

HDL Subspecies in Youth with Type 1 Diabetes and Celiac Disease: A Pilot Study **Tiani Schwindt BS¹, Nancy Crimmins MD², Amy Shah MD²**

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Introduction: Type 1 diabetes (T1D) and celiac disease (CD) increase the risk of developing vascular disease compared to T1D alone. HDL cholesterol concentrations may explain this as lower levels have been seen in patients with T1D and CD vs T1D alone.

Hypothesis: We hypothesize that children with both T1D and CD will have lower HDL cholesterol concentrations and a more atherogenic HDL subspecies profile compared to children with T1D alone.

Methods: We recruited patients with T1D/CD (n=7; goal=10) and T1D only (n=3; goal=10) between the ages of 8 and 17. Patients were recruited from diabetes clinic at CCHMC. The study was IRB approved at CCHMC and research visits were conducted in the Schubert Research Center. Data collected included blood pressure, HbA1c, TTG IgA, lipid profile, and HDL subspecies using gel filtration chromatography.

Results: Participants with T1D/CD had a mean BMI of 23.7 (78th percentile), BP of 100/70 mmHg, HbA1c of 8.3%, total cholesterol 156 mg/dL, HDL 51 mg/dL, LDL 90 mg/dL, Triglycerides 88.9 mg/dL, and TTG IgA 63.4. Participants with T1D alone had a mean BMI of 22.6 (62nd percentile), BP 104/71 mmHg, HbA1c of 8.1%, total cholesterol 159 mg/dL, HDL 60 mg/dL, LDL 85 mg/dL, triglycerides 61 mg/dL, and TTG IgA 1.9.

The mean concentration of large HDL subspecies in those with T1D/CD was 0.0101 ±0.0024 vs. 0.0127 ±0.0015 mg/mL in those with T1D alone. The mean concentration of small HDL subspecies was 0.0120 ±0.0011 in T1D/CD vs. 0.0086 ±0.0008 mg/mL in T1D alone.

There were no significant differences in any of the study measures; however, there was a trend toward lower HDL levels, higher triglycerides, and higher mean concentration of small HDL subspecies in those with T1D/CD vs T1D alone.

Conclusions: Our early data suggests that compared to adolescents with T1D alone, those with T1D/CD appear to have an altered HDL subspecies profile, lower HDL, and higher triglycerides which might lead to increased vascular risk. We intend to maximize recruitment to better test for significant differences in lipid/HDL profiles.

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