disease (NAFLD) fibrosis score, liver Fibrosis-4 (FIB-4) score, and estimated glomerular filtration rate (eGFR) were assessed with logistic regression models for the overall population and for 10-year ASCVD risk groups.
  - Models were adjusted for age and sex.

Results

- The study population included 33,984 participants; median age was 47 years, and 63% of participants were women.
- High MPO levels were similar among ASCVD risk groups: 3% for low risk (n=925), 4% for intermediate risk (n=184), 5% for high risk (n=63).
- Among the overall study population, a high MPO (>540 vs. ≤540 pmol/L) level was associated with
  - High NAFLD fibrosis score (>0.676 vs <-1.455): odds ratio (OR), 4.7; 95% CI, 3.5 to 6.2
  - High FIB-4 score (>3.25 vs ≤3.25): OR, 3.4; 95% CI, 1.8 to 6.4
  - Low eGFR (<60 vs ≥60 mL/min/1.73 m^2): OR, 1.8; 95% CI, 1.4 to 2.4
- The association between a high MPO level and risk for liver fibrosis and kidney disease varied by ASCVD risk group and score.
  - For the high-ASCVD risk group, high MPO level was not associated with NAFLD fibrosis score, FIB-4 score, or eGFR (P≥0.2 for all).
  - For the low- and intermediate-ASCVD risk groups, high MPO level was associated with high NAFLD fibrosis score and low eGFR (P≤0.02 for all). High MPO level was associated with high FIB-4 score in the low ASCVD risk group (P<0.001) but not the intermediate risk group (P=0.2).

Conclusions

- The proportion of participants with high MPO levels was similar across ASCVD risk groups.
- Many participants with high MPO levels were at low ASCVD risk. These findings may indicate that preventive treatments, which are more likely among individuals at high ASCVD risk, may affect MPO levels; further study is warranted.
- Among the overall study population, high MPO levels were associated with greater risk for liver fibrosis and kidney disease, according to biomarker levels.

Poster presentation at the Scientific Sessions of the American Heart Association (AHA)

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Reference

1. Li J, Cao T, Wei Y, et al. A review of novel cardiac biomarkers in acute or chronic cardiovascular diseases: the role of soluble ST2 (sST2), lipoprotein-associated phospholipase A2 (Lp-PLA2), myeloperoxidase (MPO), and procalcitonin (PCT). *Dis Markers*. 2021;2021:6258865. doi:10.1155/2021/6258865