

INFLAMMATORY BOWEL DISEASE

Inflammatory Bowel Disease



Crohn's disease

Ulcerative colitis

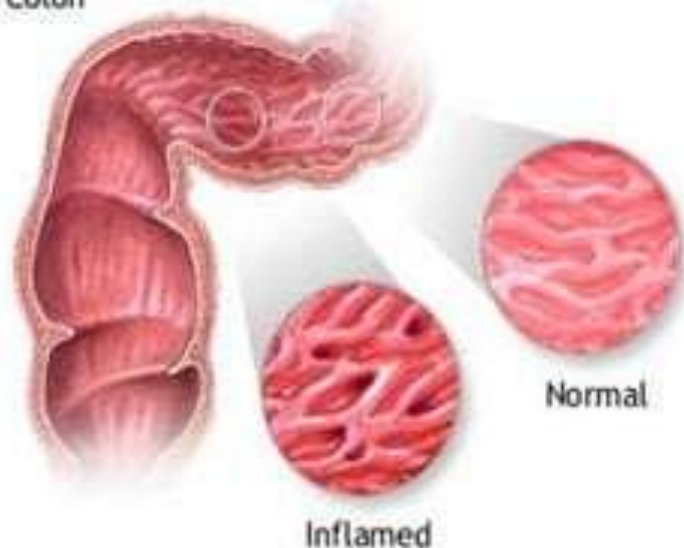
Ruchita Bhavsar

Introduction

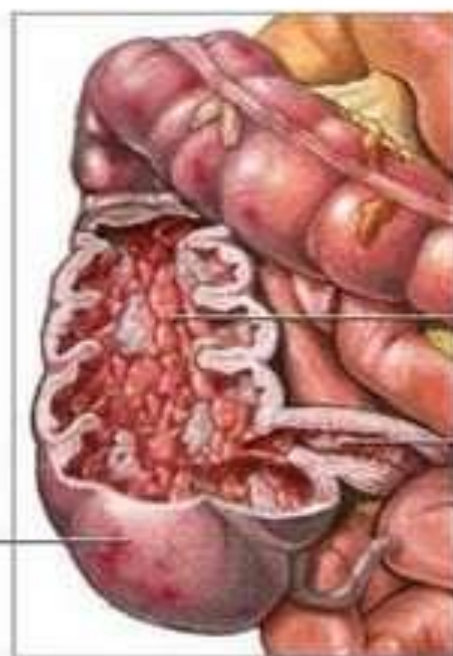
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- Inflammatory bowel disease (IBD) represents a group of intestinal disorders that cause prolonged inflammation of the digestive tract.
- It is a spectrum of chronic idiopathic inflammatory condition.

Colon



Cecum
portion of
large
intestine



Inflammatory
bowel
disease (IBD)

Ileum
portion
of small
intestine

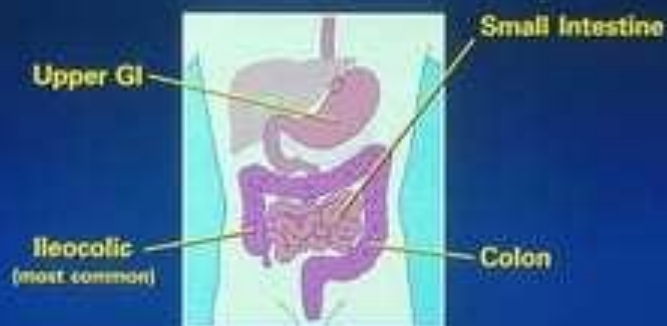
Classification

Ulcerative colitis: Ulcerative colitis is a disease that causes mucosal inflammation and sores (ulcers) in the lining of the large intestine (colon).

Chron's disease: Crohn's disease is a chronic, relapsing and remitting inflammatory disease of the gastrointestinal tract, affecting any site from mouth to anus.

