Abdominal Pain In Children

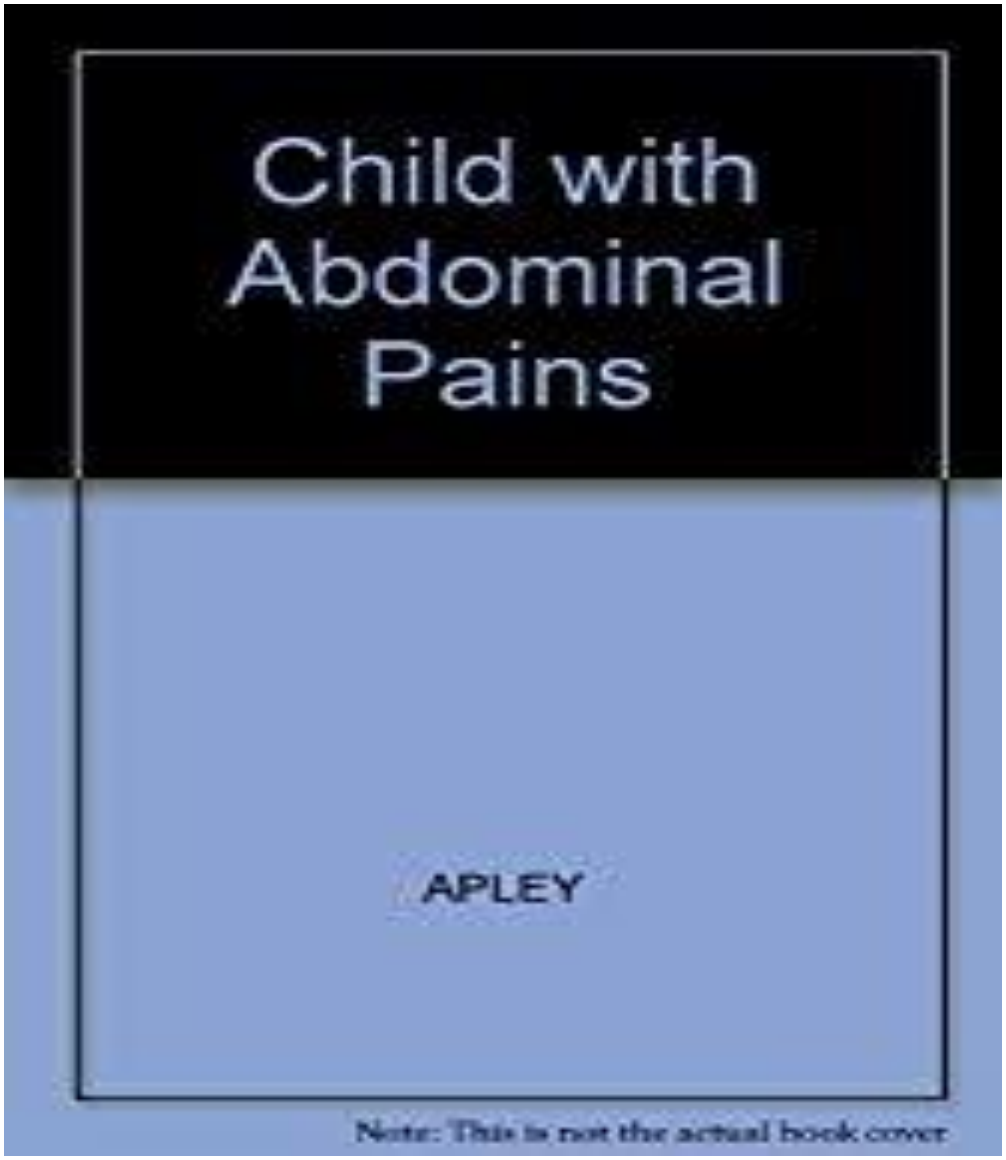
Abdominal Pain In Children

- Learning Objectives
- 1. Understand the spectrum of abdominal pain in children
- 2.Incidence, prevalence and management of abdominal pain in children
- 3.To develop a staged work up with testing and referral for pediatric abdominal pain

Disclosures

- If only….

