The Functional Medicine Approach to IBS/GI Complaints

Aunna Herbst, DO, ND, CFMP
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Name of CME Activity: 2017 ACOFP Annual Convention & Scientific Seminars
Dates and Location of CME Activity: March 16 - 19, 2017, Gaylord Palms Resort and Convention Center, Kissimmee, FL, United

Name of Faculty/Moderator: Aunna Herbst, DO ND CFMP

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<th>Organization With Which Relationship Exists</th>
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Aunna Herbst, DO ND CFMP

Please email this form to joank@acofp.org as soon as possible
Deadline: Friday, January 20, 2017
IBS

Dr Aunna Herbst
Cleveland Clinic-Center for Functional Med
Director of Clinical Operations/physician

Functional Medicine and Irritable Bowel Syndrome - Objectives

• Functional Medicine- Intro
• Functional Medicine at Cleveland Clinic
• IBS – how the Functional medicine approach is different- embracing true osteopathic philosophy – connecting the body as a whole.
• Testing – specialized testing; including permeability, pathogenic cultures, nutrient deficiencies
• Treatment options, standard of care – additions to standard care: diet, functional foods, pro/prebiotics
• Cases
Irritable Bowel Syndrome

- 40% of people have mild IBS, 35% moderate IBS, and 25% severe IBS.
- worldwide prevalence rates 10–15%.
- 2.4 and 3.5 million annual physician visits for IBS in the United States alone.
- accounts for up to 12% of total visits
- estimates $21 billion or more annually

May 2016 International Foundation for Functional Gastrointestinal disorders
Management of IBS
Standard of Care

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<th>Physiological Issue</th>
<th>Treatment Modality</th>
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<tr>
<td>Constipation</td>
<td>Diarrheal agent (ex. Linacotide)</td>
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<tr>
<td>Diarrhea</td>
<td>Anti-motility agent (ex. Rifaximin)</td>
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<td>Pain</td>
<td>Anti-depressant (ex. SSRIs)</td>
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If nothing works, then consider a probiotic.

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Management of IBS
Functional Medicine

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<tr>
<th>Physiological Issue</th>
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<td>Constipation</td>
<td>Digestion/Absorption</td>
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<td>Intestinal Permeability</td>
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<td>Diarrhea</td>
<td>Gut Microbiota</td>
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<td>Immune Modulation/Inflammation</td>
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<tr>
<td>Pain</td>
<td>Nervous System</td>
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</table>
Impairments in digestion and absorption

- Inadequate mastication
- Hypochlorhydria
- Pancreatic insufficiency
- Bile insufficiency
- Brush border injury
- Intestinal barrier disruption

Intestinal permeability

- Inadequate mastication
- Hypochlorhydria
- Pancreatic insufficiency
- Bile insufficiency
- Brush border injury

Abstract:

Food allergy, other adverse immune responses to foods, inflammatory bowel disease, eosinophilic esophagitis have become increasingly common in the last 30 years. It has been proposed in the "hygiene hypothesis" that dysregulated immune responses to environmental microbial stimuli may modify the balance between tolerance and sensitization in some patients. Of the pattern recognition receptors that respond to microbial signals, toll-like receptors (TLRs) represent the most investigated group. The relationship between allergy and TLR activation is currently at the frontier of immunology research. Although TLR2 is abundant in the mucosal environment, little is known about the complex relationship between bystander TLR2 activation by the commensal microflora and the processing of oral antigens. This review focuses on recent advances in our understanding of the relationship between TLR2 and oral tolerance, with an emphasis on regulatory T cells, eosinophils, B cells, IgA, intestinal regulation, and commensal microbes.
Triggers for increased Intestinal Permeability

Altered Intestinal Permeability

Food Allergy and Sensitivity
Poor Absorption/Malnutrition
Immune Activation
Toxic Overload
Elevated Total Toxic & Antigenic Burden
Systemic

"We discuss selected diseases associated with increased intestinal permeability such as critically illness, inflammatory bowel diseases, celiac disease, food allergy, irritable bowel syndrome, and – more recently recognized – obesity and metabolic diseases. All these diseases are characterized by inflammation that might be triggered by the translocation of luminal components into the host."
Causes of IP - Diet

Stress as a cause of IP
OBJECTIVES:
Beneficial therapeutic effect of probiotics has been reported in children with the irritable bowel syndrome (IBS) but not consistently in other functional abdominal pain-related disorders. The aim of this study was to investigate the effect of Lactobacillus (L.) reuteri DSM 17938 in the treatment of functional abdominal pain (FAP) and IBS in children.

METHODS:
Children (age 4-18 years) referred to pediatric gastroenterologist at Children's Hospital Zagreb from May 2012 to December 2014, diagnosed as FAP or IBS, were randomized to receive L. reuteri DSM 17938 10 CFU daily or placebo. The study was a prospective, randomized, double-blind, placebo-controlled parallel study. Symptoms were evaluated using Wong-Baker FACES pain rating scale for pain and Bristol scale for stool shape and consistence.

RESULTS:
Data were analyzed for 55 children (26 in the intervention group and 29 in the placebo group). Children in the intervention group had significantly more days without pain (median 89.5 vs. 51 days, p = 0.029). Abdominal pain was less severe in children taking probiotics during the 2 month (p < 0.05) and 4 month (p < 0.01). The two groups did not differ in the duration of abdominal pain, stool type or absence from school. Both groups experienced significant reduction in the severity of abdominal pain from 1 to 4 month, with the reduction more prominent in the intervention group (p < 0.001 vs. p = 0.004).

