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CLINICAL CASE STUDY

Microbiome-Guided Insights in IBS-C with Overlapping Pelvic Pathology

For Healthcare Professionals Only

Introduction

To demonstrate the clinical utility of Microbiome Explorer™ and how it can be effectively integrated into practice, real-world case scenarios have been documented to illustrate its application and care. Below is a case managed by Alyssa Tait, Naturopath, showcasing her clinical work-up and the use of Microbiome Explorer™ in guiding patient management.

Clinical Background: Chronic IBS-C with Emotional Trigger

Constipation-predominant irritable bowel syndrome (IBS-C) is a functional gastrointestinal disorder characterised by abdominal pain and infrequent or difficult bowel movements. Patients with a long history of IBS-C frequently present with treatment-resistant symptoms.

In this case, the patient's symptoms intensified over nine months following an emotionally distressing marital breakup. Despite consulting multiple practitioners and undergoing numerous interventions, her core symptoms remained unresolved.

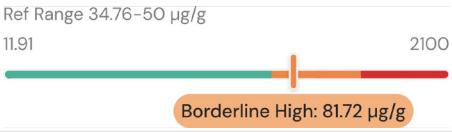
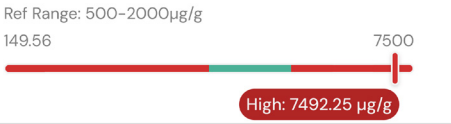
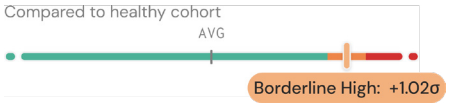
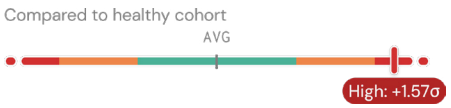
Patient Presentation

Characteristic	Details
Age	Late 30s (female)
History	Lifelong, worsened over nine months
Symptoms	Constipation, loud flatulence, bloating, sensation of incomplete emptying
Investigations	CT - faecal loading Colonoscopy – suboptimal prep, suggesting impaired motility Endoscopy - no coeliac disease or disaccharidase deficiency
Diet	Dairy-free, low grain; multiple dietary strategies attempted without sustained benefit
Intervention history	Multiple practitioner consultations; minimal or no lasting relief Antibiotic treatment for SIBO improved bowel regularity but had no impact on abdominal pain, bloating or loud flatulence

Microbiome Findings (Baseline)

A Microbiome Explorer - Comprehensive analysis was performed and revealed several microbial and GI marker abnormalities likely contributing to the patient's IBS-C presentation. Key findings included:

- Markedly elevated secretory IgA consistent with mucosal immune activation.
- Borderline high faecal calprotectin and borderline high hexa-LPS producing microbes, suggesting possible inflammation[1,2,3].
- High abundance of methane- and histamine-producing microbes, associated with constipation and abdominal pain respectively.
- Borderline low IPA-producing species, indicating reduced anti-inflammatory and barrier-supporting capacity.
- Microbial diversity within range, but richness skewed by a high proportion of rare, poor fibre degraders.

Table 1. Microbiome Explorer™ Comprehensive Report Breakdown			
	Marker	Baseline Finding	Clinical Interpretation
Pathogen Markers	Pathogens	Not detected	Pathogen ruled out
GI Markers	Calprotectin		Suggests intestinal inflammation
	Secretory IgA		Mucosal immune activation
Microbiome Markers	Hexa-LPS-producing microbes		Associated with systemic and intestinal inflammation
	Histamine-producing microbes		Associated with visceral hypersensitivity and abdominal pain
	IPA- producing microbes		Reduced anti-inflammatory activity and barrier support
	Methane-producing microbes		Associated with slow motility and constipation
	Propionate-producing microbes		

Intervention

Treatment goals included reducing bloating and wind, and improving ease of bowel emptying. Based on the microbiome findings, the intervention plan targeted methanogen overgrowth, supported digestive function to reduce symptoms, and addressed inflammation with specific botanicals.

Additional strategies focused on motility, parasympathetic support, and pelvic floor function to improve evacuation and symptom control.