History of Abdominal Pain


Child with Abdominal Pains
APLEY
Note: This is not the actual book cover

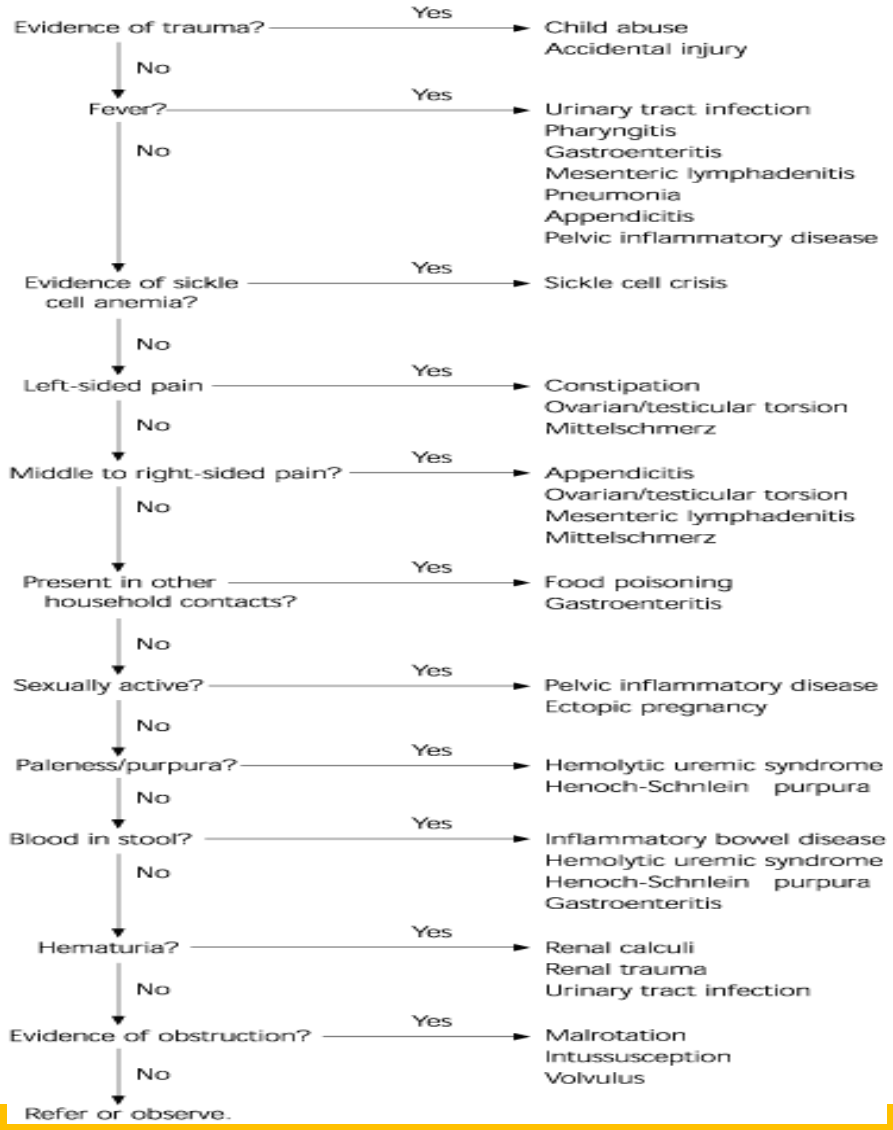
History-Dr. Apley

- The Anti-Phony Phrase Club:
- Example: “There is nothing wrong”. Of course there is something wrong or they would not have sought our help
- Example: “Don’t worry”. Really, of course parents will worry
- Example: “They will grow out of it”. Children generally do not grow out of conditions

History

- Dr. Apley's main point was " stress families"
- A child with recurrent pain likely comes from a family that is experiencing pain and is unlikely to resolve it unless the painful aspects of his environment are changed
- This set the tone for the approach to childhood chronic abdominal pain for decades

Acute abdominal pain



Chronic Abdominal pain

- **H2d. Childhood Functional Abdominal Pain**
- *Diagnostic criteria* Must include **all** of the following:*
- ▪. Episodic or continuous abdominal pain
- ▪. Insufficient criteria for other FGIDs
- ▪. No evidence of an inflammatory, anatomic, metabolic, or neoplastic process
- that explains the subject's symptoms
- * Criteria fulfilled at least once per week for at least ▪ months prior to diagnosis

Irritable Bowel Syndrome

- Diagnostic Criteriafor Irritable Bowel Syndrome
- Must include all of the following:
- 1. Abdominal pain at least 4 days per month associated
- with one or more of the following:
- a. Related to defecation
- b. A change in frequency of stool
- c. A change in form (appearance) of stool
- 2. In children with constipation, the pain does not
- resolve with resolution of the constipation (children
- in whom the pain resolves have functional
- constipation, not irritable bowel syndrome)
- 3. After appropriate evaluation, the symptoms
- cannot be fully explained by another medical
- condition
- Criteria fulfilled for at least 2 months before diagnosis.

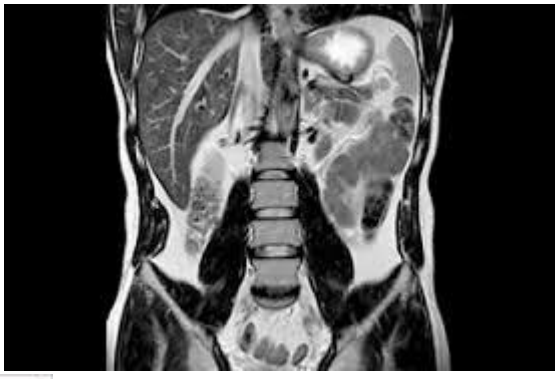
Red Flags

- Potential Alarm Features in Children With Chronic
- Abdominal Pain
- Family history of inflammatory bowel disease, celiac disease, or
- peptic ulcer disease
- Persistent right upper or right lower quadrant pain
- Dysphagia
- Odynophagia
- Persistent vomiting
- Gastrointestinal blood loss
- Nocturnal diarrhea
- Arthritis
- Perirectal disease
- Involuntary weight loss
- Deceleration of linear growth
- Delayed puberty
- Unexplained fever

What Has Changed?

"Well, yes, we could fix it in Photoshop, but your arm would still be broken."

What has changed?



What has changed?

Some Things Never Change

Case # 1

- 9 year old boy with periumbilical abdominal pain for as long as he can remember
- No diarrhea, stools are Bristol 4-5
- No bleeding
- Appetite is fair, picky eater per mother
- Plays soccer, straight A student
- FH: MGM-diverticulitis, IBS
- Mother-Migraines

What Else Do You Want To Know ?

- H/H: 10.5/33, MCV 81
- Comp Chem panel-all normal
- ESR: 7
- CRP: 0.5
- Calprotectin: 68
- H. Pylori: IgM +
- .H. Pylori stool: negative
- TTG IgA: 65

