

Difference in high density lipoprotein cholesterol between type 1 and type 2 in a paediatric population: 10-year Emirati study

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Aim: There is evidence that atherosclerosis starts in early life. Type 1 and type 2 diabetes are known to have differences in long-term complication trends in adults. Dyslipidaemia is an important risk factor for atherosclerosis. Data on whether and how lipid parameters differ in childhood and adolescence, particularly differential trends, remain scant. We aim to investigate differences between lipid parameters in children and adolescents with diabetes.

Methods: Data (2009-2019) for pediatric (<19 years old) ICLDC patients (N=11,116) were extracted. Patients with overweight/obesity (BMI $\geq$ 85th percentile) were divided into prediabetes (Pre-Dia), type 1 diabetes (T1DM), type 2 diabetes (T2DM) and normoglycemic (NG) groups. Lipid parameter percentiles were calculated (median and interquartile range (IQR)); distribution curves were plotted on R and statistical analyses performed on SPSS24.

Results: Overweight/obese patients (n=4659) included: Pre-Dia (n=1,113; 23.9%), diabetes (n=377; 8.1% [T1DM n=285; 75.6%, T2DM n=92; 24.4%]) and NG (n=3,167; 68.0%). Lipid parameters (mg/dL) compared to the NG group; were significantly higher ($p \leq 0.001$) for TC, LDL-c and non-HDL-c and were significantly lower ($p \leq 0.001$) for HDL-c. However, in the T1DM group HDL-c 56.5 (46.8 – 64.6) was significantly higher ($p \leq 0.001$) compared to T2DM 40.8 (34.8 – 48.1), Pre-Dia 46.0 (40.6 – 54.2) and NG 49.5 (42.5 – 56.8) patients.

Conclusion: Within diabetes types, the observed differences in lipid parameters, particularly in HDL-c may have differential long term implications. Studies implicate that, unlike HDL, HDL-c plays a detrimental role in endothelial dysfunction in type 1 diabetes patients via oxidative stress related vascular damage. This merits long term investigation in this population.