Dietary Options for Inflammatory Bowel Disease

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Learning objectives

• Worldwide rise in the incidence of IBD
• The relationship between diet, intestinal microbes, and IBD
• Food components that influence risk for IBD in humans and animals
• Dietary therapies – Proven and Experimental
• General recommendations
Increasing trend of IBD with “Westernization”

It is not all in our genes

• Over 200 genes related to IBD risk
• Identical twins share 100% of the same genes

• But the risk of Crohn’s disease in the identical twin of a Crohn’s disease patient is less than 50%
Is There a Relationship Between Diet, the Gut Microbiota, and IBD?

(Slide Courtesy of Lindsey Albenberg, DO)
Dysbiosis in IBD

Diet rapidly changes the gut microbiome

How do we determine what foods increase risk for inflammatory bowel disease?

• Observational studies
  o Case-control Studies – find a group of patients with IBD and without IBD and look back
  o Cohort studies – find a large group of people followed for many years and look at who develops inflammatory bowel disease and their exposures
  o Hard to rule out confounding and bias in both types of studies
Foods associated with INCREASED IBD risk

- Animal fat and protein
- Milk fat
- Fast Food
- Refined sugars

![Images of foods associated with increased IBD risk: beef, milk, fast food, and refined sugars.](image-url)
Foods associated with DECREASED IBD risk

Omega-3 Fats

Fruits & Veggies/Fiber
Food additives – emulsifiers?
Emulsifiers reduce the mucus layer and alter the gut microbiome in mice

I love hanging out on the epithelium!
Vitamin D

• Helps body absorb calcium in the intestine.
• New evidence that it is important in the immune system
• Produced naturally in the skin when exposed to sunlight.
• Food Sources: Fish, eggs, dairy
• Recommended intake is 400-800 IU per day
Pediatric patients with higher vitamin D are more likely to be in remission

Low vitamin D increases risk of clinical relapse in adults with UC in endoscopic remission

The only dietary therapy with proven effectiveness in IBD is exclusive enteral nutrition for Crohn’s disease.

The use of any other dietary therapy as the primary treatment for IBD is considered experimental.
Proven Effective: Enteral Nutritional Therapy for Crohn’s Disease

• Used for almost 4 decades
• First-line treatment for Crohn’s disease in many parts of the world
• Involves the use of a specific formula as nutritional therapy (food = medicine)
• Replacing all or the majority of daily calories with formula and excluding or limiting food
• Heals the bowel
• Supports growth
EN Therapy: Protocol

**Induction**
- 100% of calories come from formula.
- Duration 8-12 weeks
- Oral or NG tube

**Maintenance**
- Repeated 4 week cycles of exclusive enteral nutrition every 3-4 months **OR**
- Gradually reduce calories from formula by decreasing amount or number of days **OR**
- Transition to medical therapy with an immunomodulator (6-mp, azathioprine, methotrexate)
Greater Mucosal Healing with More Restrictive Diet During Induction Phase

PLEASE Study: An 8-week Prospective Cohort Study Among Children with Crohn’s

![Bar graph showing percentage of patients with calprotectin concentration at week 8 (mcg/g)]

- **Partial Enteral Nutrition** (n=16)
- **Exclusive Enteral Nutrition** (n=22)
- **Anti-TNF** (n=52)

Lee D et al. Inflamm Bowel Dis. 2015.
(Slide Courtesy of Lindsey Albenberg, DO)
Experimental: Specific Carbohydrate Diet

• Premised on the theory that poorly absorbed carbohydrates feed pro-inflammatory bacteria
• Excludes all complex sugars (lactose, sucrose), starches (corn, rice, and flour), grains, and legumes from the diet.
• Permits only the simplest sugars (glucose, fructose, and galactose) contained in certain fruits, varieties of honey, and homemade yogurt.

Evidence for Specific Carbohydrate Diet

- 5 studies with small numbers of patients
- 4 of 5 retrospective (looking back)
- Uncontrolled (no comparison group)
- Patients generally had MILD Crohn’s or UC
- Many patients on other medicines
- Generally report improvement in clinical disease activity and labs but hard to determine how much is related to SCD versus other therapy

Specific carbohydrate diet for pediatric inflammatory bowel disease in clinical practice within an academic IBD center

Experimental: Crohn’s Disease Exclusion Diet

- Treatment of active disease with elimination diet + partial enteral nutrition for 6 weeks
- Exclusion of food components shown in animal models to:
  - induce inflammation
  - change the microbiome
  - affect the mucous layer
  - increase intestinal permeability, or adherence and translocation of bacteria
- 55% mild disease, 55% were on immunomodulators (6-MP or methotrexate)
- No control group (comparison group)

Crohn’s Disease Exclusion Diet - Restrictions

• Not allowed:
  • Dairy products
  • Wheat, breakfast cereals, breads and baked goods of any kind, yeast for baking, Gluten-free products not listed above, potato or corn flour
  • Processed or smoked meats and fish
  • Sauces, salad dressings, syrups and jams of any kind
  • Canned products and Dried Fruits
  • Packaged snacks (potato chips, pretzels, popcorn, nuts, etc.)
  • All soft drinks, fruit juices and sweetened beverages, alcoholic beverages, coffee
  • Candies, chocolates, cakes, cookies and gum

Crohn’s Disease Exclusion Diet – Disease Activity

Clinical Disease Activity

C-Reactive Protein (CRP)

Dietary therapy in the future

• These studies are an important initial step to understanding the role of diet
• Larger, more rigorous studies are ongoing
• Perhaps a future role for diet as maintenance therapy in mild disease?
Exclusion diets for Crohn’s disease in 2017

• Experimental
• Best if done as part of a clinical study
• Partner with your GI doctor and dietician
• Recommend using with and not in place of medical therapy
• Close monitoring of response (labs, stool markers, endoscopy, and/or imaging)
General dietary recommendations

• Listen to your body, identify your personal symptom triggers
• Avoid fast food
• Limit red meat (2 servings per week)
• Increase fish (at least 2 servings per week)
• Cook with olive oil and canola oil
• Limit refined sugars and concentrated sweets
• Limit processed foods
• If no stricture (discuss with your doctor), increase fruits, vegetables, and other sources of fiber
• Maintain a Vitamin D level over 30