2 to 20 years: Boys
Stature-for-age and Weight-for-age percentiles

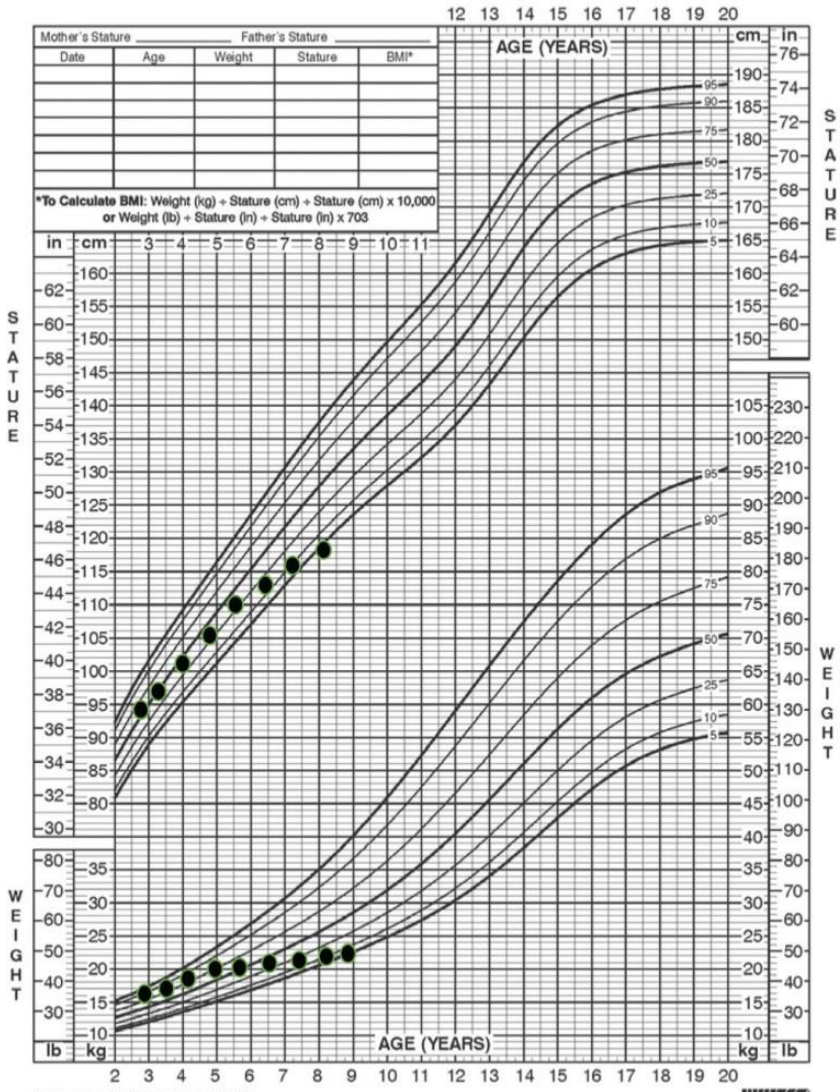
NAME _____

RECORD # _____

Mother's Stature _____ Father's Stature _____

Date	Age	Weight	Stature	BMI*

***To Calculate BMI:** Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 11/21/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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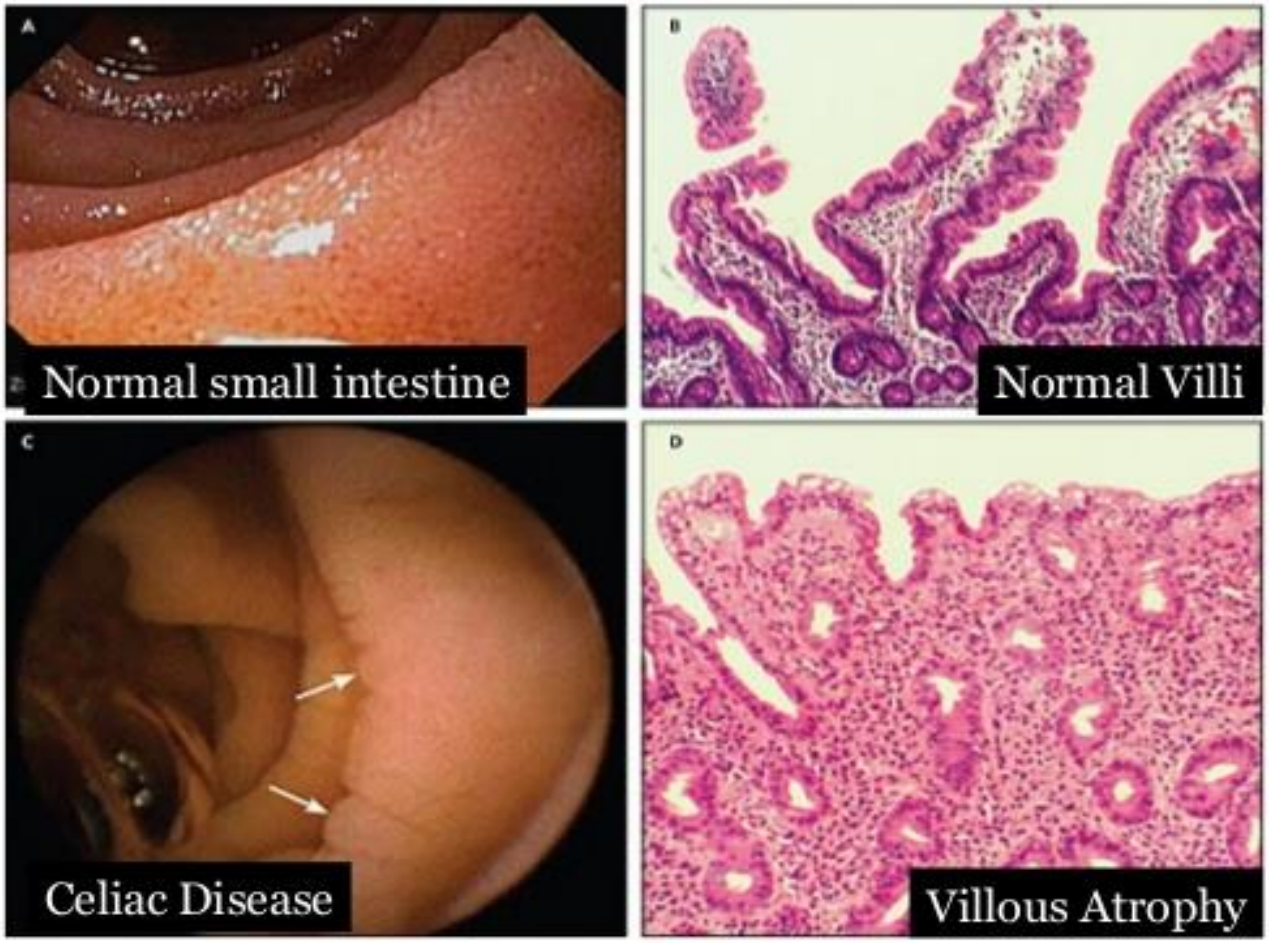
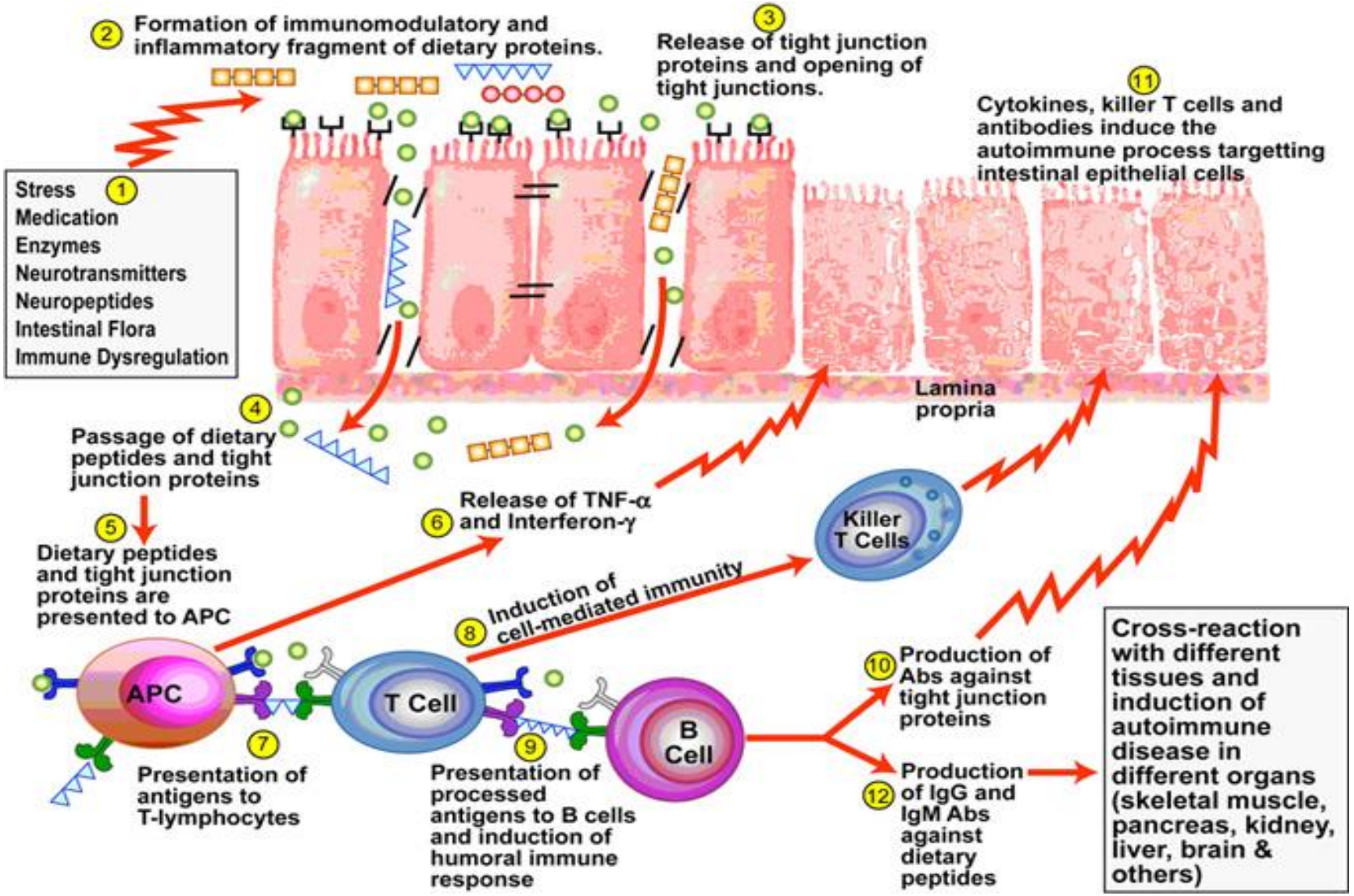
Endoscopy & Biopsy in Celiac Disease



