CCFA North Texas Chapter
IBD education symposium
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Is there an anti-inflammatory diet in IBD?

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What we will cover today

• Is diet a cause of IBD?

• If diet is a cause of IBD, can diet manipulations be used to treat IBD?

Practical advice

Inflammatory Bowel Diseases (IBD) – The Basics

Chronic inflammatory disorders of the gut

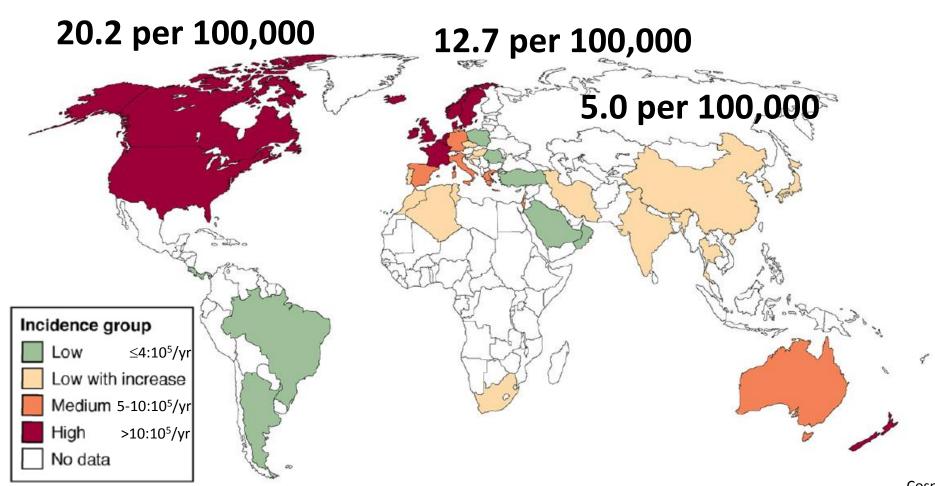
 Abnormal inflammatory response to normal gut flora in genetically susceptible hosts

 Both abnormal genes and environmental factors are important in causing the disease

Epidemiology of IBD

- Disease of the modern Western world
- Highest incidence at ages 20–30 years
- Pediatric IBD accounts for 10%

The global map of Crohn's Disease



Abnormal Genes

- Over 200 described
- Gene functions
 - Clearing of bacteria and other organisms
 - Epithelial barrier
 - Immune Thermostat
 - Balance of pro-inflammatory and anti-inflammatory pathways

Environmental factors

- Abnormal gut microbes (intestinal microbiome)
 - Differences in the types of resident microbes
 - Decreased diversity of microbes
 - Differences in microbial functions

Abnormal intestinal microbiome in IBD

What came first?

The inflammation?

or

The altered bacteria?



Environmental factors

- Abnormal gut microbes (intestinal microbiome)
 - Differences in the types of resident microbes
 - Decrease diversity of microbes
 - Differences in microbial functions
- Aspirin and non-steroidal drugs
- Cigarette smoking
- Diet

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Diet is a cause of IBD

- Evidence from animal models of IBD
- Changing global epidemiology
- Epidemiologic studies
- Elemental, semi-elemental and polymeric diets induce clinical remission and mucosal healing

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The changing global epidemiology of IBD

- Increasing incidence in the US and other developed countries
- Increasing in previous low-incidence countries
- Immigrants from low-risk to high-risk countries attain the high risk within two generations

Summary: Environmental factors play a major role ?Westernization of diet

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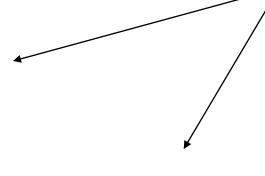
Fiber intake and Crohn's disease



40% Reduction in risk of Crohn's disease

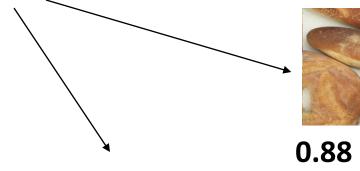


0.73(0.47 - 1.14)





0.63(0.42-0.95)





0.93(0.60-1.46)



0.88(0.56-1.37)

Summary of epidemiologic studies

Direction	Crohn's disease	Ulcerative colitis
Reduced Risk	Fiber	Long-chain n-3 PUFA
	Fruits and Vegetables	
	N-3 PUFA (pediatric)	
	Zinc	
	Vitamin D	
Increased risk	Sugar	Animal protein
		N-6 PUFA
		Total carbohydrates

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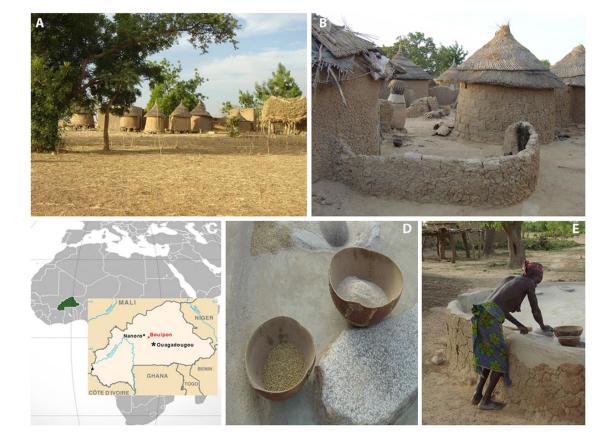
How may diet influence gut inflammation?

