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Intra-Individual Biological Variability of Lipoprotein Associated Lipase A₂ and High Sensitivity C-Reactive Protein Among Persons Without Acute Systemic Inflammatory Illness

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Abstract:

Background: Recent literature has reported that lipoprotein-associated phospholipase A₂ (Lp-PLA₂) mass and high sensitivity C reactive protein (hs-CRP), two novel inflammatory biomarkers, are independent predictors for cardiovascular disease events. The biological variation of these two biomarkers must be taken into consideration when utilizing test results to determine the individual's relative risk of a future cardiovascular event.

Purpose: The purpose of this study was to determine the intra-individual biological variability of Lp-PLA₂ mass and hs-CRP in a population of individuals with no reported history of acute systemic inflammatory illness.

Subjects: Forty-one participants (mean age of 61 years) were enrolled in the 6-week study. All participants reported no systemic inflammatory illness or acute infection during the study period.

Methods: Non-fasting venous blood samples were collected on all 41 participants; which included one blood draw each week for a period of 6 weeks. Blood draws were completed during the morning of the same week day for the entire study period. Lp-PLA₂ was determined by an FDA-cleared ELISA assay (PLACTM test, diaDexus, Inc.), whereas hs-CRP was quantified using an automated immunoturbidimetric assay.

Results: Among the study group, the intra-individual biological variation (%) was 14.5 (2.5-42.3) for Lp-PLA₂ and 56.4 (9.7-206) for hs-CRP.

Conclusion: Among persons without a history of acute systemic inflammatory illness, Lp-PLA₂ demonstrated modest intra-individual variation, whereas, substantially more variability was observed for hs-CRP. These biological variations must be considered when interpreting test results in the clinical practice setting.

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