Celiac tests

- Recommended screening test: TTG IgA
- If IgA deficient: TTG IgG
- In children under 3: anti-endomysial IgA
- Deaminated Antigliadin IgA-similar sensitivity and specificity
- HLA DQ2 and DQ8- only specific situations

Celiac disease



Celiac Disease

Table 2. Clinical and Pathogenic Differences among Celiac Disease, Gluten Sensitivity, and Wheat Allergy.

Variable	Celiac Disease	Gluten Sensitivity	Wheat Allergy
Interval between exposure to gluten and onset of symptoms	Weeks to years	Hours to days	Minutes to hours
Pathogenesis	Autoimmunity (innate and adaptive immunity)	Possibly innate immunity	Allergic immune response
HLA	Restricted to *HLA-DQ2* or *HLA-DQ8* (in approximately 97% of positive cases)	Not restricted to *HLA-DQ2* or *HLA-DQ8* (*HLA-DQ2*–positive, *HLA-DQ8*–positive, or both in 50% of patients)	Not restricted to *HLA-DQ2* or *HLA-DQ8* (*HLA-DQ2*–positive, *HLA-DQ8*–positive, or both in 35–40% of patients, similar to the general population)
Autoantibodies	Almost always present	Always absent	Always absent
Enteropathy	Almost always present	Always absent (slight increase in the intraepithelial lymphocyte count)	Always absent (eosinophils in the lamina propria)
Symptoms	Both intestinal and extraintestinal; gastrointestinal symptoms not distinguishable from those of gluten sensitivity and wheat allergy	Both intestinal and extraintestinal; gastrointestinal symptoms not distinguishable from those of celiac disease and wheat allergy	Both intestinal and extraintestinal; gastrointestinal symptoms gastrointestinal symptoms not distinguishable from those of celiac disease and gluten sensitivity symptoms
Complications	Coexisting conditions; long-term complications	Absence of coexisting conditions and long-term complications	Absence of coexisting conditions; short-term complications (including anaphylaxis)

