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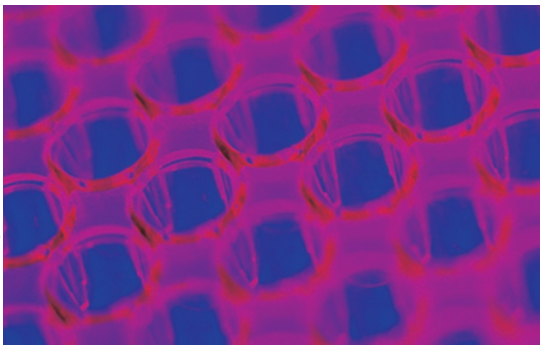
DIABETES

A lipidomic profile for the prediction of type 1 diabetes mellitus



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A lipidomic profile in the cord blood of neonates is predictive of the development of type 1 diabetes mellitus, report researchers from Finland.

Only 3–7% of children with risk-associated genotypes at the HLA locus develop type 1 diabetes mellitus by the time they reach adulthood; therefore, environmental factors have an important role. Biomarkers are needed to identify children at risk of developing type 1 diabetes mellitus that capture both genetic and environmental components of the disease risk.

A previous metabolomics study by Oresic *et al.* had shown that children who develop type 1 diabetes mellitus have lower levels of choline-containing phospholipids in their cord blood than children who do not develop the disease. The current study by the same group investigated whether specific lipidomic profiles at birth in children with HLA-conferred risk of type 1 diabetes mellitus are associated with the development of β-cell autoimmunity or with progression to type 1 diabetes mellitus or both.

The researchers compared the molecular lipids in the cord blood of 33 neonates who later developed type 1 diabetes mellitus with those of neonates who developed islet autoantibodies but no clinical disease (31 who developed three or four islet autoantibodies, 31 who developed two autoantibodies, and 48 who developed one autoantibody). As controls, 143 clinically unaffected healthy children without islet autoantibodies were matched to each child for sex, HLA-conferred type 1 diabetes mellitus risk genotype and date of birth.

Children who developed type 1 diabetes mellitus had a characteristic cord blood lipidomic profile, including reduced levels of choline-containing phospholipids; this profile was specific for progression to type 1 diabetes mellitus and not associated with the development of β-cell autoimmunity.

The researchers also developed a molecular signature including seven lipid metabolites that predicted progression to type 1 diabetes mellitus with an odds ratio of 5.94 (95% CI 1.07–17.50).

The researchers suggest that lipidomic profiles associated with progression to type 1 diabetes mellitus could be used for diagnostic screening and that metabolomics in general holds promise for neonatal screening for the risk of chronic diseases.

Carol Wilson

Original article Oresic, M. *et al.* Cord serum lipidome in prediction of islet autoimmunity and type 1 diabetes. *Diabetes* doi:10.2337/db13-0159