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Summary

Exclusive enteral nutrition: The effect on immunometabolism

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Small Intestine & Nutrition | Mechanisms & Personalised Medicine | Immunology | IBD

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Exclusive enteral nutrition in paediatric Crohn's disease induces remission through medium chain fatty acid-mediated changes in gut microbiome, particularly activation of enterocloster species, but endoscopic healing is characterized by persistent pro-inflammatory and pro-oxidative tissue signatures.

KEY POINTS

- In a study of 20 treatment-naive paediatric Crohn's disease patients, the speaker reported that all patients achieved remission after approximately eight weeks of exclusive enteral nutrition, though most relapsed subsequently.
- The speaker identified medium chain fatty acids (C8, C10, C12) from exclusive enteral nutrition formulas as key mediators that activate enterocloster species, with up to 20% increase in relative abundance and activity, though each patient harbored a unique repertoire of enterocloster strains.
- Despite endoscopic healing, the speaker reported persistent transcriptional signatures resembling active disease, including pro-oxidative pathways (Duox), inflammatory markers (SAA), and nitric oxide metabolites (nos, IL-17), indicating residual disease activity.
- The speaker presented an ongoing randomized controlled trial testing whether FMT following eight weeks of exclusive enteral nutrition can maintain remission in adult and paediatric Crohn's disease patients, with preliminary data showing FMT induces microbial changes including increased Faecalibacterium prausnitzii.
- The speaker suggested that mitochondrial dysfunction may drive the persistent inflammatory signatures observed after exclusive enteral nutrition therapy, based on mouse model comparisons.

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