

Food for Thought: Beyond FODMAPs

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Disclosures

- No relationships to disclose.

Clinical Vignette

A 32yo woman veterinarian is referred to you for abdominal pain, bloating and constipation/diarrheal symptoms for 2 years.

Symptoms get worse after meals, no matter what she eats. No relationship with bowel habits. She denies any preceding GI illness.

She has already received an EGD and CSP by another gastroenterologist which were unremarkable. Biopsies were negative for gastropathy, enteropathy and inflammatory bowel disease.

Diagnosed by her previous GI with IBS. She has tried a low FODMAP diet and says it was somewhat helpful, though not completely.

- Medications:
 - OCP daily
 - Dicyclomine 20mg QID
 - Multivitamin daily
 - OTC soluble fiber daily
- Past Medical History:
 - Not significant
- Past Surgical History:
 - Not significant
- Physical Examination:
 - Young woman of ideal body weight.
 - Appropriate affect.
 - Normal bowel sounds, no succussion splash, non tender, no fullness, no organomegaly.

Let Food Be Your Medicine and Medicine Be Your Food



Diet Recommendations for IBS

- FODMAP: fermentable oligosaccharides, disaccharides, monosaccharides and polyols
- Meta analysis (9) of low FODMAP and gluten free diets for IBS symptoms
 - 2 RCT's of GFD: reduced global symptoms but not statistically significant.
 - **There is insufficient evidence to recommend a GFD to reduce IBS symptoms.**
 - 7 RCT's of low FODMAP diet: reduced global symptoms, but low magnitude of effect.
 - **There is very low quality evidence that a low FODMAP diet is effective in reducing symptoms in IBS patients.**

Dietary Triggers

- No specific biomarkers for the diagnosis of IBS or NCGS
- Both may have dietary triggers
- 30% of PWAG → SIBO, fructose, lactose intolerance
- Low FODMAP diet improved symptoms in NCGS
 - Placebo/Low FODMAP/Gluten: placebo and gluten did worse
- Fructans are found in gluten/wheat products and induce more bloating than gluten in NCGS



"Hold on, are you gluten free?"

