Inflammatory Bowel Disease (IBS)

Online MedEds High-Yield Brilliant Summary!

Objectives :

- ★ Describe & Distinguish the Inflammatory bowel disease (IBD) is comprised of two major disorders: Ulcerative colitis (UC), Crohn's disease (CD).
- ★ Know the disorders have both distinct and overlapping pathologic and clinical characteristics.
- ★ know the Genetic factors: NOD2/CARD15
- ★ Know the ENVIRONMENTAL FACTORS: Smoking, Appendectomy: protect UC, Diet

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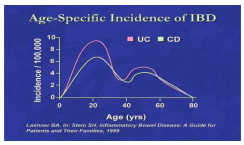
Introduction

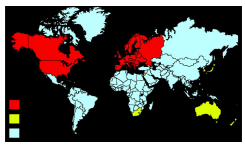
Definition

- **IBD is comprised of two major disorders: Ulcerative colitis (UC)** and **Crohn's disease(CD)** also include Microscopic Colitis & Indeterminate (Undetermined) Colitis When it's difficult to distinguish between Crohn's Disease & Ulcerative Colitis.
- These disorders have both distinct and overlapping pathologic and clinical characteristics.
- IBD is a **progressive** diseases with a fluctuating pattern of symptoms, meaning they would do well then get bad then do well and etc.. However, this fluctuation does not reflect the the levels of obstruction (it starts with inflammation -> fibrosis -> more fibrosis-> damage -> damage extends) that's why it's a progressive damage to the GI tract.

◀ Epidemiology

- **More common in the west**, but the incidence is increasing in the developing countries including saudi arabia. (changing in community habits increase the incidence)
- **IBD can present at any age:**
  - The peak: 15-30 years (majority of cases in KSA)
  - A second peak is 50 years old





◀ Etiology

- **Host factors:** Major genetic factors[1]: Nucleotide Oligomerization Domain 2 (**NOD2/CARD15**). There are more than 116 mutations found to be linked with IBD (the most common one is NOD2/CARD15. People who have this mutation have a higher risk of developing IBD (CD). NOD2 mutations have been linked to an increased risk of Crohn's disease
- **Diet** people who grow up eating fast food and western diet are more prone to IBD. Western diet and Frozen food increase the chance of developing IBD, especially in children less 10 years-old
- **Environmental factors (appendectomy and smoking is protective for UC)**
  - Smoking : smoking showed to exacerbate crohn's disease and increase risk of disease recurrence after surgery. By contrast smoking was found to be a protective factor in ulcerative colitis.
  - Appendectomy: protects against UC. By contrast it may increase the risk of development CD

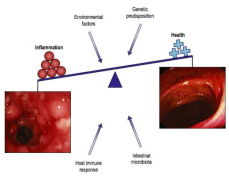
Dysbiosis

Change in microbiota of the gut:
- ↓protective bacteria
- ↑aggressive commensals

Dysregulated immune response

- Loss of tolerance
- Aggressive cellular activation
- Defective apoptosis

IBD



Defective mucosal Integrity

- Altered mucus
- Increases permeability
- Cellular starvation
- Impaired restitution

Persistent Infection

- Mycobacteria
- Helicobacter sp
- Measles,Mumps
- Listeria
- Toxiginic E.coli

Genetics of IBD

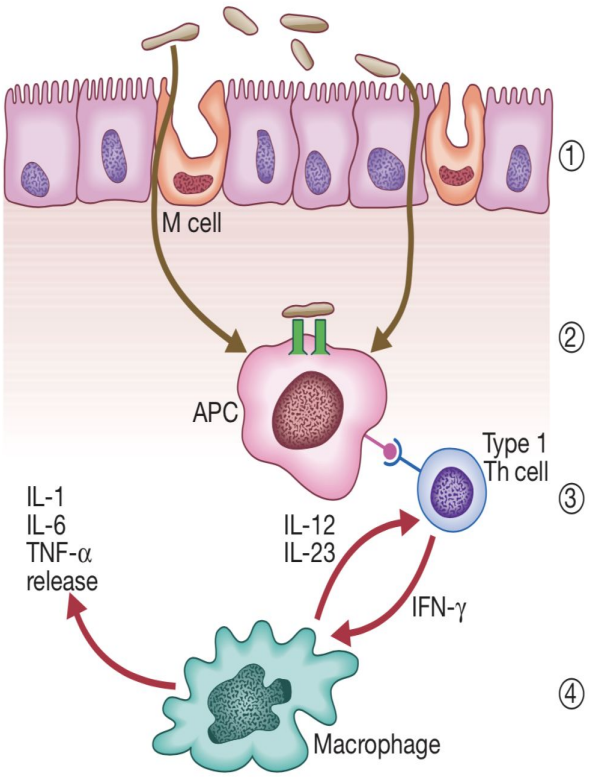
- The NOD2 protein on **chromosome 16** is an intracellular sensor of bacterial peptidoglycan, present in bacterial cell walls.
- UC and CD are both associated with genetic variants at HLA locus, and with multiple genes involved with immune signalling (especially IL-23 and IL-10 pathways)
- CD is associated with genetic defects in innate immunity and autophagy (NOD2, ATG16L1 and IRGM genes)
- UC is associated with genetic defects in barrier function
- NOD2 is associated with ileal and stricturing disease, and hence a need for resectional surgery
- HLA-DR*103 is associated with severe UC
- 10% have first-degree relative/1 or more close relative with IBD
- High concordance in identical twins (40–50% CD; 20–25% UC)

