DIARRHEA

Pediatric GI Curriculum Lecture

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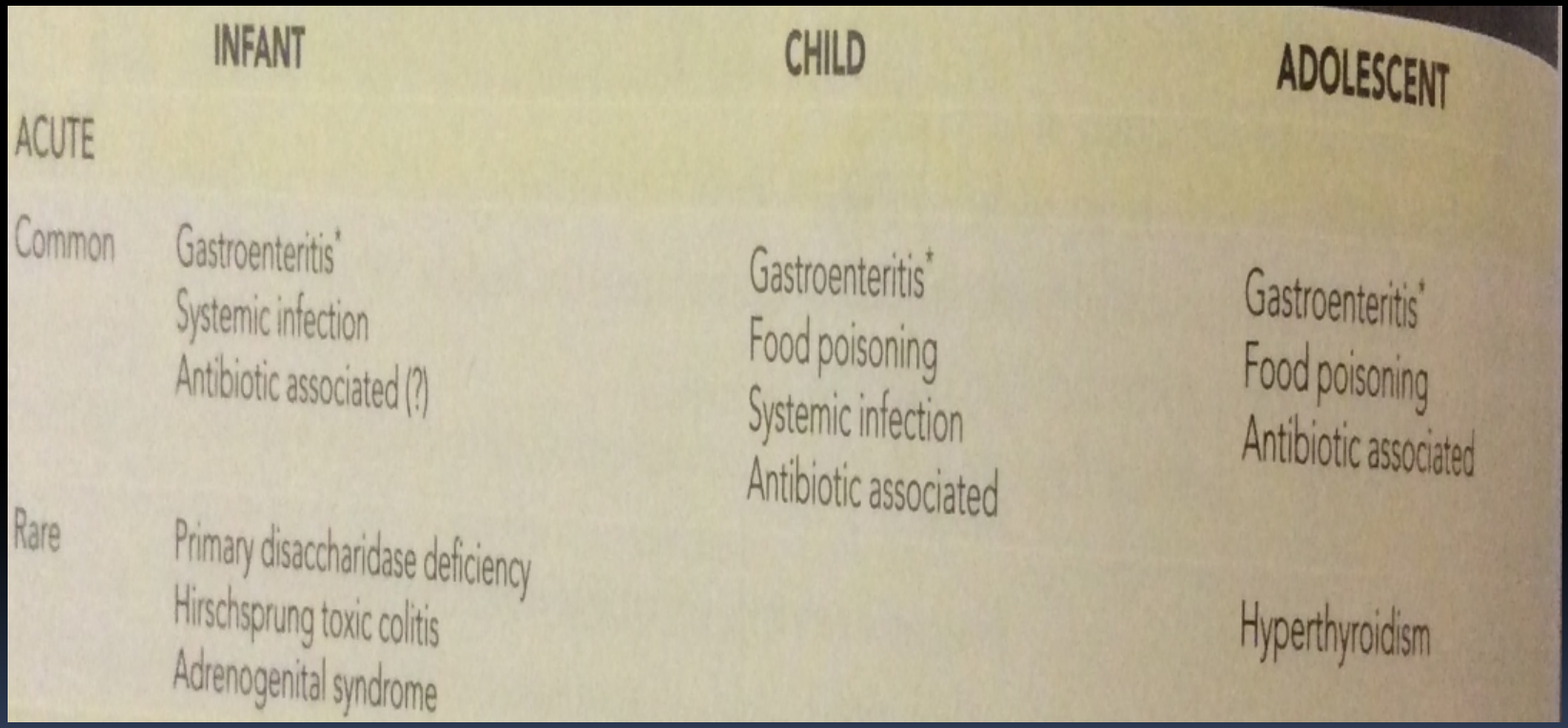
Agenda

- Acute vs. chronic diarrhea
- Bloody vs. non-bloody diarrhea
- Evaluation of patients with diarrhea
- Stools studies
- “Red flags” in patients with diarrhea
- Cases

Acute Diarrhea

- Diarrhea that lasts less than 14 days
- What is the most common cause?
  - An acute infectious process
- Work-up depends on the presenting symptoms
  - Dehydration
  - Signs of systemic involvement
  - Blood in the stool