Case # 2

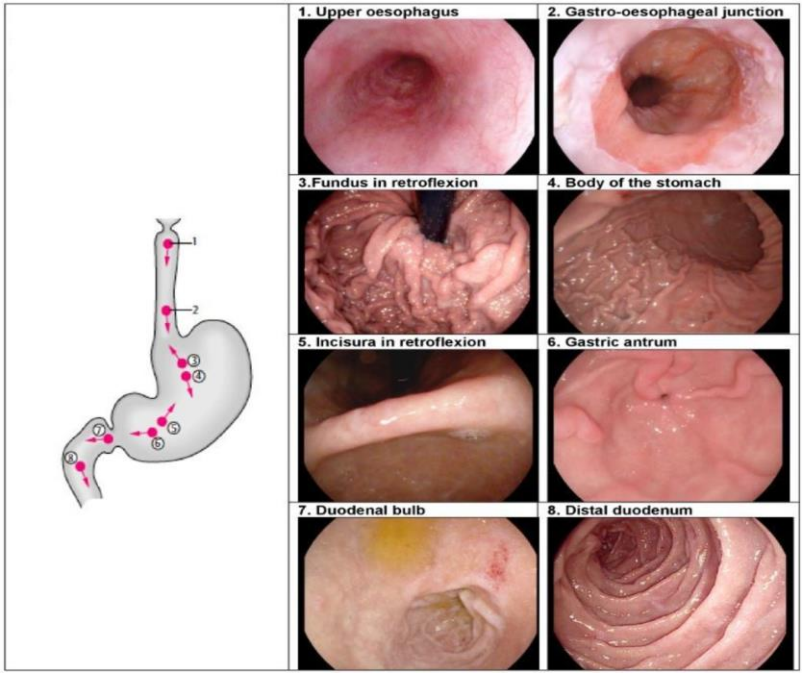
- 13 Year old girl with 3 months of abdominal pain, non descript, non localized
- Pain is not associated with eating, does not wake her from sleep
- Stools are variable, from constipation Bristol 2 to very loose, Bristol 6, no bleeding except when constipated
- She missed 12 days of school already this year

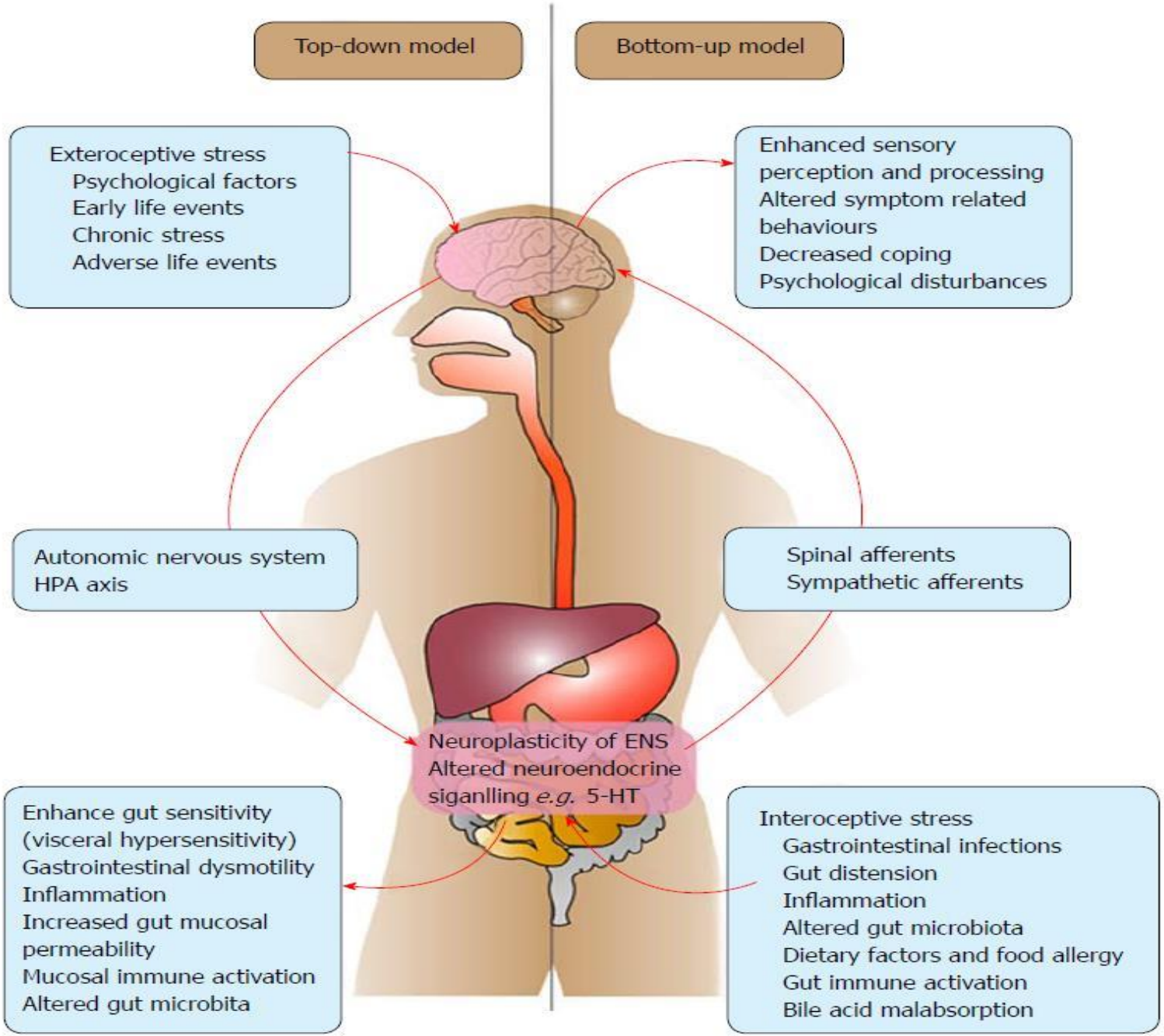
What Else Do You Want to Know?