1- Genetic Factors are not enough so there must be a combination with environmental factors

Introduction *cont'*

◀ Pathophysiology (Hypothesis) of IBD

1) Bacterial antigens are taken up by specialised M cells, pass between leaky epithelial cells or enter the lamina propria through ulcerated mucosa.
2) After processing, they are presented to type 1 T-helper cells by antigen- presenting cells (APCs) in the lamina propria.
3) T-cell activation and differentiation results in a Th1 T cell-mediated cytokine response
4) with secretion of cytokines, including interferon gamma (IFN-γ). Further amplification of T cells perpetuates the inflammatory process with activation of non-immune cells and release of other important cytokines, including interleukin 12 (IL-12), IL-23, IL-1, IL-6 and tumour necrosis factor alpha (TNF-α). These pathways occur in all normal individuals exposed to an inflammatory insult and this is self-limiting in healthy subjects. In genetically predisposed persons, dysregulation of innate immunity may trigger inflammatory bowel disease.



◀ Overview on UC and CD

	Ulcerative Colitis	Crohn's disease
Wall involvement	**Mucosal**, submucosal ulcers	**Full-thickness** inflammation with knife-like **fissures**
Location	Begins in **rectum** and can extend proximally up to cecum	**Anywhere** from mouth to anus with **skip lesions** **Terminal ileum** is the most common site
Symptoms	**Left** lower quadrant pain (rectum) with **bloody diarrhea**	**Right** lower quadrant pain (ileum) with **non-bloody diarrhea**
Inflammation	**Crypt abscess** with neutrophils	Lymphoid aggregates with **Granulomas**
Gross appearance	Pseudopolyps	**Cobblestone mucosa**, **creeping fat** and strictures
Complications	Toxic megacolon, Carcinoma	Malabsorption with nutritional deficiency, Calcium oxalate nephrolithiasis, fistula formation and Carcinoma
Smoking	Protects against UC	Increases risk

Ulcerative Colitis

Definition

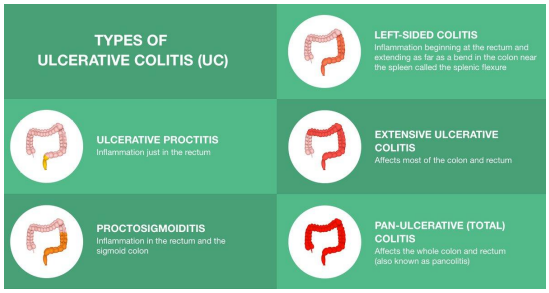
UC is a **chronic inflammatory disease** characterized by **recurrent episodes** of inflammation **limited to the mucosal layer** of the **rectum** and **colon**. Starts at the rectum then extends proximally. Ulceration only affects the **superficial** layer (ulcerative -> ulcer) and **mainly** involves the colon. Almost always it involves the rectum and spreads in a continuous route without "skip areas"

◀ Types / Locations[1]

1. Ulcerative proctitis: Rectum alone
2. **Ulcerative proctosigmoiditis:** Rectum and sigmoid colon
3. **Left-sided colitis:** Disease that extends beyond the rectum and as far proximally as the splenic flexure.
4. **Extensive colitis:** Beyond the splenic flexure

Clinically it's similar to Pancolitis in the way of treatment.