Causes



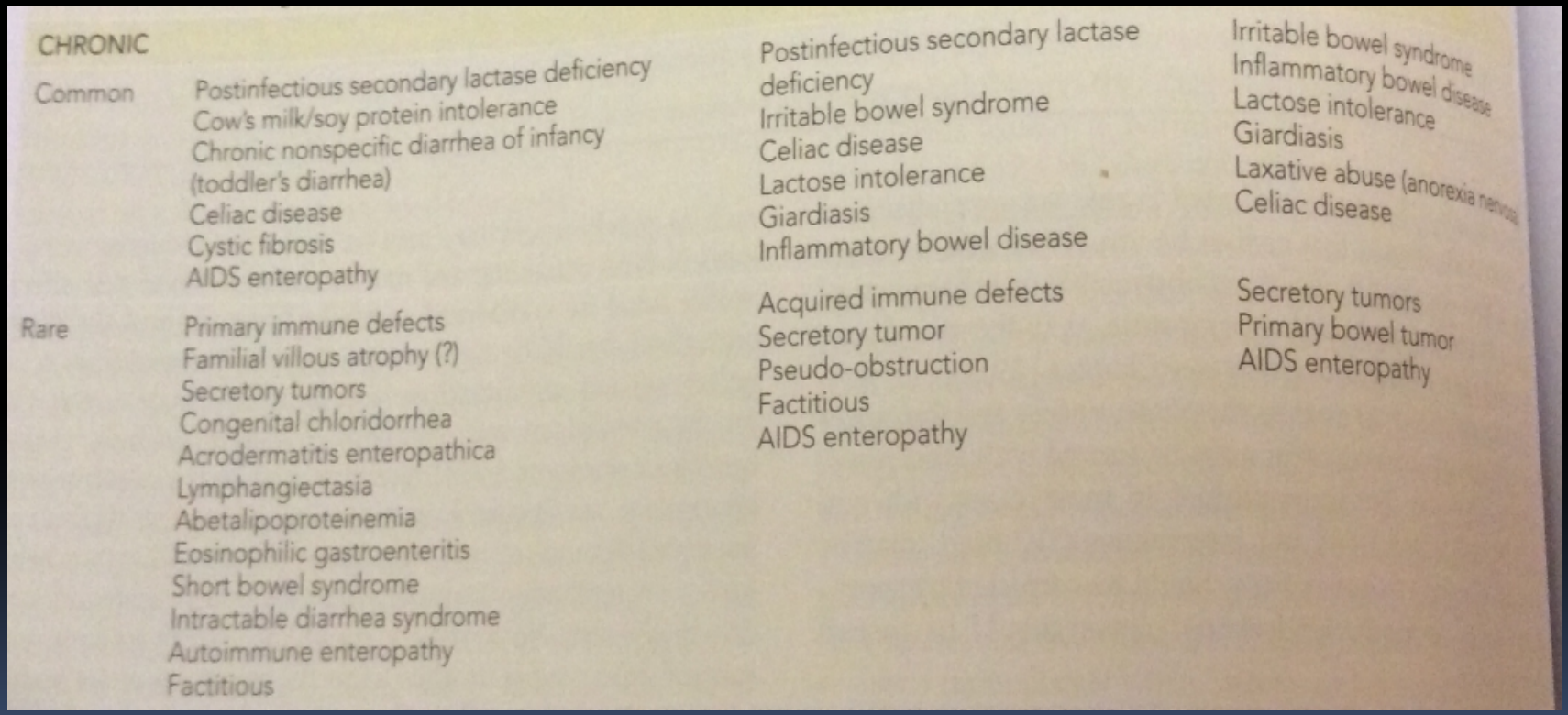
	INFANT	CHILD	ADOLESCENT
ACUTE			
Common	Gastroenteritis* Systemic infection Antibiotic associated (?)	Gastroenteritis* Food poisoning Systemic infection Antibiotic associated	Gastroenteritis* Food poisoning Antibiotic associated
Rare	Primary disaccharidase deficiency Hirschsprung toxic colitis Adrenogenital syndrome		Hyperthyroidism

Chronic Diarrhea

- Diarrhea that lasts more than 14 days
- What are some causes of chronic diarrhea?
  - Toddler's diarrhea, celiac, IBD, infection (giardia)
- An evaluation to determine the etiology of the diarrhea should be undertaken unless toddler's diarrhea is suspected
- Toddler's diarrhea can initially be treated with dietary modification prior to further work-up

