SATURDAY, November 5, 2022

Canada Future Directions in IBD

SESSION IV

MANIPULATING THE MICROBIOME: NOVEL APPROACHES

Altering the Microbiota in Clinical Practice: What's worth trying?

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Objectives

- Discuss the rationale for altering microbes in IBD
- Explore the clinical applications of manipulating the microbiome in IBD for clinical benefit
- Consider what the future of microbe-altering therapy might look like

Most current IBD treatments focus on manipulating (mostly suppressing) the immune response, but this does not address the most important basic defects in IBD pathogenesis – the toxic gut environment fueling inflammation. Within this environment, gut microbes have attracted much attention given their role in inducing inflammation and observed compositional and functional changes seen in IBD patients and animal models. However, some of these changes could represent more of an effect of the inflammation on microbes than a causative role; manipulating microbes could help address this concern and potentially offer novel therapies.

But this concept is not really new; we have been treating the microbiome in IBD for years. Beyond antibiotics and probiotics, diet directly (and indirectly) impacts microbes in a way that might explain how exclusive enteral nutrition (EEN) and the Crohn disease exclusion diet (CDED) work. Fecal microbial transplantation has also shown some promise, especially for ulcerative colitis. Many of the common immune-focused therapies also impact microbes, but this might be an indirect effect.

So, what else can be done with microbes to help patients? Microbes, or their products, could serve as predictors and biomarkers, since they are a reflection of the gut microenvironment. Novel approaches to manipulate microbes will be discussed, as will personalized microbe-driven or diet-centered studies, showing some promise. Some of the remaining gaps will also be explored, in an effort to offer a glimpse into what this field might look like in the future and how this could benefit our patients.

Key references

Armstrong HK, Bording-Jorgensen M, Santer DM, et al. Unfermented β-fructan fibers fuel inflammation in select inflammatory bowel disease patients. *Gastroenterology*. 2022 ; 29:S0016-5085(22)01150-7.

Federici S, Kredo-Russo S, Valdés-Mas R, et al. Targeted suppression of human IBD-associated gut microbiota commensals by phage consortia for treatment of intestinal inflammation. *Cell*. 2022; 185(16):2879–98.

Sorbara MT, Pamer EG. Microbiome-based therapeutics. *Nat Rev Microbiol*. 2022; 20(6):365–80.