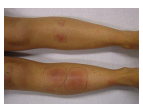
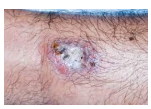
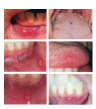
5. **Pancolitis: Whole colon**



40-50% of patients have disease limited to the rectum and rectosigmoid
30-40% of patients have disease extending beyond the sigmoid
20% of patients have pancolitis

◀ Signs & Symptoms[2,3]

How to differentiate between mild and severe UC? Click here **(EXTRA!!!!)**

Intestinal Symptoms	**1- Bloody[6] diarrhea** small amounts with urgency and increased frequency. The **inflamed rectum** cannot hold stool, even small amount. **2- Rectal bleeding** **3- Crampy lower abdominal pain, nausea and vomiting** when it extends beyond rectosigmoid area **4- Tenesmus:** Pain during defecation 5- **Passage of mucus** 6- **Iron deficiency anemia** 7- General features: malaise, lethargy, anorexia with **weight loss**
Extra-Intestinal Symptoms	**Cutaneous:** erythema nodosum[4], pyoderma gangrenosum[5], aphthous stomatitis    **Biliary:** Primary sclerosing cholangitis can be seen in CD (if there's a high degree of inflammation) this increases the risk of malignancy "Cholangiocarcinoma". PSC: progressive chronic inflammation of both the intrahepatic and extrahepatic bile ducts, patients usually present with pruritus, jaundice and dark urine. MRCP (Magnetic Resonance Cholangiopancreatography) reveal a dilation of hepatic ducts with strictures **Eye:** uveitis, episcleritis, iritis

- Patients with proctitis usually pass **fresh blood** or **bloodstained mucus either mixed with stool or streaked onto the surface** of normal or hard stool
- When the disease extends beyond the rectum, blood is usually mixed with stool or grossly bloody diarrhea may be noted
- When the disease is severe, patients pass a liquid stool containing blood, pus, fecal matter
- Other symptoms in moderate to severe disease include: anorexia, nausea, vomiting, fever, weight loss

1- Inflammation invariably involves the rectum (proctitis) and spreads proximally in a continuous manner to involve the entire colon in some cases (pancolitis). In long-standing pancolitis, the bowel can become shortened and post-inflammatory 'pseudopolyps' develop; these are normal or hypertrophied residual mucosa within areas of atrophy. The inflammatory process is **limited to the mucosa** and spares the deeper layers of the bowel wall.
2- The first attack is usually the most severe and is followed by relapses and remissions. Emotional stress, intercurrent infection, gastroenteritis, antibiotics or NSAID therapy may all provoke a relapse.
3- Ulcerative colitis pts present earlier than crohn's disease due to presence of blood in the stool, its alarming to pts so they don't wait and quickly seek medical advice
4- **Most** often affects people with Crohn's disease, but can also develop in those who have ulcerative colitis 5- Can be seen with Crohn's too. 6- ulcer -> blood

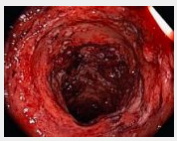
Ulcerative Colitis cont'

◀ Diagnosis

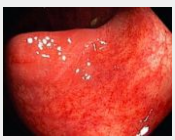
- No single modalities is enough for Diagnosis. Combination of clinical picture, laboratory, endoscopy, pathology. Despite combination of all source, 80% of cases find it hard to distinguish between UC or CD.
- The most important issue is to distinguish the first attack of acute colitis from infection. In general, diarrhoea lasting longer than 10 days in Western countries is unlikely to be the result of infection.
- ★ **Faecal calprotectin** has a high sensitivity for detecting gastrointestinal **inflammation** and may be elevated, even when the CRP is normal. It is particularly **useful for distinguishing inflammatory bowel disease from irritable bowel syndrome at diagnosis**, and for subsequent monitoring of disease activity.
  - If its high do colonoscopy
- **At initial presentation**, stool microscopy, culture and examination for **Clostridium difficile** toxin or for ova and cysts, blood cultures and serological tests should be performed.
- ESR and CRP are often raised; liver biochemistry may be abnormal, with hypoalbuminaemia occurring in severe disease. **pANCA may be positive**. This is contrary to CD, where pANCA is usually negative

Colonoscopy[1]

- ➔ The **vascular markings are lost** (blood vessels are not seen), petechiae, exudates (inflammation of mucosa), **touch friability**, and frank hemorrhage may be present in severe cases.
- ➔ In severe cases, stenosis and pseudopolyps can occur.
- ➔ Colonic involvement is **continuous** in ulcerative colitis, in contrast to the patchy nature of Crohn's disease.
- ➔ **Endoscopy with mucosal biopsy is the GOLD standard** Biopsy tells us whether its acute/chronic



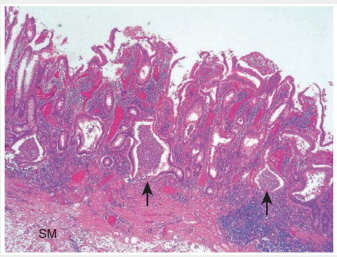
pancolitis with ulcerations



diffuse erythematous inflammation up to the splenic flexure (newly diagnosed)