Crohn's Disease

Distribution



Ulcerative Colitis

Colonic Complications

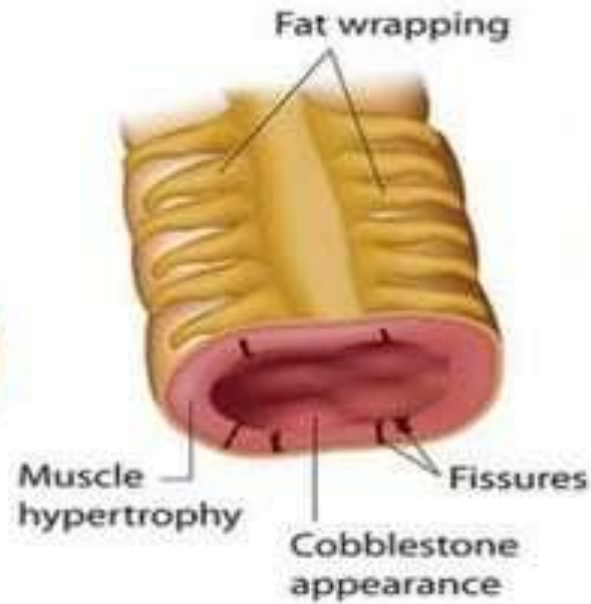


Inflammatory Bowel Disease

Healthy



Crohn's disease



Ulcerative colitis



Healthy Colon



Ulcerative Colitis



Crohn's Disease

Epidemiology

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- ❑ In the United States, it is currently estimated that about 1 –1.3 million people suffer from IBD.
- ❑ Ulcerative colitis is slightly more common in males, while Crohn's disease is more frequent in women.
- ❑ Diet, oral contraceptives, perinatal and childhood infections, or atypical mycobacterial infections have been suggested, but not proven, to play a role in developing IBD.

Prevalence (number of existing cases per 100,000 population)

Crohn's disease

26 to 199 cases per 100,000 persons²

201 per 100,000 adults¹

Ulcerative colitis

37 to 246 cases per 100,000 persons²

238 per 100,000 adults¹

Etiology

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Infectious agents

Viruses (Measles)

Bacteria (Mycobacteria)

Genetics

Environmental factors

Diet

Smoking

Psychological factors

Stress

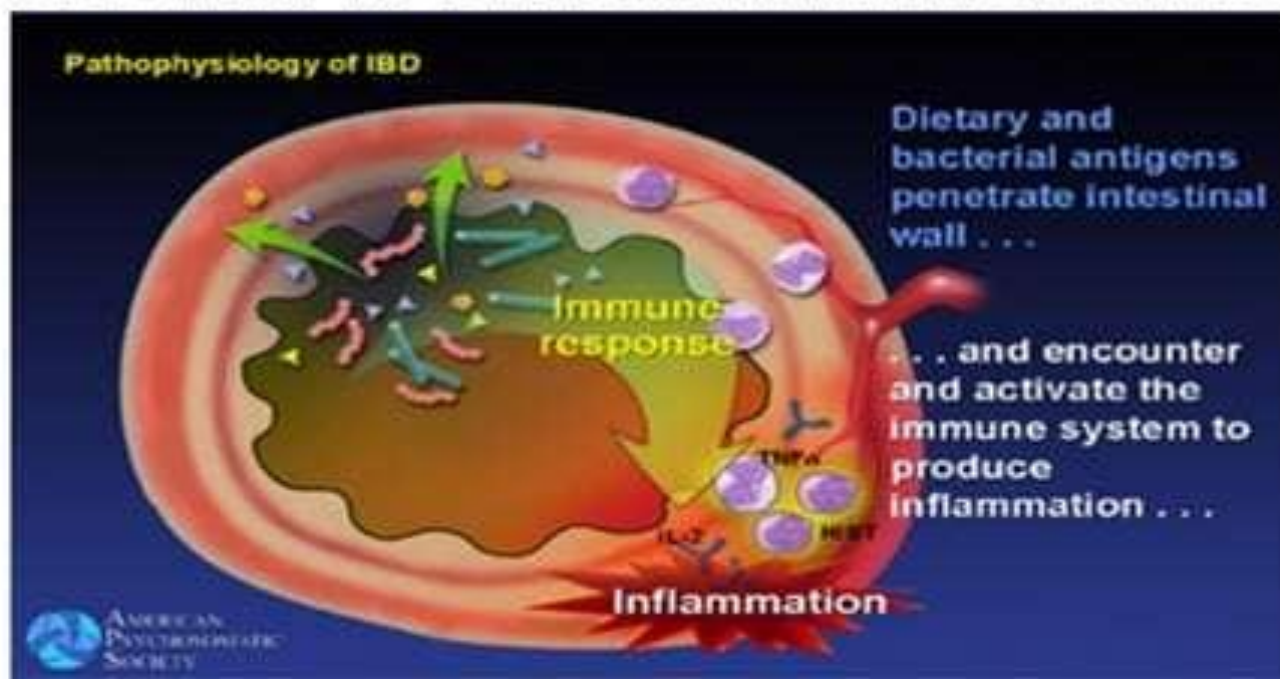
Emotional or physical trauma

Pathophysiology

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ALTERED MUCOSAL IMMUNE RESPONSE