Causes

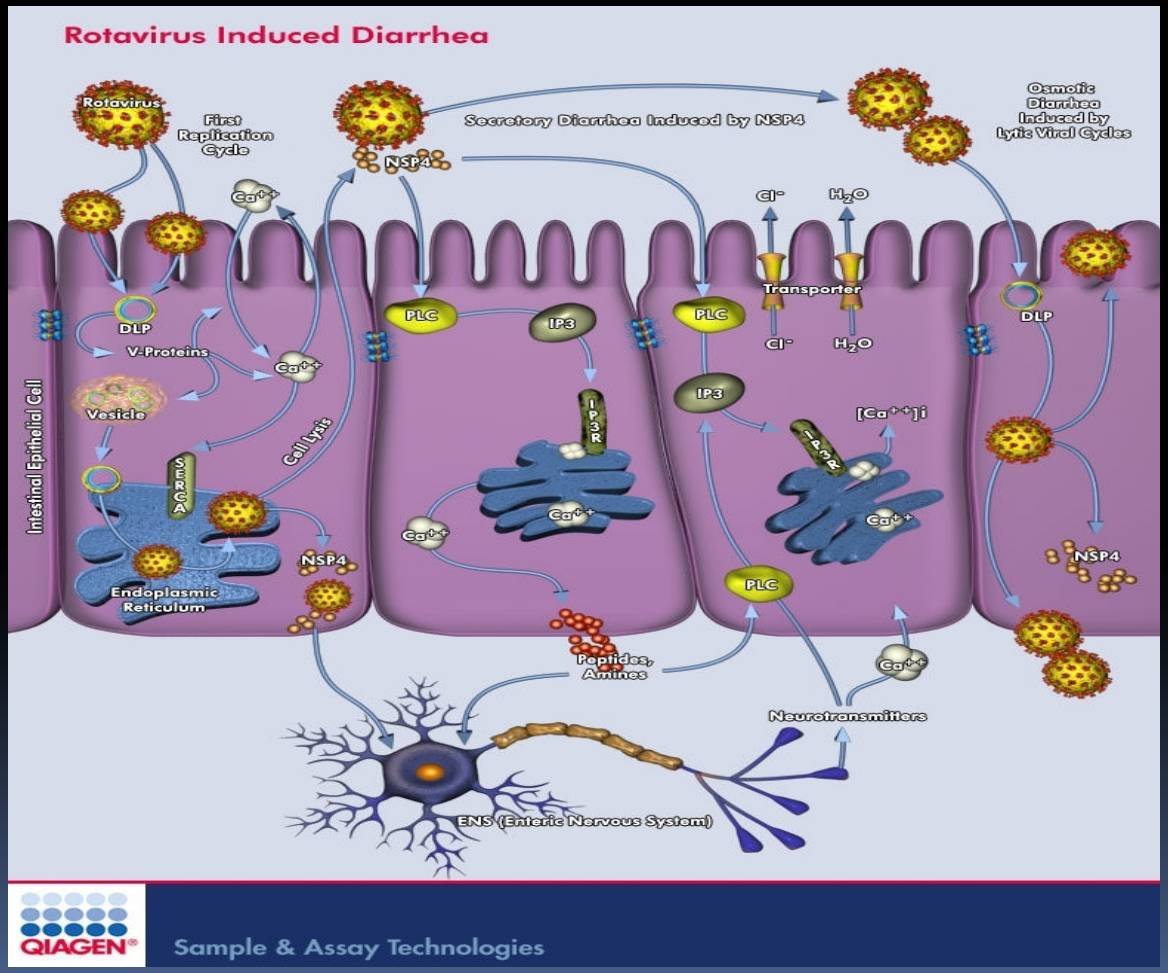
infant	Child	adolescent



CHRONIC

Common	Postinfectious secondary lactase deficiency Cow's milk/soy protein intolerance Chronic nonspecific diarrhea of infancy (toddler's diarrhea) Celiac disease Cystic fibrosis AIDS enteropathy	Postinfectious secondary lactase deficiency Irritable bowel syndrome Celiac disease Lactose intolerance Giardiasis Inflammatory bowel disease	Irritable bowel syndrome Inflammatory bowel disease Lactose intolerance Giardiasis Laxative abuse (anorexia nervosa) Celiac disease
Rare	Primary immune defects Familial villous atrophy (?) Secretory tumors Congenital chloridorrhea Acrodermatitis enteropathica Lymphangiectasia Abetalipoproteinemia Eosinophilic gastroenteritis Short bowel syndrome Intractable diarrhea syndrome Autoimmune enteropathy Factitious	Acquired immune defects Secretory tumor Pseudo-obstruction Factitious AIDS enteropathy	Secretory tumors Primary bowel tumor AIDS enteropathy

Osmotic vs Secretory diarrhea



Osmotic vs Secretory diarrhea

- Effect of fasting
- Osmotic gap

= 290- 2(Na + K)

