

# Inflammatory Bowel Diseases

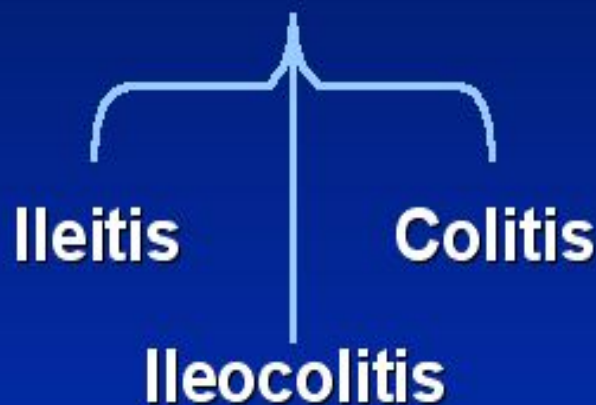
# Inflammatory Bowel Diseases

## Ulcerative Colitis

Mucosal ulceration in colon

## Crohn's Disease

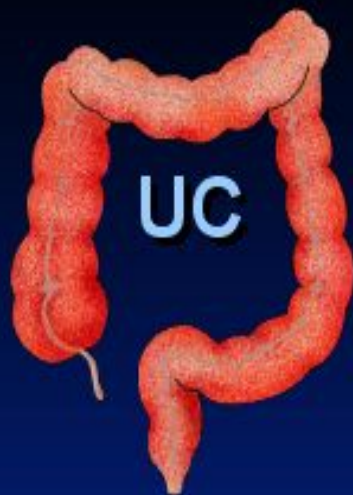
Transmural inflammation



## Other Colitides

- Microscopic colitis
- Diversion colitis
- Diverticular colitis
- Pouchitis





- Diffuse mucosal inflammation limited to colon
- Affects rectum
- May involve all or part of rest of colon



- Patchy transmural inflammation
- May affect any part of GI tract

## Epidemiology of IBD

	Ulcerative Colitis	Crohn's Disease
Incidence (North America) per person-years	2.2–14.3/100,000	3.1–14.6/100,000
Age of onset	15–30 & 60–80	15–30 & 60–80
Ethnicity	Jewish > Non-Jewish Caucasian > African American > Hispanic > Asian	
Male:female ratio	1:1	1.1–1.8:1
Smoking	May prevent disease	May cause disease
Oral contraceptives	No increased risk	Odds ratio 1.4
Appendectomy	Protective	Not protective
Monozygotic twins	6% concordance	58% concordance
Dizygotic twins	0% concordance	4% concordance

# Etiology and Pathogenesis

- Genetically predisposed individuals
- Chronic activation of the mucosal immune system may represent an appropriate response to an unidentified infectious agent
- Inappropriate response to the endogenous microbial flora within the intestine, with or without some component of autoimmunity