- History: 90% of the diagnosis is by history
- She spends a long time in the bathroom
- No weight loss, actually has gained weight
- No fever, rash, joint pain
- Menarche age 12, LMP 4 weeks ago
- FH: Mom-IBS, Dad-psoriasis, sibling-ADHD
- SH: loves music, parents separated, excellent student

Case # 2

- Trial of Zantac and Prevacid did not help
- Trial of Miralax did not help though the stools were better
- Sonogram was normal
- Upper Endoscopy was
- normal




Top-down model
Bottom-up model
Exteroceptive stress
Psychological factors
Early life events
Chronic stress
Adverse life events
Enhanced sensory perception and processing
Altered symptom related behaviours
Decreased coping
Psychological disturbances
Autonomic nervous system
HPA axis
Spinal afferents
Sympathetic afferents
Neuroplasticity of ENS
Altered neuroendocrine siganlling e.g. 5-HT
Enhance gut sensitivity (visceral hypersensitivity)
Gastrointestinal dysmotility
Inflammation
Increased gut mucosal permeability
Mucosal immune activation
Altered gut microbita
Interoceptive stress
Gastrointestinal infections
Gut distension
Inflammation
Altered gut microbiota
Dietary factors and food allergy
Gut immune activation
Bile acid malabsorption

Functional Disorders

- Diagnosis is clinical by history, exam and limited work up
- In adults, functional disorders are 40% of referrals
- Normal physical exam should include growth assessment, perianal inspection
- Recommended lab screen might include CBC, CRP or ESR, TTG and if diarrhea a calprotectin

Rule #1

Very Important Rules

- Rule # 1
- If you feel like this after taking the history, the diagnosis is functional
- Rule #2
- If you have abdominal pain after taking the history, the diagnosis is functional

Bristol Stool Chart

Bristol stool chart	
	Type 1 Separate hard lumps, like nuts (hard to pass)
	Type 2 Sausage-shaped, but lumpy
	Type 3 Sausage-shaped, but with cracks on surface
	Type 4 Sausage or snake like, smooth and soft
	Type 5 Soft blobs with clear-cut edges (easy to pass)
	Type 6 Fluffy pieces with ragged edges, mushy
	Type 7 Watery, no solid pieces (entirely liquid)

Functional Disorders Approach

- FAPDs are common, occurring in approximately 10 to 20 percent of children.
- The pain of FAPDs is real; it is thought to be caused by a heightened sensitivity to the normal function of the stomach and bowel. (Visceral Hyperalgesia)
- Like other types of pain, pain in FAPDs can be triggered, exacerbated, or maintained by environmental and psychosocial factors, including stress, anxiety, and social reinforcement (eg, attention, staying home from school).
- The pain of FAPDs is not life-threatening and does not require activity restriction.

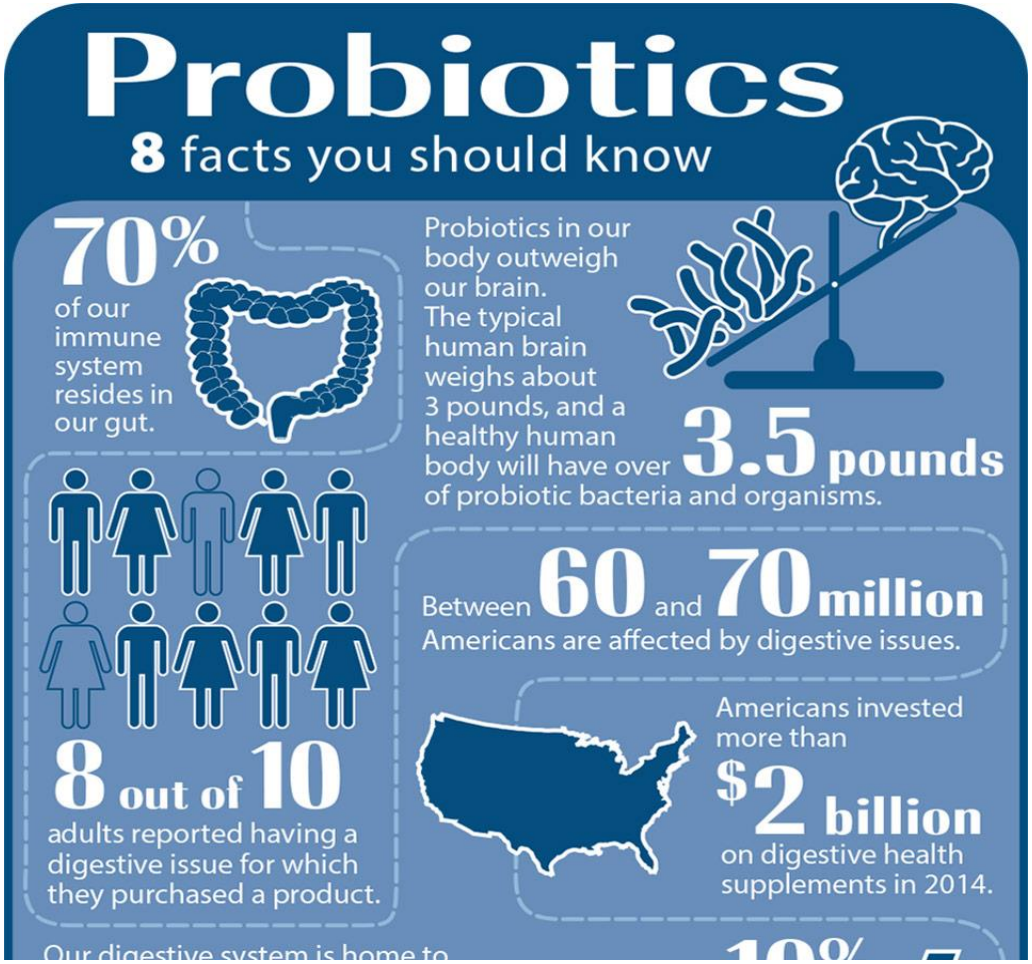
Functional Disorders Approach

- Treatment focuses on return to normal activity despite discomfort – rehabilitation
- Management of pain involves avoiding triggers and improving coping skills; the pain may persist, but the child's and family's quality of life can be improved
- Goals for management should be realistic (eg, maintenance of normal activities, increased tolerance of symptoms
- Chronic pain, regardless of the etiology, can be associated with depression or anxiety (both as a cause and an effect)

Functional Disorders Treatment

- Multiple interventions have been evaluated
- There is good evidence for psychologic interventions like CBT
- In meta analysis, improvement with placebo effect can be 40% over time and resolution 17%
- Back to school plan is critical

Functional Disorders Treatment



Functional Disorders Treatment

- Probiotics—data
- Cochrane review-2017-low quality evidence that there may be a moderate effect on improvement in pain over 3 months
- NNT was 8
- Recent meta-analysis of 17 studies: Lactobacillus Rhamnosus GG may be helpful. No evidence to support L. Reuteri, Bifidobacterium.