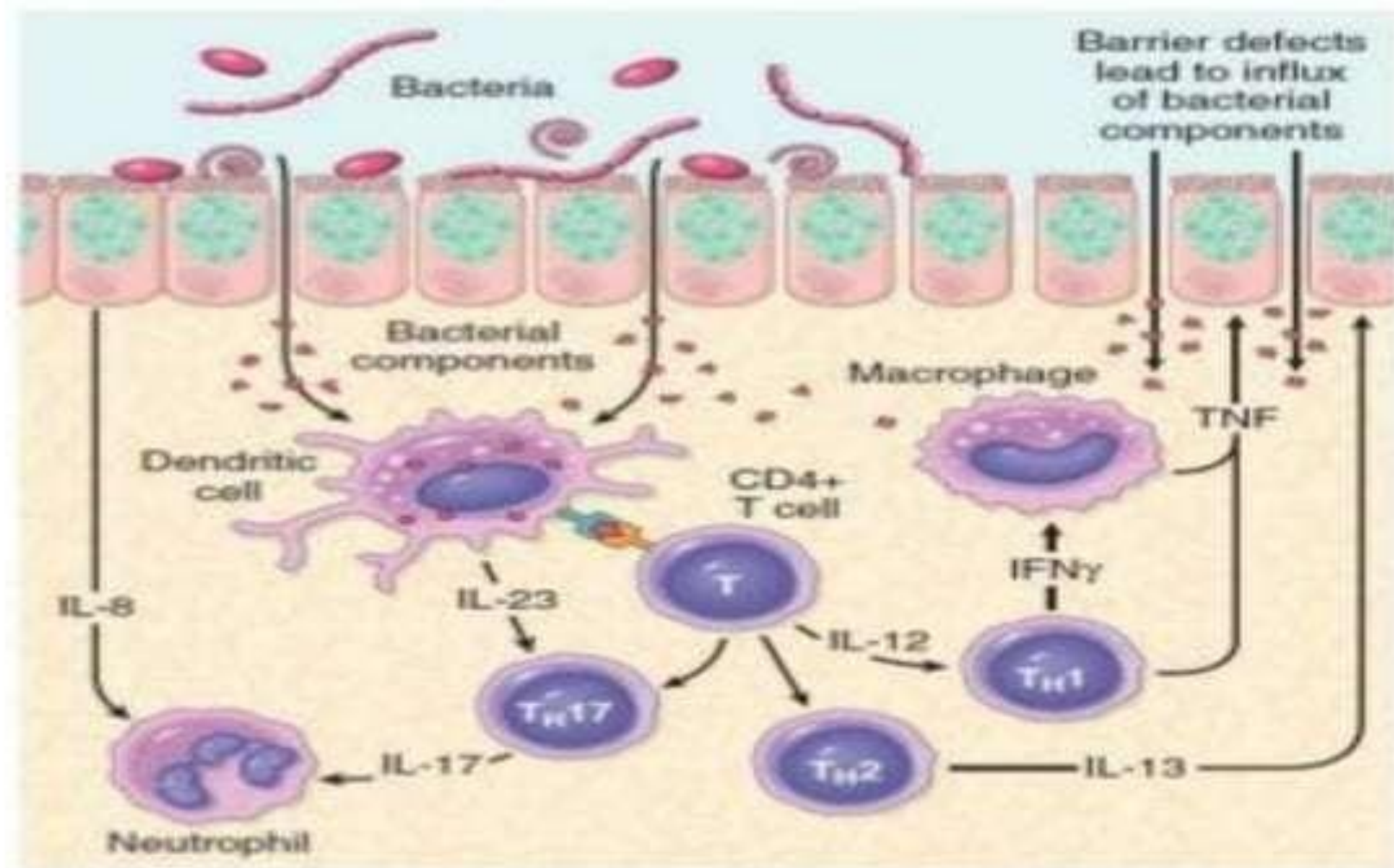
- Dietary and bacterial antigens penetrate into the intestinal wall and activates the immune system.
- This causes increased production of pro-inflammatory mediators which will lead to inflammation of the mucosal layer.