Pathology

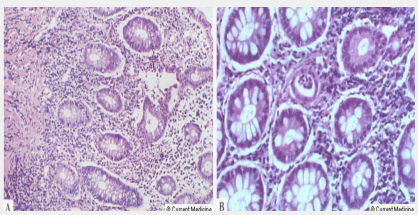
- ➔ **Crypt abscesses** Both acute and chronic inflammatory cells infiltrate the lamina propria and the crypts ('cryptitis'). Crypt abscesses are typical.
- ➔ Chronic changes (Signs of chronicity) including branching of **crypts**, atrophy of glands, and **loss of mucin in goblet cells**[2]



UC has 3 main features:

1- **Confined to the mucosa** with excess inflammatory cells in the lamina propria
2- **Loss of goblet cells**
3- **Crypt abscesses** (arrows)

Abnormal Normal



Once you have inflammation, space between crypts and its shape is disturbed, and the crypt itself has less mucin

1- Patients who present with **diarrhoea** plus raised inflammatory markers or **alarm features**, such as weight loss, rectal bleeding and anaemia, should undergo ileocolonoscopy. Flexible sigmoidoscopy is occasionally performed to make a diagnosis, especially during acute severe presentations when ileocolonoscopy may confer an unacceptable risk; ileocolonoscopy should still be performed at a later date, however, in order to evaluate disease extent. Barium enema is a less sensitive investigation than colonoscopy in patients with colitis and, where colonoscopy is incomplete, a CT colonogram is preferred. There is always inflammation

2- Goblet cells lose their mucus and, in long-standing cases, glands become distorted. Dysplasia, characterised by heaping of cells within crypts, nuclear atypia and increased mitotic rate, may herald the development of colon cancer. **When should screening occur?** After 8 to 10 years of colonic involvement, with colonoscopy every 1 to 2 years

Ulcerative Colitis cont'

◀ Management[1]

Goals of therapy:

- Induce and maintain remission
- Ameliorate symptoms
- Improve pts quality of life
- Adequate nutrition
- Prevent complication of both the disease and medications.

Medical	• **Rule out infection** Why do we need to rule out infection? because even if they have IBD (they are not immune against the usual gastroenteritis). IBD patients take medications that decrease their immunity such as azathioprine and methotrexate. • **5 - ASA** (5-aminosalicylic acid derivatives) **therapy:** Ex: Sulfasalazine, Mesalamine **The 1st line therapy for UC. Used for induction & maintenance of remission.** Oral/Rectal: usually we combine both except for pts with proctitis (oral only). • **Corticosteroids: Used for induction ONLY NEVER used for Maintenance of remission b/c of long term side effect.** Should be given with Ca/Vitamin D supplements ○ Systemic: oral prednisolone (given orally) or IV. ○ Local acting: enema. Such as budesonide MMX that acts locally in the colon (less beneficial than 5-ASA because of its side effects). • **Immunomodulators: Only for maintenance**. They need 6 weeks to start working (not good for induction of remission) ○ Azathioprine (Imuran®) (risk of lymphoma in young male, used with young female) ○ Methotrexate (used with young male) • **Anti TNF therapy:** Induction & maintenance Infliximab **Treatment for CD and UC is the same, however its important to differentiate between them when surgery is indicated.** Click here for more details about the meds (EXTRA!!!!!!)
Surgery	Only option is **total proctocolectomy.** We can't resect part of the colon and leave the rest, because of the increased risk of recurrence and complications **Indications:** ➢ Severe attacks that fail to respond to medical therapy. ➢ Complications of a severe attack (e.g., perforation, acute dilatation, **toxic megacolon)** ➢ Chronic continuous disease with an impaired quality of life. ➢ Dysplasia or carcinoma (now we're using less and less surgery) Goal: Curative approach with full recovery and Reduce risk of colorectal cancer

1-For mild use **5-ASA agents** (eg, sulfasalazine "not used anymore due to its side effects", mesalamine such as Pentasa & Asacol), topical or oral; **corticosteroids for flare-ups** and **immunomodulators** (eg, azathioprine) or **biologics** (eg, infliximab) **for refractory or moderate to severe disease.** Want more details? **click here**

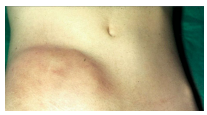
Crohn's disease (CD)

Definition

- **Characterized by transmural inflammation of the gastrointestinal tract.** Not continuous "skip lesions"
- **Involve the entire gastrointestinal tract from mouth to the perianal area**
  - 80% small bowel, 50% ileocolitis, 30% perianal disease , 20% colon, UGI < 5%
  - Perianal Diseases rarely comes alone & usually combined with other sites such as colon or ileocecal.