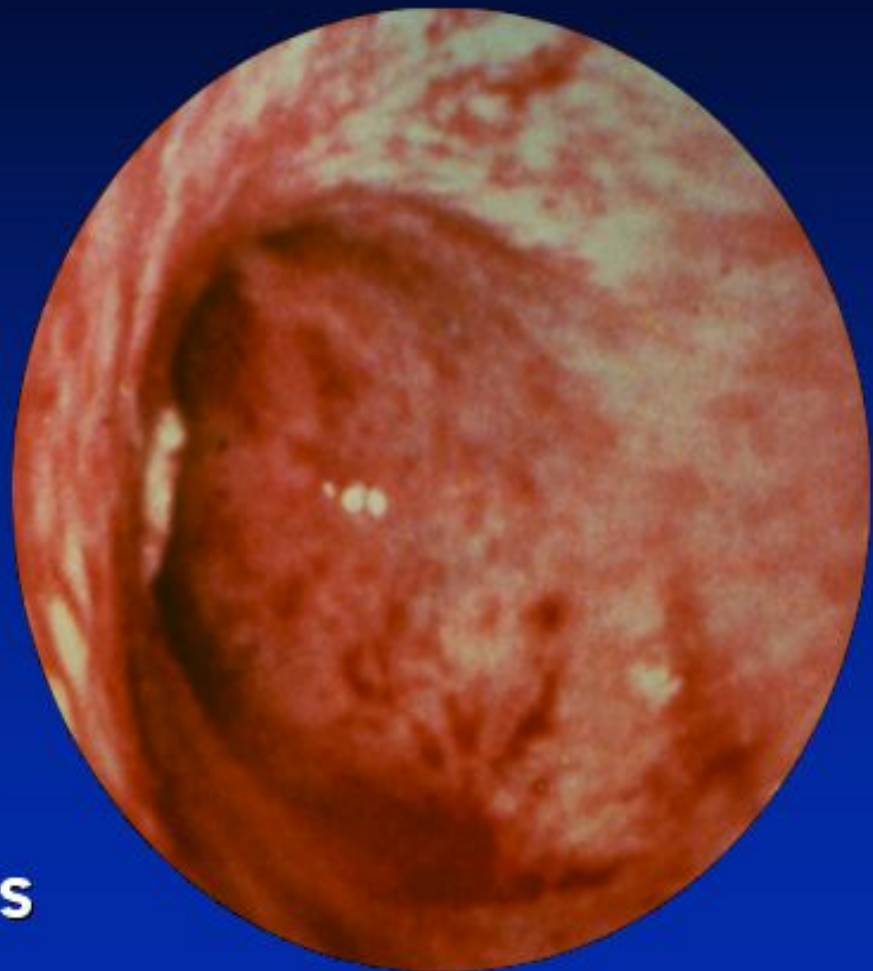
# Genetic Considerations

- ***CARD15***

- senses bacterial muramyl dipeptide and regulates intracellular signaling
- expressed by intestinal epithelial cells, including Paneth cells, monocytes, macrophages, and dendritic cells
- Loss-of-function mutations in *CARD15* are highly associated with CD
- decreased intestinal antimicrobial activity by diminishing defensin production by Paneth cells
- excess NF- $\kappa$ B activation

# Colitis

- Ulcerative colitis
- Crohn's disease
- Radiation
- Ischemia
- Infections
- Antibiotics
- NSAIDs
- Diversion colitis
- Diverticular colitis