Pathophysiology

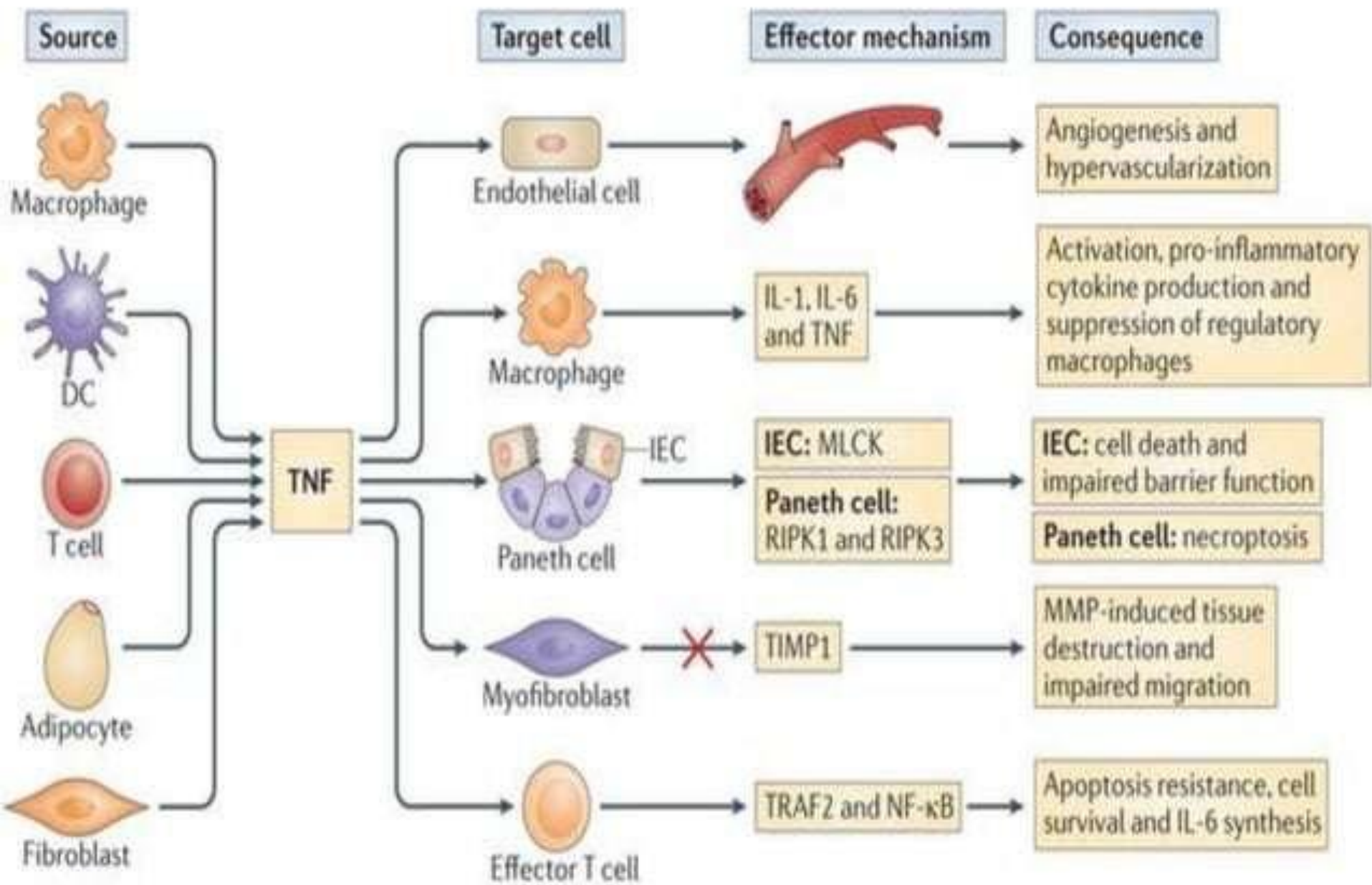
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EPITHELIAL DEFECTS



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- Variety of epithelial defects have been described in Crohn's disease and Ulcerative Colitis.
- Defects in epithelial cells will lead to influx of bacterial components such as dendritic cells and macrophages which activates CD+4 cells.
- Activated CD+4 cells activate other inflammatory cells like B-cells and variable T-cells or recruit more inflammatory cells by stimulation of homing receptor on leucocytes and vascular epithelium.
- Inflammation in IBD is maintained by an influx of leukocytes from the vascular system into sites of active disease. This influx is promoted by expression of adhesion molecules (such as α 4-integrins) on the surface of endothelial cells in the microvasculature in the area of inflammation.



Clinical Manifestations

Clinical symptoms are same in both case.