- Changes in intestinal microbiome
- Substrates for the generation of inflammatory mediators
- Antigenic stimulation

Impact of diet in shaping gut microbiome

 Fecal microbiota in European children and children from a rural African village of Burkina Faso

 Burkina Faso diet: high in fiber, similar to that of early human settlements at the time of the birth of agriculture



Impact of diet in shaping gut microbiome

The Burkina Faso children had:

- Significant enrichment in Bacteroidetes
- Significant depletion in Firmicutes
- *Unique* abundance of Prevotella and Xylanibacter (contain genes for cellulose and xylan hydrolysis)
- Significantly more short-chain fatty acids
- Depletion of enterobacteriaceae (Shigella and Escherichia)

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IBD Diets

- Elemental diet
- Specific carbohydrate diet
- Paleo diet
- Low FODMAP diet
- Other touted diets

 Only the elemental diet has undergone rigorous testing and has shown benefits in decreasing intestinal inflammation

The Baylor synthesis of the data on the "anti-inflammatory diet" in IBD

- Lower intake of n-6 polyunsaturated fatty acids
 - Arachidonic acid and Linoleic acid (red meat, margarines, oils derived from soya, sunflower, rapeseed, poppyseed, and corn)
- Higher intake of n-3 polyunsaturated fatty acids
 - Perilla oil, fish oil, sardines, salmon
- Higher intake of dietary fiber
- Lower intake of sugars



Choose Fresh, Frozen or Low-Sodium Canned!

- Artichoke
- Asparagus
- Green beans
- Brussels sprouts
- Broccoli
- Cabbage
- Celery
- Cucumber
- Greens (collard, mustard, kale, turnip)

Remember plant fats are a

condiment, not the star of your meal!

Nuts (walnuts, almonds, peanuts,

pecans), nut butters, seeds (flax,

chia, hemp), avocado, olive oil, avocado oil, flaxseed oil

Avoid:

vegetable/sunflower/corn/soybean/

peanut oils

- Leeks
- Mushrooms
- Okra

- Onions
- Peppers
- RadishesRutabaga
- Salad greens (chicory, endive, escarole, lettuce, romaine, spinach, arugula, radicchio, watercress)
- Squash (summer, spaghetti, zucchini)
- Snap peas
- Swiss chard
- Tomato
- · Tolliato
- Turnips
- Beets
- Carrots
- Eggplant

Non-Starchy Vegetables

Grains & Starch

Plant Fats

Your IBD Plate

Endless Combinations!

Fruit

Add them to salad greens or include a serving on your plate for dessert!

Apples, oranges, pineapple, peaches, nectarine, strawberries, raspberries, blueberries, kiwi fruit, plums, pears, melons, banana

Protein

Protein

Make Half Your Grains Whole!

- Whole grains and grain products (first choice): Brown rice, wild rice, whole grain pastas, whole grain cereals, quinoa, oatmeal, whole grain breads, whole grain tortillas, corn tortillas, whole grain crackers
- Starches (second choice): potatoes, yams and sweet potatoes, corn, green peas
- Limit Refined grains (last choice): white rice, breads and pastas, white flour tortillas, couscous, crackers, pastries, cookies, and other desserts

Add Spices to Improve Inflammation!

Turmeric, Ginger, Cinnamon, Garlic, Basil, Rosemary

Choose Lean Proteins & Cooking Methods (Bake, Steam, Grill, Boil)

- Fatty Fish: wild salmon, tuna, mackerel, anchovy
- · Poultry: chicken, turkey
- Eggs
- Meat alternatives: Beans (kidney, soy, pinto, navy, red, peas and black-eyed peas), tofu, quinoa, tempeh, lentils
- Nuts and Seeds
- If tolerated: Fat Free/low fat dairy foods yogurt, cottage cheese, milk, cheese
- Avoid: beef, pork, processed meats (deli meat, hot dogs, sausage, bacon)



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What do we tell patients about diet?

I do not over- or understate the role of diet

- IBD is a disease of developed societies
 - Westernization of the diet likely explains the rise of IBD in many parts of the world
- Diet is one of several causes of IBD
- No particular food or diet cures IBD
- Some patients report improved symptoms with specific diets
- Diets can be restrictive and difficult to follow

Our dietary advice depends on the clinical setting

Treating inflammation

• Mild disease The "healthy" diet has no proven benefit in mild IBD, but

makes sense

Severe disease No role in treating the inflammation

Bland diet (avoid fat, caffeine, alcohol and fiber) to

reduce symptoms

Preventing inflammation

The "healthy" diet has no proven benefit in mild IBD, but makes sense

Obstruction

Low residue diet (avoid insoluble fiber: seeds, nuts, beans, green leafy vegetables, wheat bran)

Our dietary advice depends on the clinical setting

Treating non-inflammatory symptoms

- Lactose or fructose intolerance
- Celiac disease
- Non-celiac gluten sensitivity
- Irritable bowel syndrome FODMAP diet
- Food allergies

What do we tell patients about diet?

The importance of a healthy diet

At risk individuals: Prevention of disease

Society: Public health importance