Probiotics

- Lactobacillus GG
- L. Reuteri—
- Saccharomyces boulardii
- L. Acidophilus
- B.Lactis
- Lactobacillus bulgaricus and Streptococcus thermophilus-common in yogurt

Diet Treatment

- FODMAP diet
- First what are FODMAPS?
- Fermentable, Oligosaccharides, Disaccharides,
- Monosaccharides, Polyols.
- Oligo=Fructans or inulin
- Disacc=lactose
- Mono=fructose
- Polyols=sorbitol

Diet Treatment

- FODMAP diet is essentially:
- Gluten Free
- Lactose Free
- Restricted Fruit -
- Restricted vegetables
- No high fructose syrup

Diet Treatment

- Multiple adult studies show symptom improvement in gas, bloating, abdominal pain
- One randomized control trial in children ages 7-17 showed improvement after 2 days
- No long term studies

Important Rule #3

- No child in Northern Virginia is not stressed, if they deny it they simply lack insight
- The same is true for their parents

Psychologic Component

- In a retrospective study, FGID
- leading to chronic nausea was associated with a higher prevalence
- of comorbid conditions such as migraines, sleep problems, fatigue,
- and anxiety.

- Some studies have focused on children's body weight, anxiety,
- and comorbidities to explain IBS in children. For instance,
- a cross-sectional study of 450 children found that there was a
- higher prevalence of FGID in obese-overweight children (47%)
- compared with normal-weight children (27%).

Case # 3

- 13 year old girl with persistent epigastric to periumbilical pain and nausea
- No vomiting
- 3 pound weight loss
- Normal stool daily, Bristol 4-5
- No nocturnal pain
- Pain is worse after eating anything

Case #3- Dyspepsia Differential

- Peptic ulcer disease
- Gastroesophageal reflux
- Eosinophilic Esophagitis
- H. Pylori gastritis
- Non-Ulcer dyspepsia
- NSAID induced Gastritis
- Rare things like Crohn's disease, collagenous gastritis

Please Don't

- Order an UGI
- Order H. Pylori serology
- Order H. Pylori stool or breath test
- Do a flat plate
- Treat for H. Pylori
- Suggest probiotics

Please Do

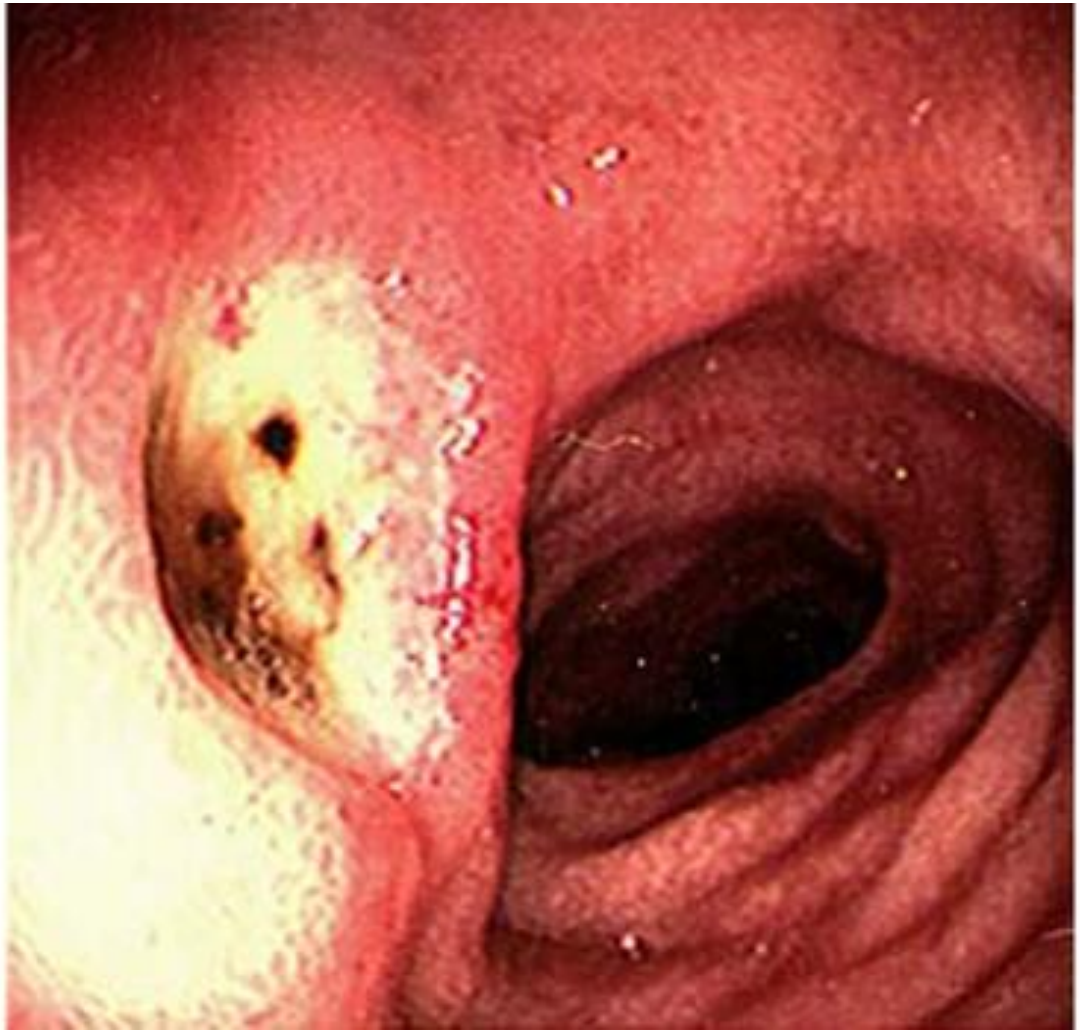
- Consider a trial of an H2 Blocker
- Avoid or withdraw NSAIDs
- Consider a trial of PPI
- Ask about risk factors for functional disease
- Look for risk factors of EoE such as atopic dermatitis, food allergies, eczema