- ❑ Diarrhoea
- ❑ Abdominal pain, cramping & bloating due to bowel obstruction
- ❑ Hematochezia : Blood in stool
- ❑ Low fever
- ❑ Decreased appetite
- ❑ Weight loss and anorexia
- ❑ Fatigue
- ❑ Arthritis

Diagnosis

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- Physical Examination
- Endoscopy
- Biopsy
- Radiology
- Blood Test

Physical Examination

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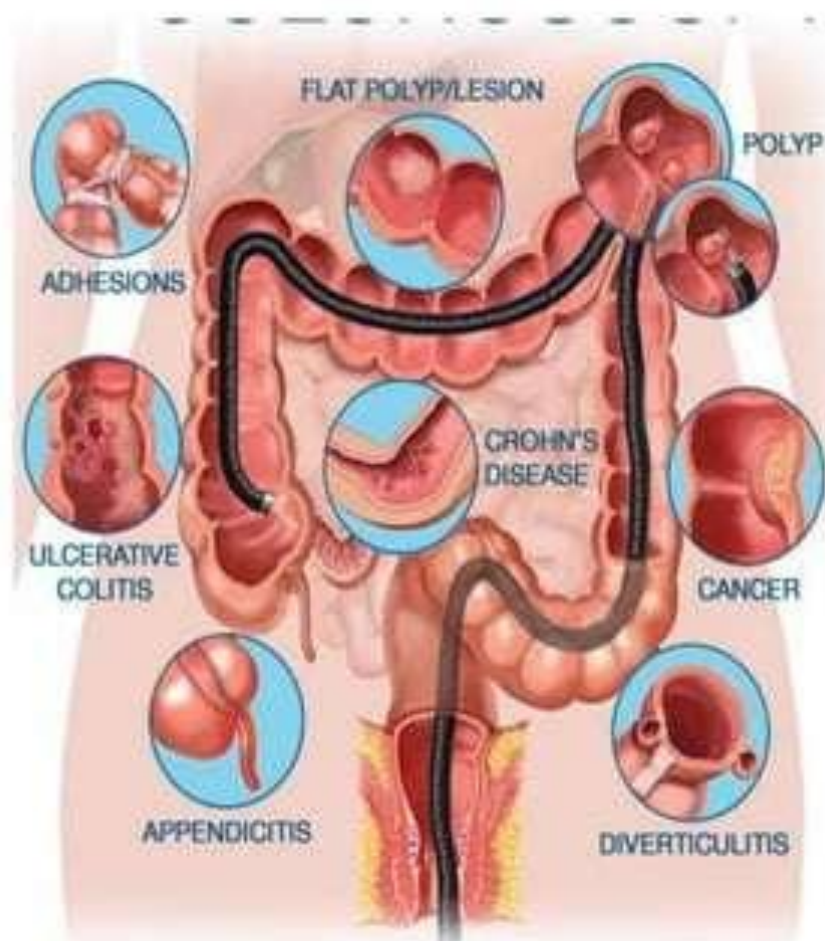
- The main features to look for are: oral aphthosis, abdominal tenderness and masses, anal tags, fissure and fistulae, nutritional deficiency.
- An important feature in children is growth retardation.



Endoscopy/ Colonoscopy/ Sigmoidoscopy

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- Colonoscopy helps to determine the pattern and severity of colonic and terminal ileum inflammation and allows biopsies to be obtained.
- Endoscopic features are aphthous ulcers, deeper ulceration, postinflammatory polyps (which indicate previous severe inflammation), but always accompanied by intervening normal mucosa, which is an important differential feature between CD and UC .



Biopsy

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- Rectal and colonic biopsies should be examined to find the nature of the inflammation (ulcerative colitis versus CD), collagenous colitis or microscopic inflammation if macroscopic appearance is normal, and infection.



Radiology

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Barium enema

- Barium inserted into rectum
- Fluoroscopy used to image bowel
- Rarely used due to colonoscopy
- Useful for identifying colonic strictures or colonic fistulae

Barium Small bowel follow-through X-ray

- Barium sulfate suspension drink
- Fluoroscopic images of bowel taken over time
- Useful for looking for inflammation and narrowing of small bowel

Blood Test

- Anemia may be present due to blood loss (iron deficiency), chronic inflammation or B12 malabsorption (macrocytic).
- Hypoalbuminemia suggests severe disease with denutrition. The best markers of inflammation severity are elevation of the C-reactive protein and platelet count.
- Anti-saccharomyces cerevisiae antibodies (ASCA) are positive in 50-60% of CD patients while anti-neutrophil polynuclear antibodies (ANCA) are positive in 50-60% of UC patients.

