J Gastroenterol Hepatol. 2021 Dec;36(12):3322-3328. doi: 10.1111/jgh.15573. Epub 2021 Jun 22.

Better response to low FODMAP diet in disorders of gut-brain interaction patients with pronounced hydrogen response to a nutrient challenge test

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PMID: 34107550 DOI: 10.1111/jgh.15573

Abstract

Background and aim: Previous studies have shown a reduction of gastrointestinal symptoms in irritable bowel syndrome (IBS) patients following a low FODMAP diet (LFD). It remains unknown which disorders of gut-brain interaction (DGBI) patients would benefit most from LFD. We aimed to analyze LFD response regarding a preceding nutrient challenge test (NCT).

Methods: Data of 110 consecutive DGBI patients undergoing NCT and LFD between August 2015 and August 2018 were analyzed retrospectively. LFD response was assessed by changes in IBS Symptom Severity Score (IBS-SSS). In mixed-effects linear regression models, the impact of hydrogen values and abdominal symptoms during NCT, performed with 30-g lactulose and 400-mL liquid test meal, on IBS-SSS changes were analyzed.

Results: Low FODMAP diet induced a significant IBS-SSS reduction of 78 points (95% confidence interval [CI] 50-96; $P < 0.001$). Patients with higher NCT-induced hydrogen increase during proximal intestinal transit had a significantly better LFD response (-66 IBS-SSS reduction per 10-ppm hydrogen increase, 95% CI -129 to -4, $P = 0.045$). Additionally, the higher the NCT-induced maximum hydrogen increase during mid-distal and distal intestinal transit, the better are the responses to LFD (-6 IBS-SSS per 10-ppm maximum delta hydrogen, 95% CI -11 to -1, $P = 0.040$). There was no association of LFD response with abdominal symptom generation during NCT.

Conclusions: Our study is the first one analyzing and demonstrating significant associations between NCT results and LFD response. These findings are of high clinical importance, as they identify a subgroup of DGBI patients that may profit most from a restrictive LFD as first-line therapy.

Keywords: Disorders of gut-brain interaction; Functional dyspepsia; Gastric motility and sensation; Hydrogen test; Irritable bowel syndrome; Lactulose; Large bowel; Nutrient challenge test; Small bowel.

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