## IBD - Differential Diagnosis

### Acute Infections

### IBD

**Duration symptoms**

**<2 weeks**

**>4 weeks**

**Onset of symptoms**

**abrupt**

**insidious**

**Platelets**

**normal**

**>450,000**

**Hct**

**normal**

**low**

**Biopsy**

**neutrophils  
predominate**

**mixed infiltrate,  
abnormal crypt  
architecture,  
↑ lymphoid  
aggregates,  
basal plasmacytosis**



## IBD - Differential Diagnosis



### Clinical features

Anemia, ↑platelets,  
↑sed. rate, ↓albumin

+

—

Weight loss, fever

+

—

Perianal disease

+

—

Bloody stools, tenesmus

+

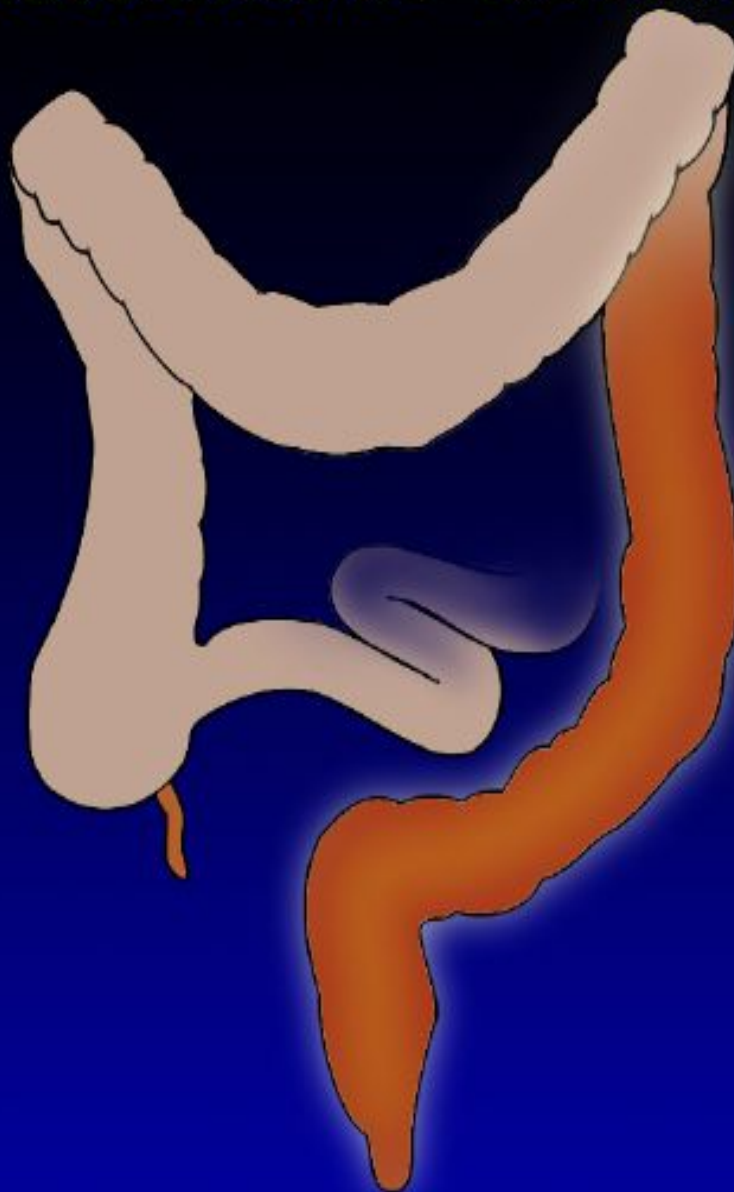
—

Fecal WBC, occult blood

+

—

# Ulcerative Colitis



- Colon only
- Mucosal inflammation
- Continuous distribution
- Rectal involvement

# Pathology

- **Ulcerative Colitis: Macroscopic Features**

- mucosal disease that usually involves the rectum and extends proximally to involve all or part of the colon
- 40–50%-rectum and rectosigmoid, 30–40%- extending beyond the sigmoid, 20%- total colitis
- Proximal spread occurs in continuity without areas of uninvolved mucosa
- terminal ileum (1-2 cm) in 10–20% of patients- *backwash ileitis*
- biopsies from normal-appearing mucosa are usually abnormal
- mucosa is erythematous, hemorrhagic, edematous, and ulcerated
- inflammatory polyps (pseudopolyps) may be present as a result of epithelial regeneration
- mucosa may appear normal in remission
- In prolonged disease mucosa is atrophic and featureless and the entire colon becomes narrowed and shortened

# UC Physical findings

- Abdomen: tenderness and distension, but can be normal
- Extra colonic: arthritis, skin changes liver disease
- Usually normal perineum

# UC Laboratory findings

- No specific findings
- ESR ↑, CRP ↑, anemia (chronic disease, Fe↓), WBC ↑  
K ↓, Albumin ↓(protein loosing)  
Disturbed LFT