CONCLUSION:
Administration of L. reuteri DSM 17938 was associated with a possible reduction of the intensity of pain and significantly more days without pain in children with FAP and IBS.
Recognition of Pathogenic and Commensal Bacteria

Recognition of luminal bacteria as either commensal or pathogenic is of great importance to the mucosal immune system in eliciting positive immune activatory- or negative, tolerising-responses. Innate pathogen recognition receptors (PRRs) such as Toll-like receptors (TLRs) respond to pathogen associated molecular patterns (PAMPs) and are expressed by enterocytes and mucosal APCs (DCs and macrophages). The binding of PAMPs to these innate receptors triggers intracellular signaling cascades, resulting in the release of specific cytokines, exerting anti-viral, pro- or anti-inflammatory effects on neighboring cells. The expression of TLRs is down-regulated on the apical membrane of the epithelial barrier in comparison to the basolateral side; TLR2 and TLR4 are expressed at low levels on the apical surface and drive tolerance to LPS and peptidoglycan, expressed in the cell walls of commensal bacteria. Indeed, bacterial flagellin in colonic inflammation. Proc. Natl. Acad. Sci. USA. 2005;102:13610–13615.


Modulation of immune development and function by intestinal microbiota

Diagnostic criteria

**Irritable Bowel Syndrome**

- *ROME III Diagnostic criterion*
- Recurrent abdominal pain or discomfort** at least 3 days/month in the last 3 months associated with *two or more* of the following:
  - Improvement with defecation
  - Onset associated with a change in frequency of stool
  - Onset associated with a change in form (appearance) of stool
- *Criterion fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis*
- **“Discomfort” means an uncomfortable sensation not described as pain.**
Diagnostic Criteria

ROME II Criteria

• Irritable Bowel Syndrome
  • At least 12 weeks, which need not be consecutive, in the preceding 12 months of abdominal discomfort or pain that has two out of three features:
    • Relieved with defecation; and/or
    • Onset associated with a change in frequency of stool; and/or
    • Onset associated with a change in form (appearance) of stool.

• Symptoms that Cumulatively Support the Diagnosis of Irritable Bowel Syndrome
  • Abnormal stool frequency (for research purposes “abnormal” may be defined as greater than 3 bowel movements per day and less than 3 bowel movements per week);
  • Abnormal stool form (lumpy/hard or loose/watery stool);
  • Abnormal stool passage (straining, urgency, or feeling of incomplete evacuation);
  • Passage of mucus;
  • Bloating or feeling of abdominal distension

Diagnosis- additional (Functional Med)

• GI effects- Pancreatic elastase, SCFA, F/B ratio, pathogens, mycology

• Zonulin

• Calprotectin

• Lactulose/mannitol
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Treatment - standard

- loperamide and diphenoxylate HCl-atropine
- 5HT 3 antagonists
- Tricyclic antidepressants and selective serotonin reuptake inhibitors
- Cholestyramine

"The physician should also emphasize the chronic nature of this syndrome because nearly 75% of patients continue to have a diagnosis of IBS 5 years later".
Treatment – Functional Medicine

• Glutamine – promotes intestinal cell proliferation, → NFkB

• Probiotics
  • modulate the activity of many cells NKs, DCs, macrophages, epithelial cells and granulocytes, and Th1, Th2, Th17, Treg, Tc and B cells

  • Biotransformation, vitamin synthesis, peristalsis

• Prebiotics

Treatment- Functional Medicine (con’t)

• Xifaxamin (SBBO)
• Antibiotics – culture and sensitivity
• Anti fungal – culture and sensitivity
• Antiparasitic
• Zinc
• Carnosine
• Melatonin
• Diet/lifestyle – biofeedback/OMT/FSM
36 y/o female

Symptoms
- IBS-D
- Anxiety
- Headaches
- Food intolerances
- Insomnia
- Osteopenia

Age of presentation
- 15 yrs old
- 18 yrs old
- 16 yrs old
- 25 yrs old
- 18 yrs old
- 36 yrs old
Testing/Treatment prior to Fx Med Visit

- Colonoscopy – nml
- IgE food testing – nml
- Tried Lopiramide, Linzess, Prozac, Pristiq, amitriptyline
- Ibuprofen PRN headaches
- Taking calcium and exercising
- Tried FODMAP diet on her own

Testing- Dec 2015 Center for Functional Med.

- Comprehensive Stool testing (included culture/sens 4+week)
- IgG food panel
- Nutritional testing
- Breath test to r/o SBBO

*Started on Elimination Diet with dietician guidance
*started on melatonin SR 3mg 1-3 bf bed
Return visit Feb 2016

• Insomnia – little better sleeping 4 hours wakes but can return to sleep
• Headaches – MUCH better
• IBS- little improvement but still >10 loose stools per day
• Not doing the deep breathing exercises
• Exercise is now yoga

Test Results- Feb 2016

• Stool –
  • citrobacter freundii 4+ sensitive to Cipro, Bactrim and Augmetin
  • Low F/B ratio
  • Low Bifidobacter sp.
  • Candida galbrata +2- sensitive to fluconazole

• IgG food panel all abnormal (RR <2 is nml), wheat 53, casein 23
• Low vit D, Magnesium, Zinc, B6, B3, glutamine
• Normal hydrogen breath test- done at Hillcrest
Treatment – Feb 2016

- Cipro 500mg BID X12 days
- Bifidobacter sp. probiotic blend
- Diflucan 100mg X 28 days
- Elimination diet to continue
- Melatonin to continue 6 mg q hs
- Blend with Zinc Carnosine, L glutamine powder, aloe
- Replace nutrients as needed

Follow up – May 2016

- Better!! BM daily 3 times – no abd pain, some bloating
- Sxs worse around day 4, then better
- 1 headache
- Sleeping well
- Noticed less anxious – still on SSRI
- BTW... she reported her muscle stiffness is better too