◀ Clinical manifestation

- **General:** Watery diarrhea (less frequent defecation but in large amounts), Fatigue, **right lower quadrant** abdominal pain, weight loss, Anemia, fever, palpable abdominal mass in RLQ
- Late presentation if it occurs in terminal ileum



palpable abdominal mass in RLQ

Intestinal Symptoms	• **Phlegmon/abscess[1]:** Phlegmon is walled off inflammatory mass without bacterial infection if there's is a bacterial infection it's called abscess.
	• **Fistulas[1]:** Tracts or communications that connect two epithelial-lined organs.
	  ○ Enterovesical
	  ○ Enterocutaneous
	  ○ Enteroenteric
	  ○ Enterovaginal
	• **Perianal disease** can present with fistula/abscess.
	• **Gallstones[2]:** develop because crohn's disease can affect terminal ileum and interferes with bile salt absorption
	• **Esophageal involvement:** odynophagia and dysphagia.
	• **Gastroduodenal CD:** upper abdominal pain and symptoms of gastric outlet obstruction.

Extra-Intestinal Symptoms
 	
CD & UC share a number of Extraintestinal manifestations
	• **Arthritis:** Bone loss and osteoporosis & Osteopenia.
	  ○ **Type 1**:
	  ■ It particularly affects the **large** joints (knees, elbow, hips) in the lower extremities.
	  ■ **Associated with the disease activity,** meaning that when there is an active disease in the gut, arthritis will flare up. Once you treat the GIT, arthritis will improve
	  ○ **Type 2**
	  ■ Involve **small** joints (hand, spine)
	  ■ **INDEPENDENT of disease activity**
	• **Severe oral involvement: aphthous ulcers**.
	• **Cutaneous:**
	  ○ **Erythema nodosum: painful** red nodules, usually affects the external surface of the hands and leg, **it is associated with diseases activity**
	  ○ **Pyoderma gangrenosum:** painless ulceration, could be associated with diseases activity
	  ○ Aphthous stomatitis
	• **Venous and arterial thromboembolism**
	• **Renal stones:** most commonly calcium oxalate and uric acid stones
	  ○ Usually **oxalate** goes to the colon and attaches to calcium and excreted in the stool, in this case malabsorption of bile acids will to lead to consuming of all calcium, oxalate will be free forming stones
	  ○ Increased inflammation of the cells will lead to increased levels of uric acid and formation of uric acid stones
	• **Vitamin B12 deficiency[3]**
	• **Eye involvement:** uveitis, iritis, episcleritis

1- (Both are more common in CD rather than UC due to the transmural infection) 2 **(oxalate stone b/c bile acid is not absorbed very well or uric acid stones)**
3- Anaemia is common and may be the normocytic, normochromic anaemia of chronic disease. However, deficiency of iron and/or folate also occurs. Despite terminal ileal involvement in CD, megaloblastic anaemia due to vitamin B12 deficiency is unusual, although serum B12 levels can be below the normal range.

Crohn's disease (CD)

◀ Diagnosis

The diagnosis of CD is usually established with endoscopic findings or imaging studies in a patient with a compatible clinical history

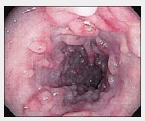
Colonoscopy

- Colonoscopy is performed if colonic involvement is suspected, except in patients presenting with severe disease (in whom a limited unprepared sigmoidoscopy should be carried out).
- Since CD is characterized by skip lesions, it may not be seen with colonoscopy, therefore endoscopy should be performed

Endoscopic features include:

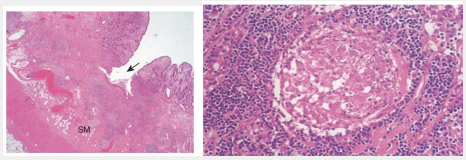
- Focal ulcerations adjacent to areas of normal appearing mucosa along with polypoid mucosal changes that give a **cobblestone**
- **Wireless capsule endoscopy:** only used for the small bowel
  - Before doing this step, make sure that the pt doesn't have strictures.

To avoid retention of the capsule used in capsule endoscopy (CE), the patency capsule (PC), a self-disintegrating sham capsule, is administered prior to CE in patients suspected of small intestinal strictures. If the PC is excreted intact within 30 hours of ingestion, the patient can undergo CE without retention. However, if the PC is not excreted within 30 hours, its location must be confirmed as in either the small intestine or the colon.
The patient swallows it & it takes a picture/second for 8 hours.