H. Pylori

- Current guidelines recommend against test and treat strategy
- Current evidence suggests eradication of H. Pylori in the absence of mucosal disease will not improve the symptoms
- Children with recurrent abdominal pain without alarm symptoms likely have functional pain regardless of their H. Pylori status

H. Pylori

Duodenal Ulcer



Nodular Gastritis

Case #4

- 14 year old with persistent periumbilical pain
- Worse after eating, especially dairy
- No vomiting but mother feels he is eating less
- Weight down 1-2 pounds
- Stool 2 times per day, Bristol 5
- No bleeding
- Recent travel to Italy

Case #4

- PMH: CMPI as infant, GER on meds to a year
- FH: mother-Fibromyalgia, hypothyroid
- MgM-colitis
- Father-psoriasis
- SH: straight A student, travel soccer player,
- anxious recently
- ROS: no fevers, +athralgias, no rash,

Case #4

- Physical Exam:
- Prepubertal
- Slight tenderness in periumbilical area
- Weight is at 57%
- Height is at 34%
- Height 2 years ago was 62%

Growth

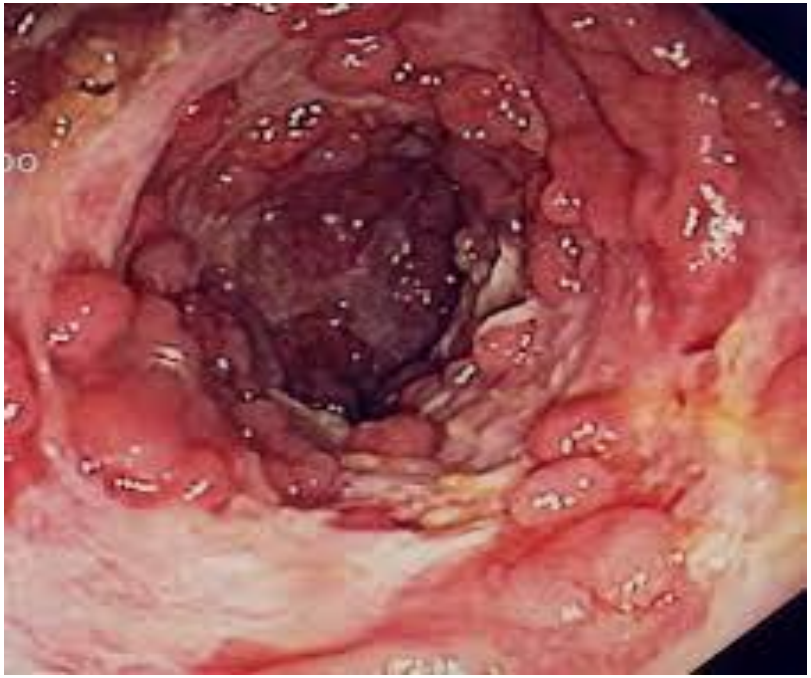
Skin Tags

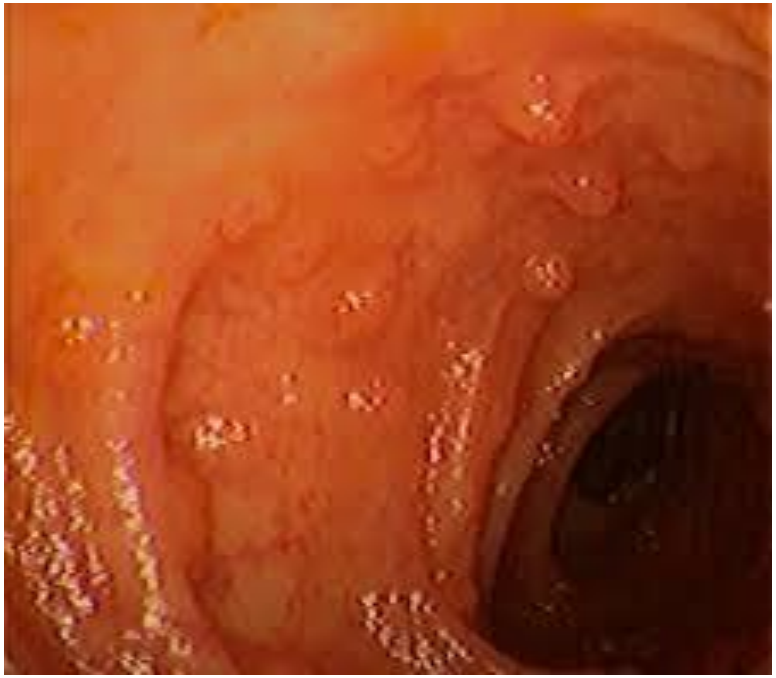
Labs

- CRP:14
- CBC: H/H-11/33.5
- MCV: 72
- Comp. Chem:normal except albumin 3.3
- Calprotectin: normal
- H. Pylori IgM: positive
- Flat plate: constipation


OUT TO LUNCH
THIS HERE IS OUR BRAND NEW COLONOSCOPY 3000 XL PROBE! IT TAKES 300 MEGAPIXEL IMAGES, HAS A LASER SCALPEL, AND MORE ... I CAN'T WAIT TO TRY THIS BABY OUT!
UM ...
PAT PAT
COLONOSCOPY 3000 XL PROBE

Case #4





Treatment

- Induction: steroids, biologic therapies or nutritional therapy
- Maintenance: Methotrexate, biologic therapies, nutritional therapy