# UC Clinical Features

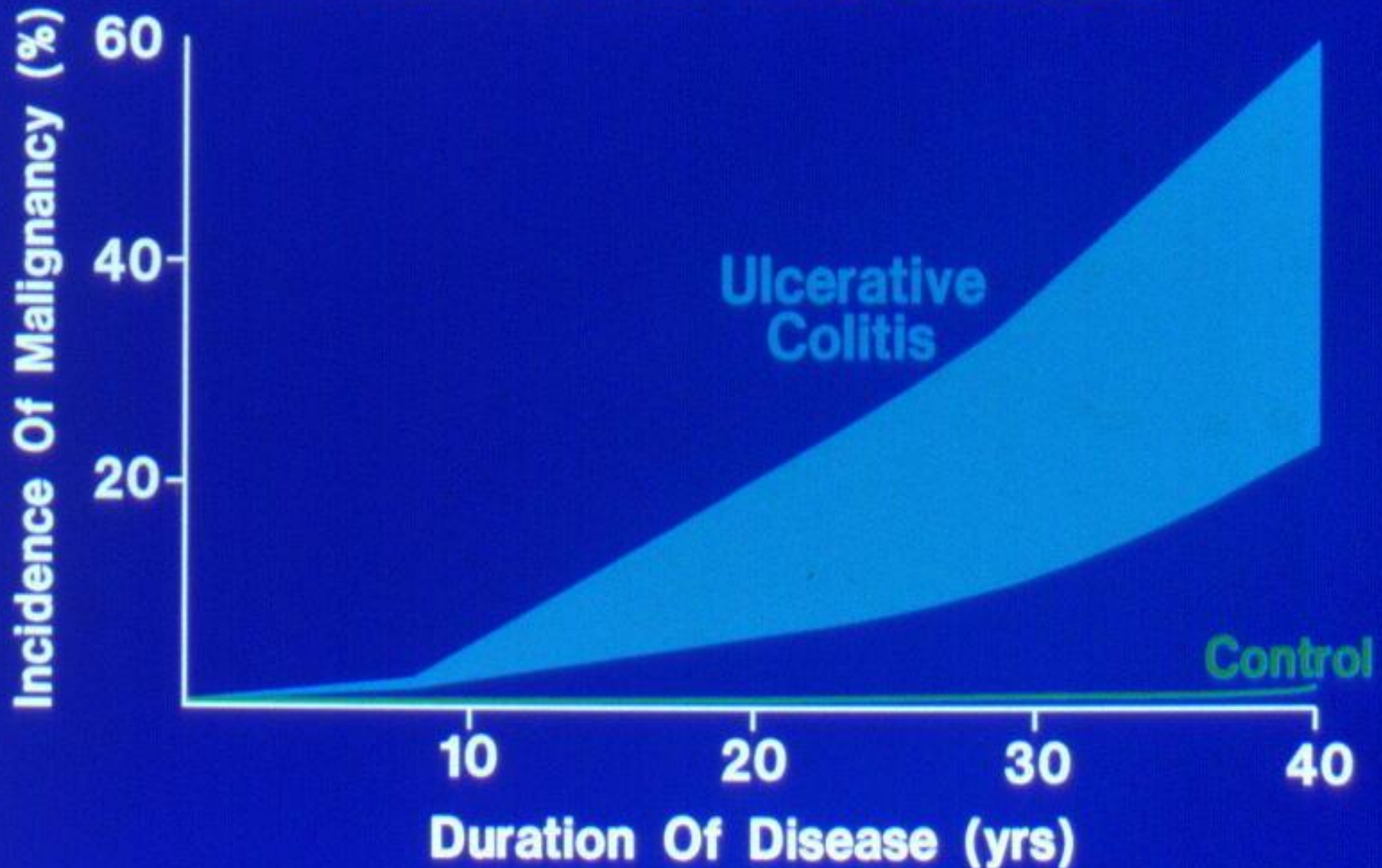
- Relapsing disease (~ 80% 1yr)
- Symptoms usually parallel disease extent  
(More disease→more systemic signs & need for operation)
- Proctitis may be hard to treat and cause blood loss and disturbing tenesmus
- Disease may extent more proximally with follow up  
(~40% in proctitis, ~ 10% in left sided)

# UC- Complications

- Bleeding
- Perforation
- Toxicity
- Cancer

# Colorectal Cancer In Ulcerative Colitis

## CUMULATIVE INCIDENCE



# Crohn's disease (CD)

- Transmural disease, symptoms depend on site of involvement and complications
- Abdominal pain, diarrhea (usually not bloody), weight loss, fever
- Mouth to anus

# Anatomic Distribution

Freq. of involvement  
most ————— least

Small bowel alone 33%

Ileocolic 45%

Colon alone 20%

Terminal ileum is involved in 75%



# CD Small bowel

- Abdominal pain (mainly RLQ), may be constant and dull, may be colicky (obstruction)
- Diarrhea
- Vomiting (obstruction)
- Weight loss, fatigue, fever
- Acute presentation may resemble appendicitis
- May present as FUO or chronic subtle disease

# CD Colon

- Colon: diarrhea, less rectal bleeding (less colon & rectum involved), **characteristic rectal sparing.**
- Perianal involvement: fissures, fistulas, perirectal abscess