Pathology

1) **Submucosal or transmural inflammation**
2) **Deep fissuring ulcers**
3) **Fistulae**
4) **Patchy changes**
5) **Non-caseating granulomas**



Imaging studies[1]

- Plays a major role in diagnosis and ruling out complications
- Computed tomography: CTS or CT enterography. Used in acute emergencies. For CT, we give oral + IV contrast
- Magnetic resonance imaging (MRI) or **MRI enterography**. More used due to less radiation
- Small bowel follow through (SBFT): not used anymore

Stool markers

- Stool cultures, including C. difficile toxin assay, should always be performed if diarrhoea is present.
- **Faecal calprotectin** and lactoferrin are raised in **active** intestinal disease (monitor disease activity and response to therapy. It tells us if there is an inflammation, but it doesn't tell which type(IBS or not). It's used in clinical practice as an indication of colonoscopy

Antibody tests and Markers

Serology may reveal:

- **Negative** Antineutrophil cytoplasmic antibodies **(pANCA)** more common in ulcerative colitis if Positive.
- **Positive** Anti-Saccharomyces cerevisiae antibodies (ASCA) more common with Crohn's Disease

Not useful clinically, used for research purposes

Inflamatory marker: ERS, CRP

1- Small bowel imaging is mandatory in patients with suspected CD. An asymmetrical alteration in the mucosal pattern with deep ulceration, and areas of narrowing or structuring may be found. Although disease is commonly confined to the terminal ileum, other areas of the small bowel can be involved, and skip lesions with normal bowel are seen between affected sites. Axial imaging allows the diagnosis of extraintestinal sepsis in patients presenting acutely and is therefore preferred in this situation.

Crohn's disease (CD) cont'

◀ Management

For more details **Click here** (EXTRA)

Goals of therapy:

- Induce and maintain remission
- Ameliorate symptoms
- Improve pts quality of life
- Adequate nutrition
- Prevent complication of both the disease and medications.

Medical	• **Rule out infection** Why do we need to rule out infection? because even if they have IBD (they are not immune against the usual gastroenteritis). IBD patients take medications that decrease their immunity such as azathioprine and methotrexate.
	• **Corticosteroids: Used for induction ONLY NEVER used for Maintenance of remission b/c of long term side effect.**
	  ○ Systemic: prednisolone
	  ○ Local acting: regular budesonide and not MMX
	• **Immunomodulators: Used for maintenance (bigger role in CD than UC)**
	  ○ Azathioprine (not prederd for young male because of increased risk of lymphoma)
	  ○ Methotrexate
	• **Anti TNF therapy: Plays a major role in CD .**as well as anti integrins or anti IL-12 & anti IL-23.

Surgery	• Laparoscopic or open resection of the diseased bowel segment (small bowel resection, segmental colectomy). Surgery can lead to remission **but is not curative.** In crohn's we only remove the affected part so it doesn't affect other parts + give prophylactic medication to prevent recurrence. • Drain abscess **Surgery indicated in:** • Obstruction or stenosis. • Difficult fistulas or abscess. • Major bleeding • Severe perianal disease unresponsive to medical therapy • Severe disability

◀ Complications of IBD

1- Hemorrhage

Haemorrhage due to erosion of a major artery is rare but **can occur in both UC and CD.**

2- Perforation

Peritonitis

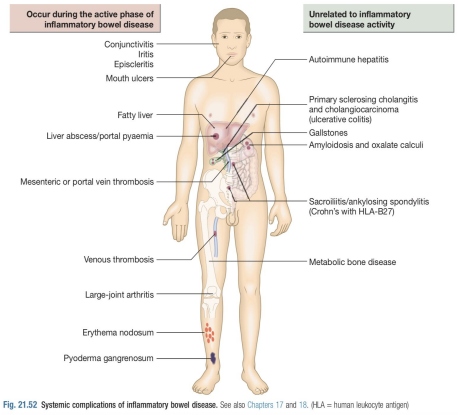


Fig. 21.52 Systemic complications of inflammatory bowel disease. See also Chapters 17 and 18. (HLA = human leukocyte antigen)

Complications of IBD

3- Fistulae

These are specific to Crohn's disease.

- ➔ **Enteroenteric fistulae** can cause diarrhoea and malabsorption due to blind loop syndrome.
- ➔ **Enterovesical fistulation** causes recurrent urinary infections and pneumaturia.
- ➔ **An enterovaginal fistula** causes a faeculent vaginal discharge.
- ➔ **Fistulation from the bowel** may also cause perianal or ischiorectal abscesses, fissures and fistulae

  Treatment: Ciprofloxacin

4- Toxic megacolon

- ➔ Transverse colon with a diameter of more than 5,0 cm to 6,0 cm with loss of haustration.

This mainly occurs in ulcerative colitis but can occur in both UC and CD

- ➔ Toxic megacolon (Dilated colon) is a **serious complication** associated with acute severe colitis. The plain **abdominal X-ray shows a dilated**, thin-walled colon with a diameter of >6 cm; it is gas-filled and contains mucosal islands . It is a particularly dangerous stage of advanced disease, with impending perforation and a high mortality (15-25%). **Urgent surgery is required in all patients in whom toxic dilatation has not resolved within 48 hours**. The differential diagnosis includes an infectious colitis, e.g. with C. difficile and cytomegalovirus.