	Crohn's disease	Ulcerative colitis
Terminal ileum involvement	Commonly	Seldom
Colon involvement	Usually	Always
Rectum involvement	Seldom	Usually
Involvement around the anus	Common	Seldom
Bile duct involvement	No increase in rate of primary sclerosing cholangitis	Higher rate
Distribution of Disease	Patchy areas of inflammation (Skip lesions)	Continuous area of inflammation
Endoscopy	Deep geographic and serpiginous (snake-like) ulcers	Continuous ulcer
Depth of inflammation	May be transmural, deep into tissues	Shallow, mucosal
Fistulae	Common	Seldom
Stenosis	Common	Seldom
Autoimmune disease	Widely regarded as an autoimmune disease	No consensus
Cytokine response	Associated with T_H17	Vaguely associated with T_H2
Granulomas on biopsy	May have non-necrotizing non-peri-intestinal crypt granulomas	Non-peri-intestinal crypt granulomas not seen
Surgical cure	Often returns following removal of affected part	Usually cured by removal of colon
Smoking	Higher risk for smokers	Lower risk for smokers

Goals of Treatment

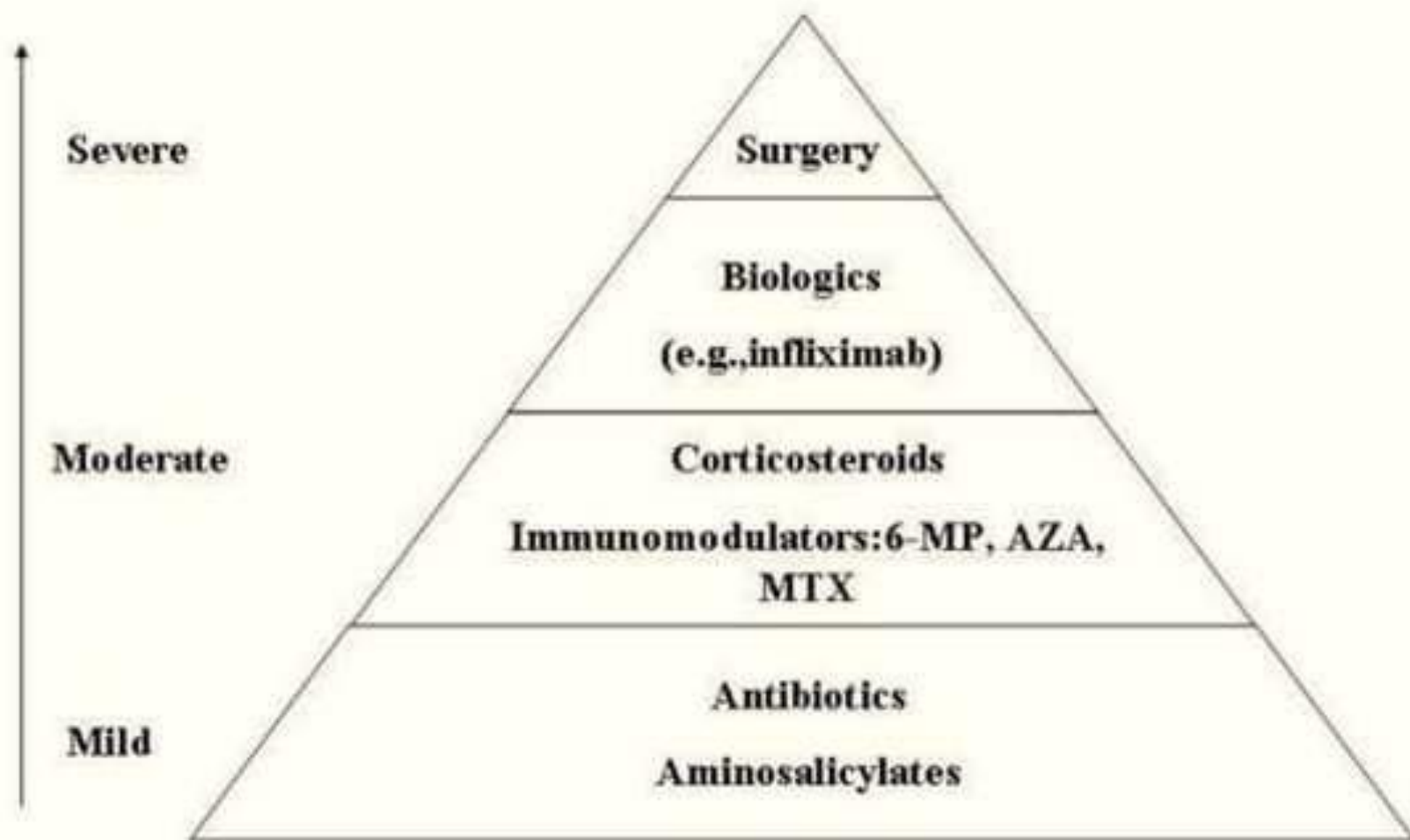
- ❑ Maintain or improve quality of life.
- ❑ Terminate the acute attack and induce clinical remission.
- ❑ Prevent symptoms during chronic symptomatic periods.
- ❑ Prevent or reduce complication.
- ❑ Use the most cost-effective drug treatment.
- ❑ Avoid surgery if possible.
- ❑ Replacement of vitamin A, D, K if necessary in case of malabsorption.