Workup

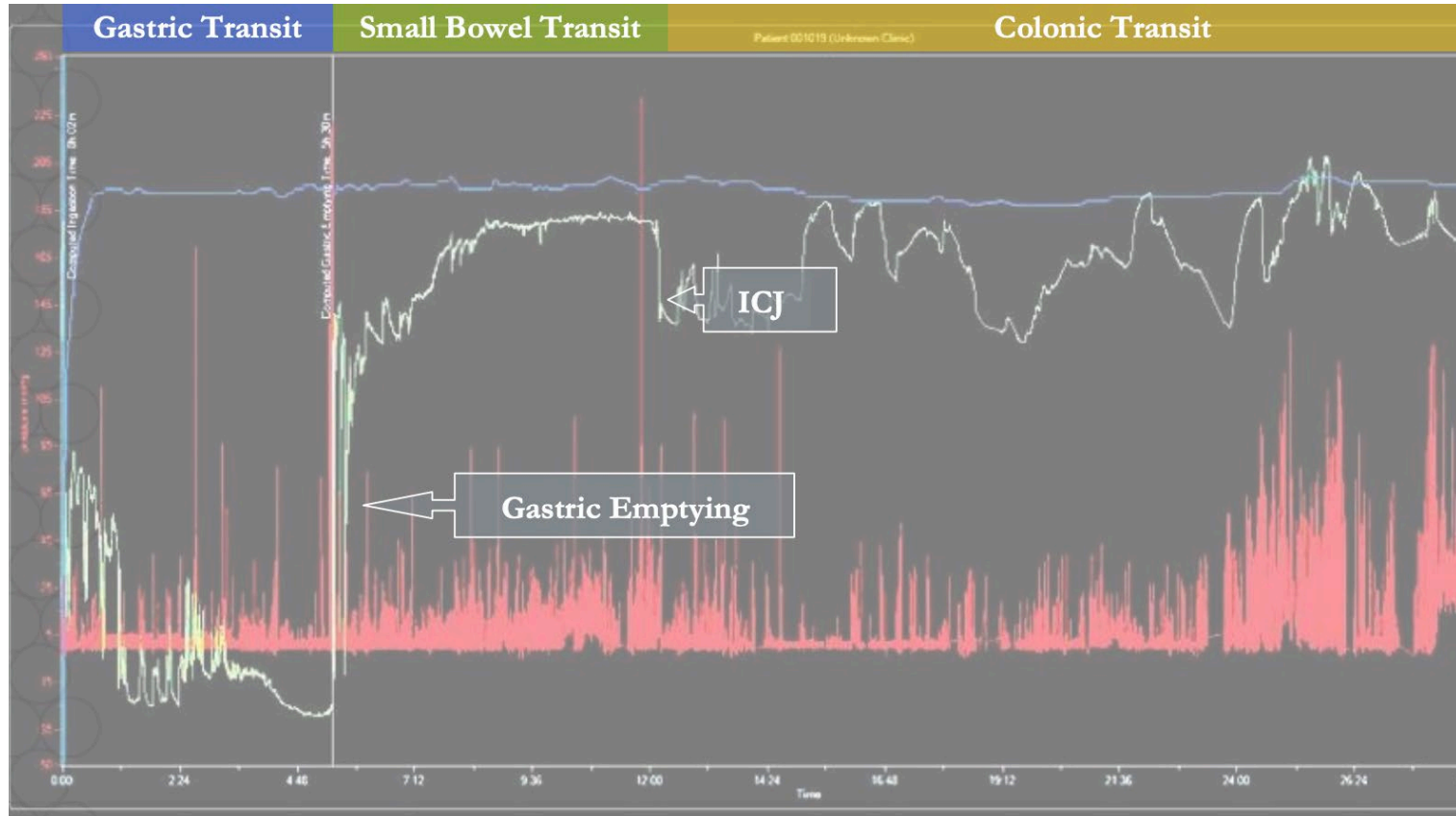


Breath Testing



- Glucose (SIBO)
- Fructose
- Lactose
- Fructan

Wireless Motility Capsule Testing



Endoscopy



View of Esophagus

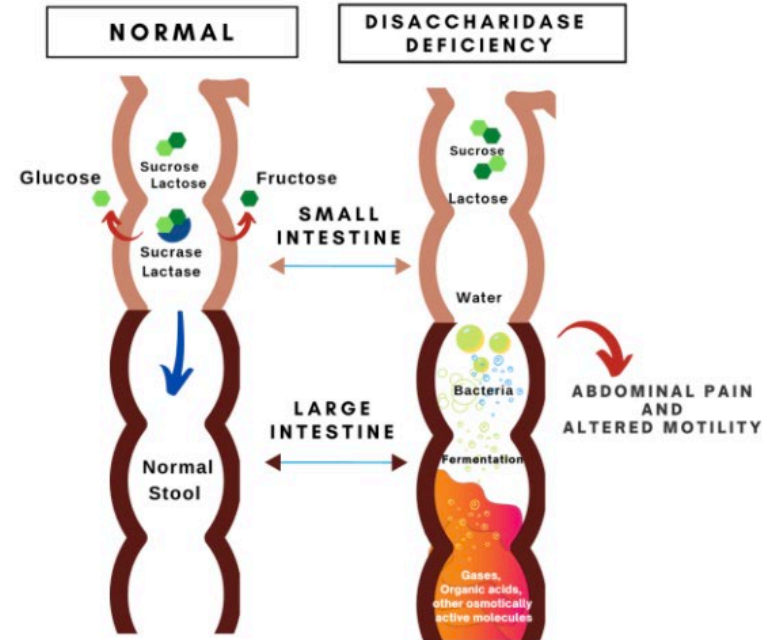
View of Duodenum

View of Stomach

- EGD with distal duodenal biopsies to assess disaccharidase levels.
- **Results notable for sucrase deficiency.**

Disaccharidase Deficiency

- >50% of our daily diet comes from carbohydrates
- American diet: 300 gm carbohydrates and 140 gm sugar intake/d
- Lactose and sucrose are the most common disaccharides in the diet
- Lactase, sucrase, maltase and palatinase
- Disaccharidases are located in the brush border and help to break down carbohydrates into sugar monomers
- Deficiency → osmotic load → pain, gas, bloating, diarrhea

