Vascular and Inflammatory Diseases of the Intestines
Overview

• Vascular disorders
  – Vascular “malformations”
  – Vasculitis
  – Ischemic disease
• Inflammatory disorders of specific etiology
  – Infectious enterocolitis
  – “Immune-mediated” enteropathy
  – Diverticular disease
• Idiopathic inflammatory bowel disease
  – Crohn’s disease
  – Ulcerative colitis
Sporadic Vascular Ectasia (Telangiectasia)

- Clusters of tortuous thin-walled small vessels lacking muscle or adventitia located in the mucosa and the submucosa.
- The most common type occurs in cecum or ascending colon of individuals over the age of 50 and is commonly known as “angiodysplasia”.
- Angiodysplasias account for 40% of all colonic vascular lesions and are the most common cause of lower GI bleeding in individuals over the age of 60.
Angiodysplasia
Hereditary Vascular Ectasia

- Hereditary Hemorrhagic Telangiectasia (HHT) or Osler-Webber-Rendu disease
- Systematic disease primarily involving skin and mucous membranes, and often the GI tract
- Autosomal dominant disease with positive family history in 80% of cases
- After epistaxis which occurs in 80% of individuals, GI bleed is the most frequent presentation and occurs in 10-40% of cases
Arteriovenous Malformations (AVM’s)

• Irregular meshwork of structurally abnormal medium to large ectatic vessels

• Unlike small vessel ectasias, AVM’s can be distributed in all layers of the bowel wall

• AVM’s may present anywhere at any age, although some are thought to be congenital
Vasculitis

- Goodpasture
- Giant-Cell Arteritis, Takayasu Arteritis
- Polyarteritis Nodosa, Kawasaki Disease
- Microscopic Polyangiitis, Wegener's, Churg-Strauss Syndrome, SLE
- Henoch-Schönlein Purpura
Vasculitis (PAN)
Vascular Insufficiency

• Vaso-occlusive Diseases
  – Mesenteric arterial occlusion (embolism/thrombosis)
  – Mesenteric vein thrombosis
  – Bowel strangulation (volvulus, hernia)

• Non-Occlusive Vascular Insufficiency
  – Systemic hemodynamic disturbances
  – Local hemodynamic disturbances
Ischemic colitis
Ischemic Colitis
Infectious Enteritis

• The most common GI problem worldwide
• Most symptomatic infections produce diarrhea and some produce malabsorption
• Diagnosis is most often by stool culture or O&P
• Organisms rarely produce a pathognomonic pattern of injury
Mechanism of Injury: Toxin Production

- V. cholera
- E. coli
- “Food poisoning”
  - Staphylococcus
  - Clostridium
Mechanism of Injury: Invasion

- **Bacteria**
  - Salmonella, shigella, campylobacter, E. coli, yersinia, mycobacteria
- **Protozoa**
  - Cryptosporidia, isospora, microsporidia
- **Viruses**
  - Rotaviruses, adenovirus, CMV, HSV
- **Fungi**
  - Histoplasma, candida
Cryptosporidiosis
The Lumen Dwellers

Ascaris lumbricoides

Enterobius vermicularis
Antibiotic-Associated Colitis

- Antibiotic-associated pseudomembranous colitis (PMC) is an acute colitis characterized by the formation of an inflammatory exudate.
- PMC is a toxin-mediated colitis usually caused by C. difficile or less commonly by E. Coli.
“Immune” Enteropathy: Celiac sprue

- Gluten-sensitive enteropathy, Celiac disease, Non-tropical sprue
- Chronic inflammatory disease of the proximal small intestine with generalized malabsorption
- Most common in the Irish, British, and other northern European populations
- Immune mediated injury to enterocytes accompanied by serum antibodies to gliadin, a component of gluten
Celiac disease-
Immunologic mechanism of damage

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Celiac Sprue

• Symptoms:
  – Steatorrhea, abdominal distention, flatulence, fatigue, and weight loss

• Complications:
  – Iron and vitamin deficiency
  – Risk of lymphoma (T-cell type)

• Extraintestinal manifestation:
  – Dermatitis herpetiformis (a pruritic papulovesicular rash with IgA deposits at the dermoepidermal junction)
Malabsorption—other causes

- Immune conditions
- Hypersensitivity/allergy/eosinophilic gastroenteritis
- Infection: Whipple’s dis., tropical sprue, bacterial overgrowth
- Nutritional deficiencies-
- Inherited: Microvillous inclusion dis., lymphangiectasia
- Infiltrative disorders: amyloidosis, lymphoma
- Systemic disorders: lipid storage
- Other: short bowel
Whipple’s disease

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Collagenous, lymphocytic colitis

- Collectively, “microscopic colitis”
- Middle aged to elderly adults
- Chronic watery diarrhea
- Endoscopically normal mucosa
Diverticulosis Coli

- Acquired colonic diverticula are present in nearly half of the population over the age of 50
- Diverticula are associated with low-fiber, low-residue diets
- Etiology is most likely high intraluminal pressure required for propulsion of hard, small stools
- Complications include hemorrhage, acute diverticulitis, perforation, fistula formation
Idiopathic Inflammatory Bowel Disease (IBD)

• Chronic, relapsing, idiopathic inflammatory disease of the GI tract

• Crohn’s Disease
  – Transmural granulomatous disease affecting any portion of the GI tract

• Ulcerative Colitis
  – Superficial, non-granulomatous inflammatory disease restricted to the colon
Ulcerative Colitis

- Bloody mucoid diarrhea, rarely toxic megacolon
- Can begin at any age, peaks at 20-25 years
- Annual incidence of ~10 per 100,000 in US
- Negligible risk of cancer in the first 10 years, but 1% per year risk of cancer thereafter
- Good response to total colectomy if medical therapy fails
Ulcerative colitis - pseudopolyps
Crohn’s Disease

- Variable and elusive clinical presentation with diarrhea, pain, weight loss, anorexia, fever
- Can begin at any age, peaks at 15-25 years
- Annual incidence of ~3 per 100,000 in US
- Many GI complications and extracolonic manifestations
- Risk of cancer less than in UC
- Poor response to surgery
Crohn’s disease- gross appearance

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Aphthous ulcer
“Cobblestoning”
Wall thickening
Crohn’s disease- stricture

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Crohn’s disease- microscopic

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Transmural inflammation  Granuloma formation
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