Approach To The Patient with Chronic Diarrhea
Objectives

- Identify the common sources of chronic diarrhea including irritable bowel syndrome, inflammatory bowel disease, microscopic colitis, pancreatic insufficiency, post-cholecystectomy diarrhea, lactose intolerance, and celiac sprue
- Review treatment options
- Differentiate between the various conditions
Definition

- Subjective - >3 BMs per day
- Objective - >200-300 gms of stool per day
- Liquidity/Watery
- Chronic > 4 weeks
Chronic Diarrhea

• “Old” sub-types
  – Osmotic, secretory, motility, inflammatory

• “New” Subtypes
  – Inflammatory, Fatty, and Watery

Diarrhea..Cha-cha-cha
“New” Sub-types

- **Inflammatory** — IBD, parasitic infections, fungal, TB, viral, Sprue(?), rare bacteria
- **Watery** — Secretory, osmotic and some motility types
- **Fatty** — Pancreatic insufficiency, sprue, bacterial overgrowth, large small bowel resections
Osmotic Diarrhea

- **Mechanism** –
  - Unusually large amounts of *poorly absorbed* osmotically active solutes
  - Usually Ingested
    - Carbohydrates
    - Lactose
    - Laxatives
Osmotic Diarrhea

• History –
  – Can be *watery* or loose.
  – No blood, Minimal cramping, No fevers
  – Diarrhea stops when patient fasts!

\[
290 - 2([\text{Na}^+] + [\text{K}^+]) = ??
\]

Osmotic Gap (stool):
Low: secretory
High: osmotic
Osmotic Diarrhea

- Lactose - Dairy products**
- Sorbitol - Sugar free gum, fruits
- Fructose - Soft drinks, fruit
- Magnesium - Antacids
- Laxatives - Citrate, NaSulfate
Osmotic Diarrhea

Melanosis Coli
Secretory Diarrhea

• Much Bigger group and more complex
• Defects in ion absorbtive process
  – Cl-/HCO3- exchange
  – NA+/H+ exchange
  – Abnormal mediators – cAMP, cGMP etc
Secretory Diarrhea

• History –
  – More difficult – but is usually WATERY
  – Large amounts/24 hours
  – Non-bloody, persistent during fast
    • ….but not always – malabsorptive subtype (FA’s etc)
  – Day/Night
  – Explosive, cramping
Chronic Secretory Diarrhea

- Villous adenoma
- Carcinoid tumor
- Medullary thyroid CA
- Zollinger-Ellison syndrome (gastrin)
- VIPoma (endocrine)
- Lymphocytic colitis

- Bile acid malabsorption
- Stimulant laxatives
- Sprue
- Intestinal lymphoma
- Hyperthyroidism
- Collagenous colitis
Dysmotility Induced Diarrhea

- *Rapid* transit leads to decreased absorption
- *Slowed* transit leads to bacterial overgrowth
Dysmotility Induced Diarrhea

- Irritable bowel syndrome
- Carcinoid syndrome
- Resection of the ileocecal valve
- Hyperthyroidism
- Post gastrectomy syndromes
Fatty Diarrhea

- Malabsorption – secondary to pancreatic disease, Bacterial overgrowth, Sprue and occasionally parasites
- Greasy, floating stools
- Measure 24 hour fecal fat
  - > 5g per day = fat malabsorption
  - Trial of Panc enzymes, measure TTG
Inflammatory Diarrhea

• Inflammation and ulceration compromises the mucosal barrier

• Mucous, protein, blood are released into the lumen

• Absorption is diminished
Inflammatory Diarrhea

- Inflammatory bowel disease
- Celiac Sprue?
- Chronic infections
  - Amoeba
  - C. Difficile, aeromonas,
  - Other parasites
  - HIV, CMV, TB,
Inflammatory Diarrhea

- History
  - Bloody diarrhea
  - Tenesmus and cramping
  - Fevers, malaise, weight loss etc
  - May have FMHx of IBD
  - Travel--infectious
• Yes that’s right *constipation*!
  – “Overflow” diarrhea
  – Extremely common!
  – Check KUB!!
  – Often in elderly with fecal incontinence
  – Think fiber
General Approach

• History
  – Is diarrhea inflammatory, watery or fatty?
  – Try to determine obvious associations
    • Foods (lactose!), candies, medications, travel,
    • Recent chole?
  – There may be an immediately obvious cause
  – Constipation?
History

- Describe diarrhea
- Onset?
- Pattern
  - Continuous or intermittent
- Associations
  - Travel, food (specifics)
  - Stress, meds,
  (OLDCARTS)
- Weight loss? Abd pain?
- Night time symptoms?
- Fmhx –
  - IBD, IBS, other?
- Other medical conditions?
  - Thyroid, DM, Collagen vascular, associated meds???
Warning Signs

- Blood in Stool
- Abdominal Pain waking them up
- Weight Loss
- Fever/Chills
- Nutrient Deficiency (objective)
### History

#### Localizing the source

<table>
<thead>
<tr>
<th>Small bowel source</th>
<th>Colonic source</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Large volume</td>
<td>• Small volume</td>
</tr>
<tr>
<td>• Steatorrhea</td>
<td>• No steatorrhea</td>
</tr>
<tr>
<td>• No blood</td>
<td>• Bloody</td>
</tr>
<tr>
<td>• No tenesmus</td>
<td>• Tenesmus</td>
</tr>
<tr>
<td>• Peri-umbilical pain</td>
<td>• Lower quadrant pain</td>
</tr>
</tbody>
</table>
Physical Examination