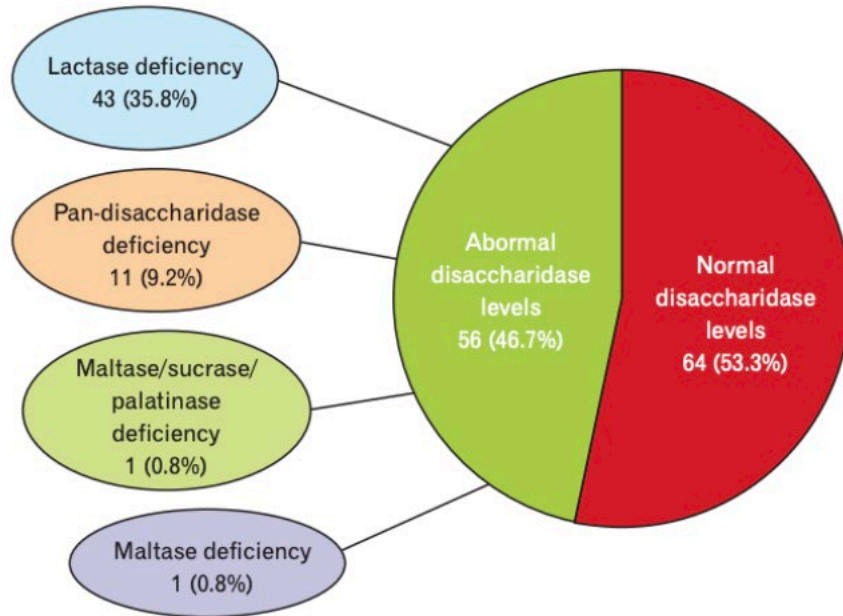


Prevalence

- Originally studied in children as a common cause of abdominal pain
- May be congenital/acquired
- Sucrase-isomaltase deficiency estimated to be 0.2-10%

Disaccharidase Deficiency	Children
Lactase	37%
Maltase	25%
Sucrase	21%
Palatinase	8%

Prevalence in Adults



- 120 adults presenting with unexplained GI symptoms were tested for disaccharidase deficiencies
- Lactase was the most prevalent single deficiency
- 9.2% adults had pan disaccharidase deficiency

Clinical Presentation

- More common in adults than previously thought
- Single deficiency characteristics
 - ↑ abdominal pain, bloating, fullness, gas, indigestion, cramping, nausea
 - ↓ weight loss, vomiting
- Disaccharidase deficiencies often occur in combination
- Pan disaccharidase group has a distinct phenotype
- Pan disaccharidase group reported more weight loss than single deficiency group

Diagnosis



Small bowel biopsy

- Considered gold standard
- Specimens sent to specialty lab



Genetic test

- Buccal swab, saliva, or blood
- Detects 37 polymorphisms in *SI* gene



Breath tests


- Hydrogen-methane
- ^{13}C -sucrose



Sucrose challenge

- Simple test, but not validated

Treatment Options

Name	Components	Cost	FDA Approved
Similase	Sucrase 300 IU Lactase 4,670 IU Amylase 32,000 USP Maltase 32,100 DP Protease 30,000 USP	\$0.29 per pill	N
Starchway (Intoleran)	Sucrase 7,500 IU Glucoamylase 2,500 IU	\$1.30 per pill	N
Baker's Yeast	Sucrase 7,500 IU	\$0.60 per ounce	N
 Sacrosidase (Sucraid)	Sacrosidase 8,500 IU	\$37.01 per mL	Y

How Effective Is Treatment?

- 258 adults with sucrase deficiency
 - Presented with functional diarrhea, flatulence, bloating and IBS-M
 - 60% reported improvement with dietary measures and/or enzyme replacement tx
 - Sacrosidase normalized sucrose breath test results
- Enzyme replacement therapy can be expensive, so important to offer good dietary resources
- Comparative trials needed to evaluate therapies

Take Home Points

- Adult disaccharidase deficiency is more common than you think
- Considerable overlap with IBS and SIBO
- GFD/low FODMAP diets have very low evidence of efficacy in IBS
- We may be overlooking disaccharidase deficiencies in these patients
- Pan disaccharidase deficiency is a unique group
- Enzyme replacement therapy is effective, but can be expensive w/ variable coverage
- Efficacy trials needed