Patient will present sick, febrile, tachycardic and hypotensive with a distended colon.
X-ray or CT can be performed for them to look at the size of the colon, once it >6cm immediate surgery is required

5- Colon cancer

- ➔ The risk of dysplasia and cancer increases with the duration and extent of uncontrolled colonic inflammation. Thus patients who have long-standing, extensive colitis are at highest risk In order to decrease chance of cancer development, inflammation should be controlled.
- ➔ Oral mesalazine therapy reduces the risk of dysplasia and neoplasia in ulcerative colitis. Azathioprine also seems to reduce the risk of colorectal cancer in ulcerative colitis and Crohn's colitis.
- ➔ Cumulative risk for dysplasia in ulcerative colitis may be as high as 20% after 30 years but is probably **lower for Crohn's colitis**
- ➔ The risk is particularly high in patients who have concomitant **primary sclerosing cholangitis** for unknown reasons
- ➔ Patients with long-standing colitis are therefore entered into surveillance programmes **beginning 10 years after diagnosis**
- ➔ If high-grade dysplasia is found, panproctocolectomy is usually recommended because of the high risk of colon cancer.
- ➔ UC: risk is not high if you control inflammation but it's still a higher chance than normal individuals
  - ◆ Extensive colitis: risk is usually higher after 8 years of diagnosis
  - ◆ Left-sided colitis: risk is higher after 15 years of diagnosis
  - ◆ Proctitis: risk is almost the same as normal individuals .
  - ◆ Colonoscopy should be done from year 8 and repeated every year

Summary from Dr slides

◀ Distinguishing characteristics of CD and UC

	Crohn's disease	Ulcerative Colitis
Location	SB or colon	Colon
Anatomic distribution	Skip lesions	Continuous
Rectal involvement	Rectal spare	Involved in 90%
Gross bleeding	Only 25 %	Universal
Perianal disease	1/3	Rare
Fistuilization	Yes	No
Granulomas	30%	No

◀ Endoscopic features of CD and UC

	Crohn's disease	Ulcerative Colitis
Mucosal involvement	Discontinuous	Continuous
Aphthous ulcers	Common	Rare
Surrounding mucosa	Relatively normal	Abnormal
Longitudinal cancer	Common	Rare
Cobblestoning	In severe cases	No
Mucosal fariability	Uncommon	Common
Vascular pattern	Normal	Distorted

◀ Pathologic features of CD and UC

	Crohn's disease	Ulcerative Colitis
Transmural inflammation	Yes	Uncommon
Fissures	Common	Rare
Fibrosis	Common	No
Submucosal inflammation	Common	Uncommon