Less than 50 : secretory

More than 50 : osmotic

Bloody Diarrhea

- Bloody diarrhea suggests colitis
- What is the most common cause of acute bloody diarrhea?
  - Bacterial infection
- What is the most common cause of chronic bloody diarrhea?
  - Inflammatory bowel disease

Non-bloody Diarrhea

- Non-bloody diarrhea usually results from
  - Enteropathy (infection, post-infectious, celiac disease, Crohn's disease)
  - Malabsorption states (pancreatic insufficiency, cholestasis, short gut, hypolactasia)

Evaluation of Patients with Diarrhea

- Depends on
  - Acute vs. chronic
  - Bloody vs. non-bloody

- In short, all chronic diarrhea (except Toddler's diarrhea) or bloody diarrhea deserves an evaluation which may include:
  - Blood: CBC, CMP, ESR,CRP, and celiac panel (TTG IgA and total IgA)
  - Stool: hemoccult, infection, malabsorption

Stool Studies

- Hemoccult
  - Hemoglobin
- Wright stain
  - White blood cells
- Sudan stain
  - Fat
- Fecal elastase
  - Pancreatic insufficiency
- Reducing substances
  - Malabsorbed carbohydrates
- pH
  - <5.6 suggests carbohydrate malabsorption
- Rotazyme
  - Rotavirus

Stool Studies

- Viral culture
  - Enteric viruses
- Ova and Parasites
  - Giardia, Cryptosporidium, Entamoeba
- Stool Culture
  - Salmonella, Shigella, E. coli 01:57H7, Campylobacter, +/- Yersinia
- C. diff toxin
  - Toxins produced by C. diff

"Red Flags" in Patients with Diarrhea

- History
  - Gross blood in stool
  - Waking up at night to pass stool
  - Abdominal pain, particularly if it is localized
  - Weight loss
  - Persistent fevers
  - Rash
  - Arthralgias
- What do each of these suggest?

"Red Flags" in Patients with Diarrhea

- Physical Exam
  - Grossly bloody or hemoccult positive stools
  - Pallor
  - Perianal skin tags, fissures, fistulae, or abscesses
  - Abdominal tenderness that localizes
  - Malnutrition (weight:length ratio or BMI <3rd %)
  - Dermatitis herpetiformis, erythema nodosum or pyoderma gangrenosum
- What do each of these suggest?

An 8-year-old male presents with a two day history of watery diarrhea, fever, and abdominal pain/cramping that is worse with stooling. Exam is remarkable for mild abdominal pain in both lower quadrants and stool which is hemoccult positive.

- What is the most likely cause of the diarrhea?
- Are there any tests that should be ordered?
- How would you treat this patient?

A 15-month-old female presents with a two day history of watery diarrhea. She is having 8-10 stools per day and no vomiting. She has good oral intake and good urine output. Mom is concerned because the stools are very watery. On exam she is well-hydrated, she has no abdominal tenderness, and her stool is heme negative.

- What is the most likely cause of the diarrhea?
- Are there any tests that should be ordered?
- How would you treat this patient?

A 6-year-old male presents with a 4 day history of diarrhea that has become grossly bloody over the past 24 hours. He complains of abdominal pain and the mother has noticed that his feet and legs look swollen this morning. Exam is remarkable for abdominal tenderness and 2+ pitting edema in the lower extremities.

- What is the most likely cause of the diarrhea?
- Are there any tests that should be ordered?
- How would you treat this patient?

A 2-year-old male presents with diarrhea for 3 months. He has 3-4 stools per day that are almost always loose and watery, with no gross blood noted in the stool. He has a good appetite and has not lost any weight. He drinks primarily Kool-aid and fruit juices. On exam, he is well nourished and well hydrated.

- What is the most likely cause of the diarrhea?
- Are there any tests that should be ordered?
- How would you treat this patient?

A 2-year-old male presents with diarrhea for 3 months. He has 3-4 stools per day that are almost always loose and watery, with no gross blood noted in the stool. He has a very good appetite but has lost about five pounds over the past few months. On exam, he is thin with a BMI <3rd percentile and has a protuberant abdomen.

- What is the most likely cause of the diarrhea?
- Are there any tests that should be ordered?
- How would you treat this patient?

A 16-year-old male presents with a one month history of bloody diarrhea. He now passes 5-6 bloody stools per day and often wakes up in the middle of the night to pass stool. He has had a 5 pound weight loss over the past few months. On exam, he is pale, thin, and complains of tenderness in the lower abdomen.

- What is the most likely cause of the diarrhea?
- Are there any tests that should be ordered?
- How would you treat this patient?

THE END

QUESTIONS?