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Catherine J. Andersen

Christa Esposito

Julia Greco

Allison Sloan

Aaron R. Van Dyke

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Egg-induced Changes in Serum Lipids Are Associated with Clinical Immune Cell Counts (OR12-04-19)

Catherine Andersen, Christa Palancia Esposito, Julia Greco, Allison Sloan, and Aaron Van Dyke

Fairfield University

Objectives: We have previously demonstrated that serum lipids can predict clinical immune cell counts at the population level; however, it is unknown whether diet-induced changes in serum lipids correspond to similar shifts in clinical blood cell counts. We hypothesized that whole egg vs. egg white consumption, which is known to differentially affect lipoprotein profiles and inflammatory markers, would induce shifts in clinical immune cells counts that are associated with changes in serum lipids.

Methods: In this ongoing study, healthy men and women (18–35y, BMI < 30 kg/m^2, $n = 11$) consumed an egg-free diet for 4 weeks, followed by a 4-week diet containing either 3 whole eggs or 3 egg whites per day. Fasting serum lipids and complete blood cell counts were measured at the end of each diet period.

Results: Following the egg-free diet period, individuals with higher total cholesterol levels had greater absolute lymphocyte counts, and a trend toward greater absolute eosinophils counts. While no significant changes in total cholesterol or LDL-cholesterol were observed between diet periods, HDL-cholesterol was increased in subjects consuming whole eggs only. Similarly, serum triglycerides, alanine aminotransferase, and platelet counts were only decreased by whole egg intake. Interestingly, while egg intake did not alter total white blood counts, there was a trend toward decreased absolute lymphocyte counts in all subjects following consumption of both whole eggs and egg whites, as compared to the egg-free diet period. Across all subjects, a strong positive correlation was observed between changes in HDL-cholesterol vs. changes in absolute monocytes, as well as the percentage of monocytes in total white blood cell counts. Changes in triglycerides were negatively associated with changes in eosinophil levels.

Conclusions: These findings suggest that egg-induced changes in serum lipids are associated with differential shifts in clinical immune cell counts.

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