Non-Pharmacological Treatment

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- ❑ To avoid smoking cessation
- ❑ To reduce alcohol consumption
- ❑ To avoid the use of NSAIDs
- ❑ To avoid spicy and fried/oily food
- ❑ To take fiber rich diet as tolerated that include tender cooked vegetables, canned or cooked fruits, and starches like cooked cereals and whole wheat noodles and tortillas.
- ❑ To incorporate more omega-3 fatty acids in the diet. These fats may have an anti-inflammatory effect. They are found most probably in fish.

Inflammatory Bowel Disease: Treatment



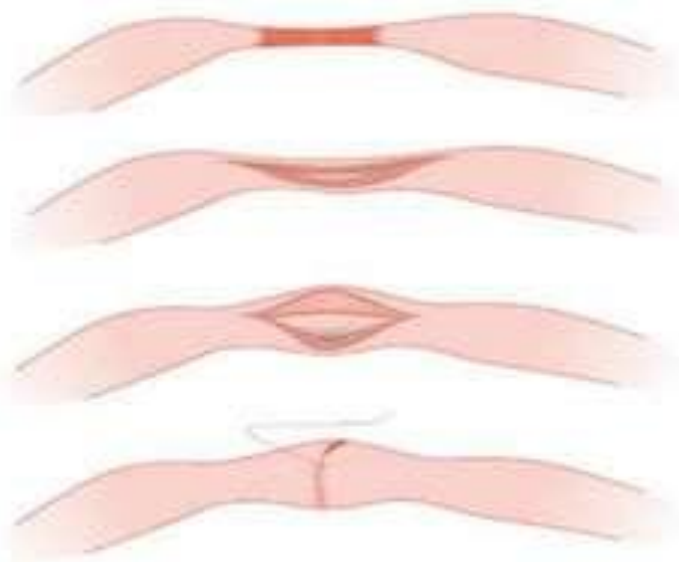
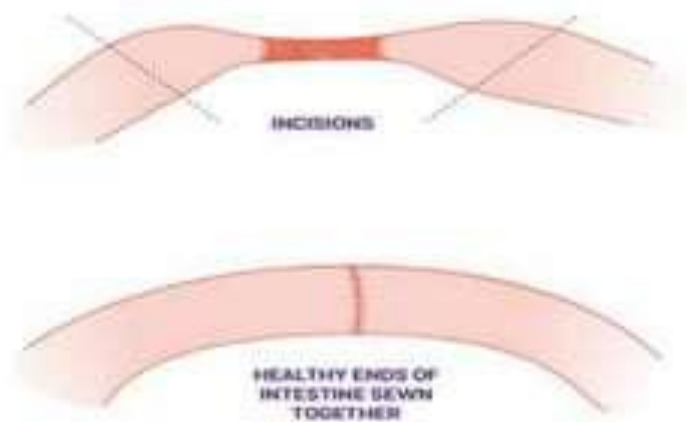
Surgery for Ulcerative Colitis

- ❑ **Proctocolectomy** (removing the colon and rectum) **with ileostomy**: If UC is severe, surgery may be required to remove the entire colon and rectum, plus bring the ileum (end of the small intestine) through a stoma (opening) in the abdominal wall to allow drainage of intestinal waste out of the body. The second part of the procedure is called ileostomy. After the procedure, an external bag must be worn over the opening to collect waste.
- ❑ **Restorative proctocolectomy**, also known as ileoanal pouch anal anastomosis (IPAA): It involves removing the colon and rectum, but the patient can continue to pass stool through the anus — in place of an ileostomy, the ileum is fashioned into a pouch and pulled down and connected to the anus.

Surgery for Crohn's Disease

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- ❑ **Strictureplasty:** If an area of the bowel narrows, this widens the area without removing any portion of the small intestine.
- ❑ **Resection** (removing portions of the intestines): This involves removing affected areas of the intestine, and then joining together the two ends of healthy intestine in a procedure called anastomosis.



