

# History & Physical Examination

## Extraintestinal symptoms

- ▶ Rash (allergic disorders , the characteristic dermatitis herpetiformis of celiac disease)
- ▶ Aphthous ulcers, arthritis, erythema nodosum, or pyoderma gangrenosum (IBD)
- ▶ Frequent infections, especially respiratory infections (pancreatic insufficiency related to cystic fibrosis, primary immunodeficiency)
- ▶ Fever, vomiting and diarrhea by weeks of persistent diarrhea (postinfectious enteritis)



# History & Physical Examination

## Carbohydrate malabsorption:

- ▶ Excessive fructose intake (toddler's diarrhea)
- ▶ Excessive sorbitol intake found in beverages in adolescents
- ▶ symptoms that correlate with dairy intake (lactose intolerance)

# History & Physical Examination

- ▶ Persistent diarrhea in a daycare or school ( parasitic infection such as *Giardia*)
- ▶ Family history (IBD, celiac, some congenital diarrheal disorders)
- ▶ Nutritional assessment (height, weight, global nutritional appearance, BMI, all plotted on graphs)



# History & Physical Examination

Examination of the perianal area:

- ▶ Significant diaper dermatitis in infants (Carbohydrate malabsorption )
- ▶ fissure, skin tag or drainage, in the absence of constipation, (Crohn's dis.)
- ▶ true diarrhea or overflow incontinence



# Diagnostic evaluation

- ▶ will focus the differential diagnosis
- ▶ Stepwise fashion with the least invasive testing performed
- ▶ For children with weight loss, an endoscopy and colonoscopy may be prioritized, besides laboratory testing, stool studies, and imaging



# Diagnostic Stool Studies

- ▶ A critical part of the evaluation
- ▶ *Clostridium difficile* and also parasitic infections can cause prolonged diarrhea
- ▶ infections commonly acute in healthy patients may become chronic in immunodeficients
- ▶ Parasitic infections, may require more than one sample
- ▶ In suspicion for a particular pathogen, communicate with lab



# Diagnostic Stool Studies

- ▶ Barrier disruption, loss of protein (stool  $\alpha$ -antitrypsin)
- ▶ Carbohydrate malabsorption ( stool reducing substances)
- ▶ Elevated fecal fat, low stool elastase (Pancreatic insufficiency , fat malabsorption)
- ▶ Elevated stool calprotectin (Inflammatory or infectious etiology)
- ▶ Fecal leukocytes ( indicative of inflammation)
- ▶ Occult blood (allergy or inflammation)



# Hematologic Studies

- ▶ CBC (Hb and RBC indices) : (anemia, iron-deficiency as a marker of small intestinal inflammation and poor absorption of iron)
- ▶ Comprehensive metabolic panel (CMP), prealbumin (nutritional deficits)
- ▶ ESR, CRP & plts (Crohn's disease, UC, other inflammatory conditions)
- ▶ Electrolytes, vitamins, or mineral levels, levels of fat-soluble vitamins
- ▶ TTG IgA & EMA IgA (celiac)
- ▶ quantitative immunoglobulin, T-cell, and IgG subsets (immunodeficiency)



# Hydrogen Breath Test

- ▶ Carbohydrate malabsorption
- ▶ small bowel bacterial overgrowth
- ▶ sucrase-isomaltase deficiency



# Sweat Test

- ▶ FTT and protracted diarrhea



# Endoscopy and Histologic Sampling

- ▶ When less invasive, routine studies do not suggest a diagnosis
- ▶ Inflammatory condition or congenital diarrheal disorder
- ▶ The cornerstone for diagnosis of diseases that require confirmation with a tissue sample (Crohn's disease, ulcerative colitis, celiac disease, graft-versus-host disease (GVHD), microvillous inclusion disease, and tufting enteropathy)
- ▶ Duodenal aspirate



# Radiology imaging

- ▶ Anatomic abnormality is suspected
- ▶ When there is concern for small bowel Crohn's disease



# CAUSES OF PROTRACTED DIARRRHEA

The background features a dark blue-grey area on the left and a complex, layered pattern of various shades of green on the right. The green shapes are semi-transparent and overlap, creating a sense of depth and movement.

# Infection-Induced Enteropathies

- ▶ *Salmonella*, *Shigella*, *Campylobacter*, *Yersinia*, and enterotoxigenic *E. coli*
- ▶ enteropathogenic *E. coli* (EPEC) and enteroaggregative *E. coli* (EAEC)

# Cow's milk protein intolerance

- ▶ In addition to formula-fed infants, cow's milk protein intolerance may also be seen in exclusively breast-fed babies through transfer of dietary antigens through the breast milk.
- ▶ Treatment includes exclusion of the offending proteins in the diet of the formula-fed infant and in the maternal diet of the breastfed infant, which may involve transitioning to a protein hydrolysate formula, or to an amino acid-based formula.
- ▶ In the great majority of cases, soy and cow's milk protein can be reintroduced into the diet after one year of age without recurrence



# Chronic nonspecific diarrhea of childhood

- ▶ also known as toddler's diarrhea
- ▶ typically presents in otherwise healthy children between the ages of 1 and 4 years
- ▶ continuous or episodic with usually variable stool consistencies from watery to soft
- ▶ In many instances, the consumption of excessive quantities of hypertonic fluids such as fruit juices (apple, grape, or peach) is identified
- ▶ a single 240-mL serving causes carbohydrate malabsorption as evidenced by diarrhea and abnormal breath hydrogen testing





# Chronic nonspecific diarrhea of childhood

- ▶ It is confirmed by an empiric trial of therapy without any need for further testing
- ▶ Treatment involves parental reassurance, limiting hypertonic, removing any unfounded food restrictions
- ▶ A balanced diet is recommended : encouraging the consumption of fiber-rich and fatty foods (e.g., cheeses, whole milk)
- ▶ fat may be helpful, as fat is known to slow gastric emptying and to increase small-intestinal transit time by activating the “ileal brake” and decreasing colonic motility



**شاد و تندرست  
باشید**

