

Persisting changes of intestinal microbiota after bowel lavage and colonoscopy

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Abstract

Objective

An adequate bowel preparation is essential for a successful colonoscopy, but to date, only scarce information exists on the impact of the bowel cleansing on the gut microbiota, in particular, 1 month after the procedure.

Patients and methods

Through 16S rDNA Ion Torrent profiling of fecal samples of 10 patients, we evaluated changes that occurred in the gut microbiota composition immediately after a 4 liter polyethylene glycol-based (SELG Esse) bowel lavage and 1 month thereafter. We studied the gut microbiota at the phylum, class, and family level.

Results

At the phyla level, we found a significant decrease in Firmicutes abundance and an increase in Proteobacteria abundance immediately after the colon cleansing and 1 month after the colonoscopy, whereas, at the class level, a significant increase in γ -Proteobacteria immediately after the colonoscopy was observed. Interestingly, 1 month after the endoscopic examination, this bacterial class was decreased 2.5-fold compared with samples before colonoscopy, as well as α -Proteobacteria. At the family level, a significant reduction in Lactobacillaceae and an increase in Enterobacteriaceae abundance were observed immediately after the colonoscopy, whereas 1 month after the bowel cleansing, these families were significantly lower compared with samples collected before the colonoscopy. Moreover, the abundance of Rikenellaceae and Eubacteriaceae has been observed to be significantly higher compared with samples collected before the bowel lavage. Finally, Streptococcaceae were increased 4.0-fold 1 month after the bowel lavage compared with fecal samples collected before the colonoscopy.

Conclusion

We provide clear evidence that, in normal individuals, a high-volume polyethylene glycol bowel cleansing preparation has a long-lasting effect on the gut microbiota composition and homeostasis, in particular, with a decrease in the Lactobacillaceae abundance, a population of protective bacteria. Further studies are required to assess whether these changes have any metabolic, immunological, or clinical consequence.