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- ❑ **Surgery for abscesses and fistulas:** Sometimes abscesses (pus-filled mass) need to be removed surgically. And surgery may be required if a fistula (abnormal tract) is causing symptoms that don't respond to medication.
- ❑ **Colectomy** (removing the colon) or proctocolectomy (removing the colon and rectum): If only the colon is affected, a colectomy may be needed. But if the colon and rectum are affected, a proctocolectomy may be needed, along with ileostomy — bringing the ileum (end of the small intestine) through a stoma (opening) in the abdominal wall to allow drainage of intestinal waste out of the body. After the procedure, an external bag must be worn over the opening to collect waste.

Pharmacological Treatment

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The major types of drug therapy used in IBD include

- ❑ **Aminosalicylates**
- ❑ **Corticosteroids**
- ❑ **Immunosuppressive agents**
- ❑ **TNF – Tumor Necrosis Factor Inhibitor**
- ❑ **Antimicrobials**

Aminosalicylates / 5-ASA

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- These agents have anti-inflammatory effects. They are used to maintain remission and to induce remission of mild flares of disease.
- Egs., Sulfasalazine, Mesalamine
- Sulfasalazine and mesalamine are used to treat mild to moderate disease and to maintain remission induced by corticosteroids.
- Sulfasalazine is useful for ileocolonic and colonic disease.
- The side effects are hemolytic anemia & pruritic dermatitis.
- Pentasa is a recently developed sustained-release preparation (coated with ethylcellulose) that delivers 5-ASA to the distal ileum and colon.

Corticosteroids

- ❑ Corticosteroids (1 mg/kg/day) are effective in decreasing disease activity and inducing remission in most patients. However, due to undesirable side effects, long-term use of corticosteroids is not recommended.
- ❑ Oral or parenteral corticosteroids are indicated for the treatment of ambulatory patients with moderate to severe colitis whose symptoms cannot be controlled by aminosalicylates.
- ❑ The adverse effects include cosmetic effects, suppression of linear growth in children and osteopenia.
- ❑ Egs., Prednisolone, Budesonide

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- Ambulatory patients are usually treated with prednisolone.
- Budesonide, a potent steroid that undergoes extensive first-pass hepatic metabolism, is useful, but approximately one-third of patients experience adverse effects related to budesonide use.



Immunosuppressive Agents

- If it is impossible to taper corticosteroids or frequent relapses occur, immunomodulating therapy should be considered. However, the use of immunomodulators is not approved by the national health insurance scheme.
- Azathioprine and 6-mercaptopurine are used due to their steroid - sparing or steroid - reducing effects, since approximately 50% of patients experience adverse effects from corticosteroids.
- Due to delayed onset of action, these agents are not used to treat acute colitis.
- Cyclosporine and tacrolimus have been used to treat acute steroid-refractory UC when surgery seemed inevitable.



TNF Inhibitors

- Increased production of inflammatory cytokines, especially tumor necrosis factor alpha (TNF- α), has been described in both normal and inflamed mucosa.
- These agents prevent the endogenous cytokine from binding to the cell surface receptor and exerting biological activity. These agents adversely affect normal immune responses.
- Thalidomide, originally used for its sedative and antiemetic properties, has recently been shown to inhibit TNF- α production by monocytes and other cells.
- Infliximab is a chimeric mouse-human monoclonal antibody to TNF. It binds free and membrane-bound TNF and thus prevents the cytokine from binding to its cell surface receptor .

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- Golimumab is a human anti-TNF- α monoclonal antibody that blocks the inflammatory activity of TNF- α .
- Adalimumab is a recombinant human anti-TNF-alpha IgG1 monoclonal antibody that blocks the inflammatory activity of TNF- α . It specifically binds to TNF- α and blocks its interaction with p55 and p75 cell surface TNF receptors.



Antimicrobial Agents

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- Metronidazole and ciprofloxacin are useful in the treatment of mild to moderate disease, particularly in patients with perianal disease and infectious complications.
- Sensory neuropathy, which may be seen with long-term metronidazole use, usually resolves completely or improves after discontinuation of the drug.



THANK YOU

The image shows the words "THANK YOU" arranged on a corkboard. Each letter is cut from a different piece of paper and pinned with a pushpin. The letters are: 'T' (white paper, yellow pin), 'H' (yellow paper, green pin), 'A' (green paper, yellow pin), 'N' (light green paper, red pin), 'K' (white paper, red pin), 'Y' (white paper, yellow pin), 'O' (black paper, white pin), and 'U' (white paper, red pin).