DEPLETION OF BUTYRATE-PRODUCING MICROBES OF THE FIRMICUTES PREDICTS NONRESPONSE TO FMT THERAPY IN PATIENTS WITH RECURRENT CLOSTRIDIUM DIFFICILE INFECTION

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A study of 23 recurrent Clostridium difficile infection patients identified microbiome characteristics associated with FMT treatment failure, finding that non-responders had depleted butyrate-producing bacteria and unfavorable conditions for Firmicutes colonization.

KEY POINTS

- Seven of 23 recurrent CDI patients did not respond to FMT treatment, with non-remission patients showing significantly reduced microbiome α-diversity indexes before treatment
- Butyrate-producing Firmicutes bacteria including Bifidobacterium, Veillonella, Coprococcus_2, Oscillospira, and Roseburia were almost completely depleted in non-remission patients before treatment
- Patients with good prognosis had high relative abundance of Veillonella before treatment, while Burkholderiales_unclassified, Coprococcus_2, and Oscillospira failed to colonize in non-responders before and after FMT
- Older patients showed poor Veillonella colonization consistent with worse outcomes, and all rCDI patients with Crohn's disease were found only in the non-remission group
- The study analyzed 10 FMT donors screened from thousands of healthy individuals and 171 healthy control samples to characterize microbiome features predictive of FMT response

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