• Vital Signs, general appearance
• Abdomen – tenderness, masses, organomegaly
• Rectal exam – Sphincter tone and squeeze
• Skin – rash, flushing
• Thyroid mass?
• Edema?
Initial Work Up

• Again, address any obvious causes
• Somewhat different then a GI approach
• Initial labs
  – CBC, Chemistry
  – TSH, CRP, ESR
  – Stool analysis
    • Wt., Na+, K+, osm, pH, Fat assessment (sudan), O&P, C Diff. stool cx, WBC, blood
Work up

• Can categorize into sub groups at this point
  – Inflammatory vs Watery vs Fatty

• Other modalities to evaluate
  – Stool elastase, TTG, Anti-EMA
  – Colonoscopy and EGD
  – CT Scan, SBFT, etc
Inflammatory Diarrhea

Consider early referral to GI

- Small-bowel radiographs
- Sigmoidoscopy or colonoscopy with biopsy
- CT scan of abdomen
- Small-bowel biopsy

Exclude structural disease

Exclude infection

Bacterial pathogens
- "Standard"
- Aeromonas
- Plesiomonas
- Tuberculosis

Other pathogens
- Parasites
- Viruses

O&P

HIV
Fatty Diarrhea

Fatty diarrhea

Exclude structural disease

Examine small-bowel radiographs

CT scan of abdomen

Exclude pancreatic exocrine insufficiency

Secretin test

Bentiromide test

Stool chymotrypsin activity

Small-bowel biopsy and aspirate for quantitative culture

EGD

Vs

ABX

Watery Diarrhea

Osmotic

Consider Lactose Intolerance
Watery Diarrhea

Secretory

- Exclude infection
  - Bacterial pathogens
    - "Standard"
    - Aeromonas
    - Plesiomonas
  - Other pathogens
    - "Standard" ova + parasites
    - Coccidia
    - Microsporidia
    - Giardia antigen
- Exclude structural disease
  - Small-bowel radiographs
  - Sigmoidoscopy or colonoscopy with biopsy
  - CT scan of abdomen
  - Small-bowel biopsy and aspirate for quantitative culture
- Selective testing
  - Plasma peptides
    - Gastrin
    - Calcitonin
    - VIP
    - Somatostatin
  - Urine
    - 5-HIAA
    - Metanephrines
    - Histamine
  - Other tests
    - TSH
    - ACTH stimulation
    - Serum protein electrophoresis
    - Immunoglobulins
- Cholestyramine trial for bile acid diarrhea

When to Refer?

- **Inflammatory**
  - Refer to GI
  - Unless infectious

- **Watery**
  - Await labs

- **Fatty**
  - Refer to GI

**Secretory?**
- Infectious?—Treat
- IBS?? Consider Tx??
- Otherwise refer to GI

**Osmotic?**
- Stop offending agent?
Inflammatory Diarrhea

• Crohn’s Disease (AI)– mouth to anus, full thickness, extraintestinal (fistulas, abscesses, skin, eyes), surgery common
  – Rx: Thiopurines, biologics (Humira, Remicade)

• Ulcerative Colitis (AI) – colon only, surface inflammation, cancer risk
  – Rx: 5-ASAs, mesalamines, thiopurines, biologics
Infectious Diarrhea
(inflammatory/secretory)

• Cdiff Colitis – infectious, can be chronic, nosocomial, antibiotics, resistant to tx
  – Causes: Clindamycin, PCN, Ceph
  – Rx: Flagyl (resistant), Vancomycin, Dificid (macrolide), fecal transplant, Zinplava (binds toxin B)
  – Test of cure recommended 1-2 weeks after rx
Microscopic Colitis (secretory/inflammatory)

- Collagenous Colitis (collagen bands)
- Lymphocytic Colitis (intraepithelial lymph)
- Most common: females, 65 or older
- Rx: Budesonide (non FDA approved)
  - Antispasmodics, antidiarrheals, cholestyramine
  - Biologics in refractory patients
Postcholecystectomy Diarrhea (secretory)

- AKA: Bile Acid Diarrhea, “dumping”
- 5-12% cholecystectomy patients
- Rx: cholestyramine 1-2g with meals
  - Colestipol (pill)
Celiac Sprue (secretory/fatty)

- Gluten Disease
- Immune response to gluten protein
- NOT an allergy
- Malabsorption symptoms
- Dx: small bowel biopsy: inflammation, villous atrophy, crypt distortion
  - IgA Anti-tTG antibody*
  - IgA EMA-ab and anti-DGP (low total IgA)
Lactose Intolerance (osmotic)

- Malabsorption due to lactase deficiency
- Can develop at any age!
- Spectrum of dairy tolerance
- Dx: Lactose breath test ($$$$) OR lactose challenge ($)
- Rx: Lactase, dairy avoidance
Pancreatic Insufficiency (fatty)

- Chronic pancreatitis
- Exocrine pancreatic insufficiency
- Dx: stool pancreatic elastase-low
- Rx: Exogenous pancreatic enzymes with meals (Pancrelipase)
Irritable Bowel Syndrome (secretory/motility)

- Dysmotility – “spastic” intestines
- Diagnosis of Exclusion
- Strongly suspicious - antispasmodic trial
- Many other diarrheal illnesses present like IBS
- Stress induced, intermittent symptoms, pain relieved with defecation
Irritable Bowel Syndrome (secretory/motility)

• Be suspicious if:
  – Stress induced, intermittent symptoms, pain relieved with defecation, no night time symptoms

• Rx: Antispasmodics: Dicyclomine, Hyoscymamine, Lomotil (controlled),
Chronic Diarrhea

Don’t forget to consider fecal incontinence!

And Constipation

(Over flow diarrhea)
Questions?