Table 2. Intervention Plan

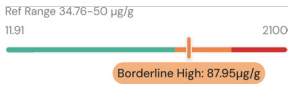
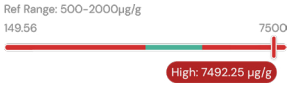
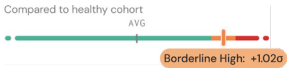
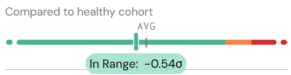
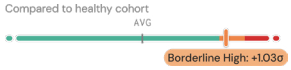
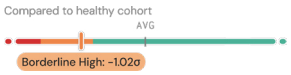
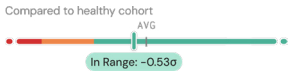
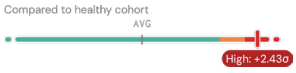
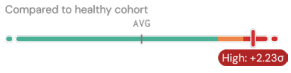
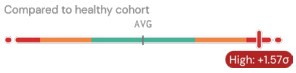
Intervention	Dosage	Purpose
Lactobacillus reuteri DSM 17938	1x daily for 3 months	Reduce methanogen overgrowth
Betaine hydrochloride 400mg, L-glutamic acid 100mg, pepsin 100mg	1 tds for 3 months	Support digestion, reduce bloating
Turmeric (*Curcuma longa*) liquid extract 1:1	5–7 mL daily	Reduce inflammation
Matcha green tea	1 tsp daily	Reduce inflammation
Pomegranate (*Punica granatum*) husk extract 1:2	7.5 mL daily	Reduce inflammation
Passionflower (*Passiflora incarnata*) 1:2 + Licorice (*Glycyrrhiza glabra*) extract 1:1	3.5 mL daily for 3 weeks	Improve evacuation efficiency, reduce bloating
Pelvic floor physiotherapy	1 session with home exercise program	Improve incomplete evacuation
Transcutaneous auricular vagal nerve stimulation	10 min x 2 sessions + home trial	Enhance parasympathetic tone, improve motility
Visceral mobilisation	20 min x 2 sessions	Reduce pelvic pain, support motility

Follow-up and Retesting

The patient reported a 95% adherence to the program and was re-tested with Microbiome Explorer - Comprehensive 10 months later, with results as follows:

- **Reduced drivers of dysfunction:** methanogens, histamine producers, and pro-inflammatory hexa-LPS species decreased.
- **Improved protective capacity:** IPA-producing microbes increased into the optimal range, supporting anti-inflammatory activity and barrier integrity.

Table 3. Microbiome Explorer™ Comprehensive Result Comparison

		Baseline	Follow-up
GI Health Markers	Calprotectin		
	Secretory IgA		
Microbiome Markers	Hexa-LPS producing microbes		
	Histamine-producing microbes		
	IPA-producing microbes		
	Methane-producing Archaea		
	Propionate-producing microbes		

Clinical Outcome

Despite measurable improvements in microbial and gastrointestinal health markers, the patient experienced only partial relief from her clinical symptoms:

- The greatest improvements were linked to passionflower/licorice, which improved her sensation of incomplete emptying.
- Exacerbation of bloating and emptying difficulties occurred after discontinuation of betaine hydrochloride, suggesting a role in symptom control.
- Bloating, pelvic discomfort, and urinary frequency (15x/day) persisted.

The patient was referred to her GP for further evaluation and further medical evaluation identified a descending perineum, indicating a structural contribution to the pelvic floor dysfunction and outlet obstruction. A pelvic ultrasound revealed fixed ovaries, raising suspicion of endometriosis or pelvic inflammatory disease. Further investigation is underway.

Clinical Insights

This case illustrates how Microbiome Explorer testing can:

- Identify hidden microbial drivers of IBS-C, including high levels of methanogens and histamine producers, and low gastric secretory function.
- Highlight functional deficits such as reduced IPA-producing capacity.
- Provide objective biomarkers to track progress, even when symptoms persist.
- Reinforce the need for multidisciplinary involvement and further medical investigation when clinical outcomes are inconsistent with microbiome improvements.

Conclusion

Microbiome Explorer testing uncovered hidden microbial contributors in a patient with long-standing IBS-C, guiding a personalised intervention that improved microbial balance and immune markers. However, only partial clinical improvement with subsequent identification of pelvic floor dysfunction and possible endometriosis underscore the multifactorial nature of IBS. This case demonstrates both the value of microbiome testing in uncovering overlooked drivers and the importance of a comprehensive, multidisciplinary approach in complex digestive cases.

References

1. Chen, L., Reynolds, C., David, R. & Peace Brewer, A. Development of an index score for intestinal inflammation-associated dysbiosis using real-world stool test results. Dig. Dis. Sci. 65, 1111–1124 (2020). 2. Matsuura, M. Structural Modifications of Bacterial Lipopolysaccharide that Facilitate Gram-Negative Bacteria Evasion of Host Innate Immunity. Front. Immunol. 4, (2013). 3. Thompson, K. N. et al. Alterations in the gut microbiome implicate key taxa and metabolic pathways across inflammatory arthritis phenotypes. Sci. Transl. Med. 15, eabn4722 (2023). 4. Arpaia, N. et al. Metabolites produced by commensal bacteria promote peripheral regulatory T-cell generation. Nature 504, 451–455 (2013). 5. Alexeev, E. E. et al. Microbiota-derived indole metabolites promote human and murine intestinal homeostasis through regulation of interleukin-10 receptor. Am. J. Pathol. 188, 1183–1194 (2018). 6. Zhernakova, A. et al. Population-based metagenomics analysis reveals markers for gut microbiome composition and diversity. Science 352, 565–569 (2016). 7. Asnicar, F. et al. Blue poo: impact of gut transit time on the gut microbiome using a novel marker. Gut 70, 1665–1674 (2021).