Summary

IBD	Ulcerative Colitis Mnemonic: ULCCCERS U: Ulcers | L: Large intestine l C: Continuous l C: Colon Cancer l C: Crypt abscess l E: Extends Proximally l S: Sclerosing Cholangitis	Crohn's Disease
Age of onset	Young adults (15-35)	- Young adults one peak at (15-35)another peak at (55-70) years old - More in women
Location	Begins in **rectum** and can extend proximally up to cecum (Doesn't extend outside the colon)	**Anywhere** from mouth to anus **Terminal ileum is the most common site**
Wall involvement	**Mucosal**, submucosal ulcers	**Full-thickness (transmural)** inflammation with knife-like **fissures**
Pattern	**Continuous lesions**	**Skip lesions** (Not continuous)
Inflammation (Microscopic appearance)	- **Superficial inflammation** - **Crypt abscess** with neutrophils	- Transmural inflammation - Lymphoid aggregates with non caseating **Granulomas**
Gross appearance	- **Pseudopolyps** result from the healing of ulcers (the scar tissue that is lay down can go up and lead to polyps) - **Loss of haustra** (pouches of the colon)	- **Cobblestone mucosa** - **Creeping fat** (transmural inflammation heals, condensed fibrous tissue pulls fat around bowel wall) - **Strictures** (narrowing of intestinal lumen that occurs as a result of healing)
Radiological appearance	- **Lead pipe appearance** on the colon on x-ray due to the loss of haustra	**String sign** due to strictures
Symptoms (Intraintestinal)	- **Left lower quadrant pain** (rectum) (because it starts in rectum) - **Bloody diarrhea** - **Tenesmus** (Pain during defecation)	- **Right lower quadrant pain** (ileum) because terminal ileum is the most common site - **Non-bloody diarrhea (watery diarrhea)** due to malabsorption
Extraintestinal manifestation	- **Arthritis** - **Skin disorders (Erythema nodosum)** - **Primary sclerosing cholangitis (More than CD)** - Eye involvement (Uveitis, Iritis) - Anemia	- Arthritis - **Skin disorders (Erythema nodosum)** Correlates to the activity of it - Primary sclerosing cholangitis - Eye involvement (Uveitis, Iritis) - Renal stone - Vitamin B12 Deficiency - Osteoporosis - Anemia - Fever - Weight loss - **Aphthous ulcer** (Sever oral involvement)
Complications	- **Toxic megacolon** - Carcinoma (Adenocarcinoma) duration of disease >10 years before most cancer form	- **Malabsorption with nutritional deficiency** (Vit B12 because it is absorbed in the ileum and Bile salt) - Calcium oxalate nephrolithiasis (Because of fat malabsorption due to bile salt malabsorption -> fat binds to ca+ -> oxalate free to be absorbed in the gut. - **Fistula formation** - Carcinoma (Risk only when colon involved)
Smoking	**Protects against UC**	**Increases risk**
Laboratory tests	**Serology (**not recommended for definitive diagnosis or exclusion of UC but can support the diagnosis) High ESR, CRP. Positive: pANCA **(Specific for UC)** Negative: ASCA **Stool analysis** (Used to monitor disease activity and response to therapy also to differentiate IBD from IBS) - Test for bacteria to rule out infectious causes - Calprotectin protein(has a high sensitivity for detecting gastrointestinal inflammation and may be elevated, even when the CRP is normal.	**Serology (**not routinely recommended due to low sensitivity) High ESR,CRP. Positive: ASCA Negative: pANCA **Stool analysis** (Used to monitor disease activity and response to therapy also to differentiate IBD from IBS) - Test for bacteria to rule out infectious causes - Calprotectin protein(has a high sensitivity for detecting gastrointestinal inflammation and may be elevated, even when the CRP is normal.
Diagnosis	Endoscopy **(Colonoscopy) with mucosal biopsy is the gold standard**	**Endoscopy**
Treatment	- **Rule out infection (By stool analysis)** - Anti TNF therapy (Induction & maintenance) - 5 ASA therapy: **The 1st line therapy. Used for induction & maintenance of remission.** - Corticosteroids: **Used for induction ONLY NEVER used for Maintenance of remission.** ○ Systemic: Prednisolone ○ Local acting: enema. - Immunomodulators: **(Just for maintenance)** ○ Azathioprine ○ Methotrexate	
Role of Surgery	Curative: Because it's only in the colon (Colectomy)	Only treat the complications Don't perform surgery except for fistulas because of the skip lesions

Lecture Quiz

Q1: A 35-year-old white man presents with diarrhea, weight loss, and right lower quadrant (RLQ) pain. On examination, a tender mass is noted in the RLQ; the fecal occult blood test is positive. Colonoscopy shows segmental areas of inflammation. Barium small bowel series shows nodular thickening of the terminal ileum?

A- Ulcerative colitis
B- Crohn disease
C- Ischemic colitis
D- Diverticulosis

Q2: A 75-year-old African-American woman, previously healthy, presents with low-grade fever, diarrhea, and rectal bleeding. Colonoscopy shows continuous erythema from rectum to mid-transverse colon. The cecum is normal.?

A- Ulcerative colitis
B- Crohn disease
C- Ischemic colitis
D- Diverticulosis

Q3: You are asked to see a 29-year-old woman diagnosed with ulcerative colitis 18 months ago. Over the last 4 days she has been experiencing slight abdominal cramps, opening her bowels approximately 4–5 times a day and has been passing small amounts of blood per rectum. The patient is alert and orientated and on examination her pulse is 67, blood pressure 127/70, temperature 37.3°C and her abdomen is soft with mild central tenderness. PR examination is nil of note. Blood tests reveal haemoglobin of 13.5 g/dL and a CRP of 9 mg/L. The most appropriate management plan for this patient is?

A- Admission to hospital for intravenous fluid therapy and steroids
B- Oral steroid therapy + oral 5-ASA + steroid enemas + discharge
C- Admission and refer to surgeons for further assessment
D- Oral steroid therapy and discharge home

Q4: A 29-year-old anxious man is diagnosed with mild Crohn's disease. Due to time constraints, the patient was asked to come back for a follow-up appointment to discuss Crohn's disease in more detail. The patient returns with a list of complications he researched on the internet. Which of the following are not associated with Crohn's disease?

A- Cigarette smoking reduces incidence
B- Fistula formation
C- Abscess formation
D- Non-caseating granuloma formation

Q5: You read a report which was handwritten in a patient's medical notes who you suspect has inflammatory bowel disease. The report reads, '… there is cobblestoning of the terminal ileum with the appearance of rose thorn ulcers. These findings are suggestive of Crohn's disease'. Select the most likely investigation that this report was derived from?

A- Colonoscopy
B- Sigmoidoscopy
C- Barium follow through
D- Abdominal CT

Answers: Q1:B | Q2:A | Q3:B | Q4:A | Q5:C

Answers Explanation File!

GOOD LUCK !

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