

Genetic and non-genetic factors at play in celiac disease development in infants

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Video Byte

Keywords: Microbiota, Celiac disease, Multi-omics analysis, gut microbiome, delivery, infants, childbirth, Microbiome

Posted Date: November 12th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-106685/v1>

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Abstract

Celiac disease is an autoimmune digestive disorder that causes a severe response to gluten. Although genetic predisposition is necessary for celiac disease to develop, exposure to certain environmental stimuli may also play a role in disease development. A recent study evaluated potential environmental risk factors affecting celiac disease development. Researchers used metagenomics and metabolomics to analyze infants with a first-degree relative with CD. Using samples collected at birth, 3 months, and 6 months of age to compare infants exposed or unexposed to environmental factors, including birth delivery mode, infant feeding type, and antibiotic exposure, the researchers found that many microbial species, functional pathways, and metabolites were affected by risk factors. Notably, C-section delivery was associated with decreases in beneficial bacteria and alterations in metabolic pathways - changes which are implicated in immune system dysfunction and inflammatory conditions. Bacterial abundance and metabolic pathways also changed in different ways when infants were not exposed to risk factors, with potentially beneficial immunomodulatory and anti-inflammatory effects. These results provide insight into taxonomic and functional shifts in developing gut microbiota in infants, linking elevated genetic risk of celiac disease to environmental risk factors in disease pathogenesis.