# CD Perianal Disease

- Fissures
- Fistulas
- Perirectal abscess

# CD Pathology

## Macroscopic Features

- terminal ileum is involved in 75%
- the rectum is often spared in CD
- CD is segmental with skip areas
- Perirectal fistulas, fissures, abscesses, and anal stenosis are present in one-third of patients with CD, particularly those with colonic involvement
- serosal and mesenteric inflammation promotes adhesions and fistula formation
- "creeping fat"

# Vienna Classification of CD

*Consensus of International Working Party,  
World Congresses of Gastroenterology 1998*

## One Choice Each Category

- A**<sub>ge at diagnosis</sub> { 1 <40 years  
2 ≥40 years
- L**<sub>ocation</sub> { 1 Terminal ileum  
2 Colon  
3 Ileocolon  
4 Upper GI
- B**<sub>ehavior</sub> { 1 Non-stricturing, non-penetrating  
2 Stricturing  
3 Penetrating



## CD - Clinical Patterns

**Inflammation**



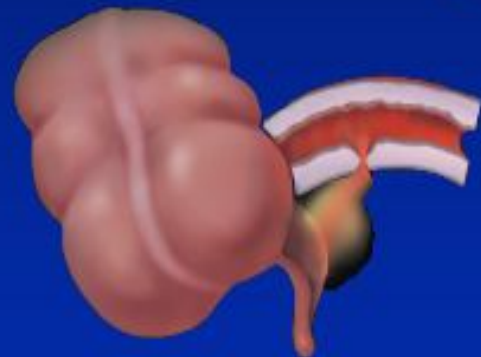
**Fistulization**



**Obstruction**



**Microperforation**  
(appendicitis-like)



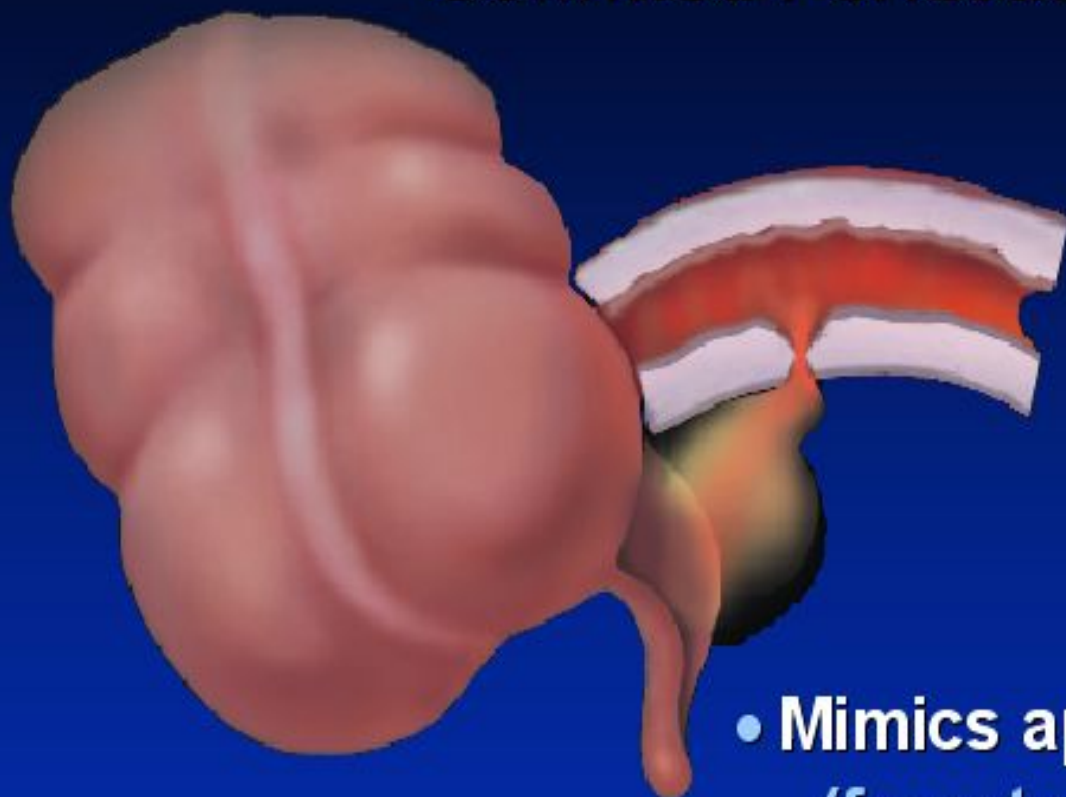
## CD - Clinical Patterns

### Fistulization



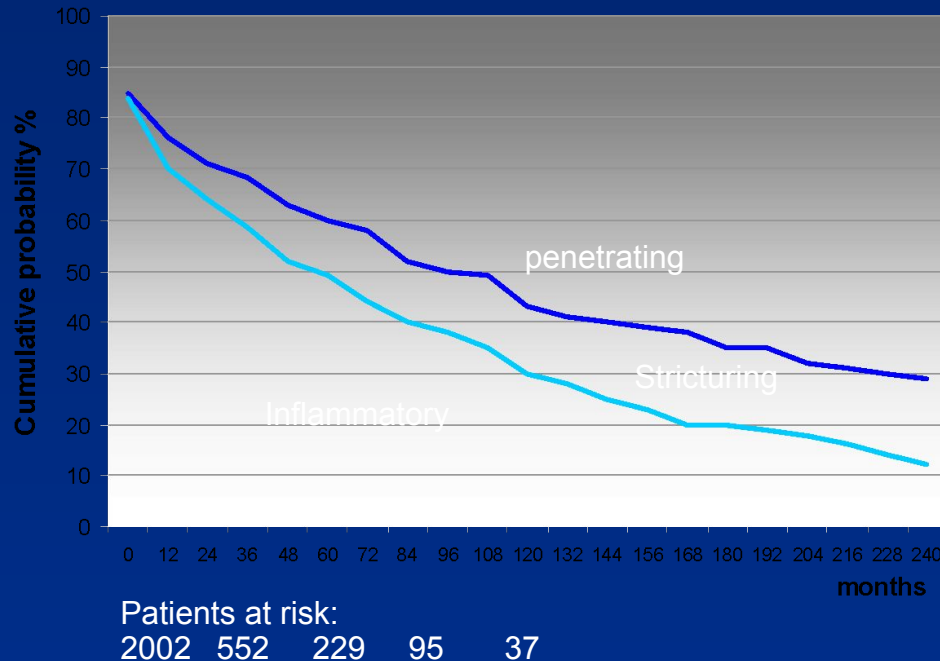
- **Enteroenteric**  
May be asymptomatic
- **Enterovesical**  
Recurrent UTIs,  
pneumaturia
- **Retroperitoneal**  
Psoas abscess signs:  
back, hip, and thigh pain;  
limp
- **Enterocutaneous**  
Drainage via scar
- **Perianal**  
Pain, drainage
- **Rectovaginal**  
Drainage: feces and/or air

## **Confined Perforation**



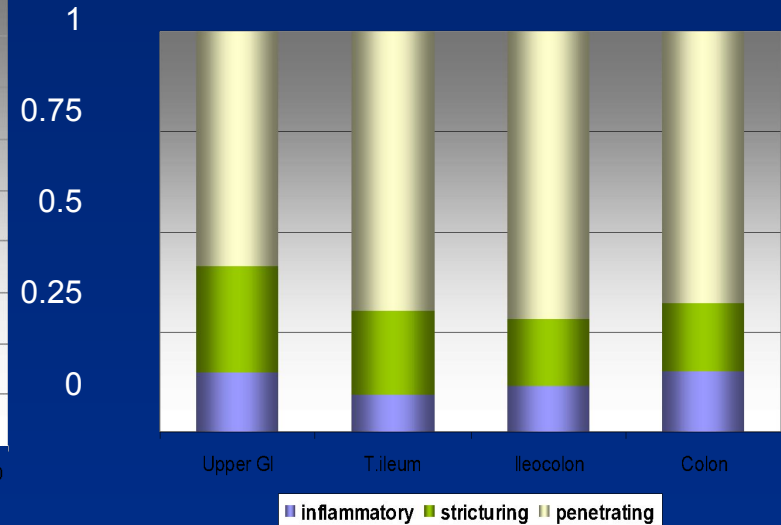
- **Mimics appendicitis**  
(from terminal ileum)
- **Mimics diverticulitis**  
(from sigmoid colon)

# Natural history of CD accumulation of disease complications



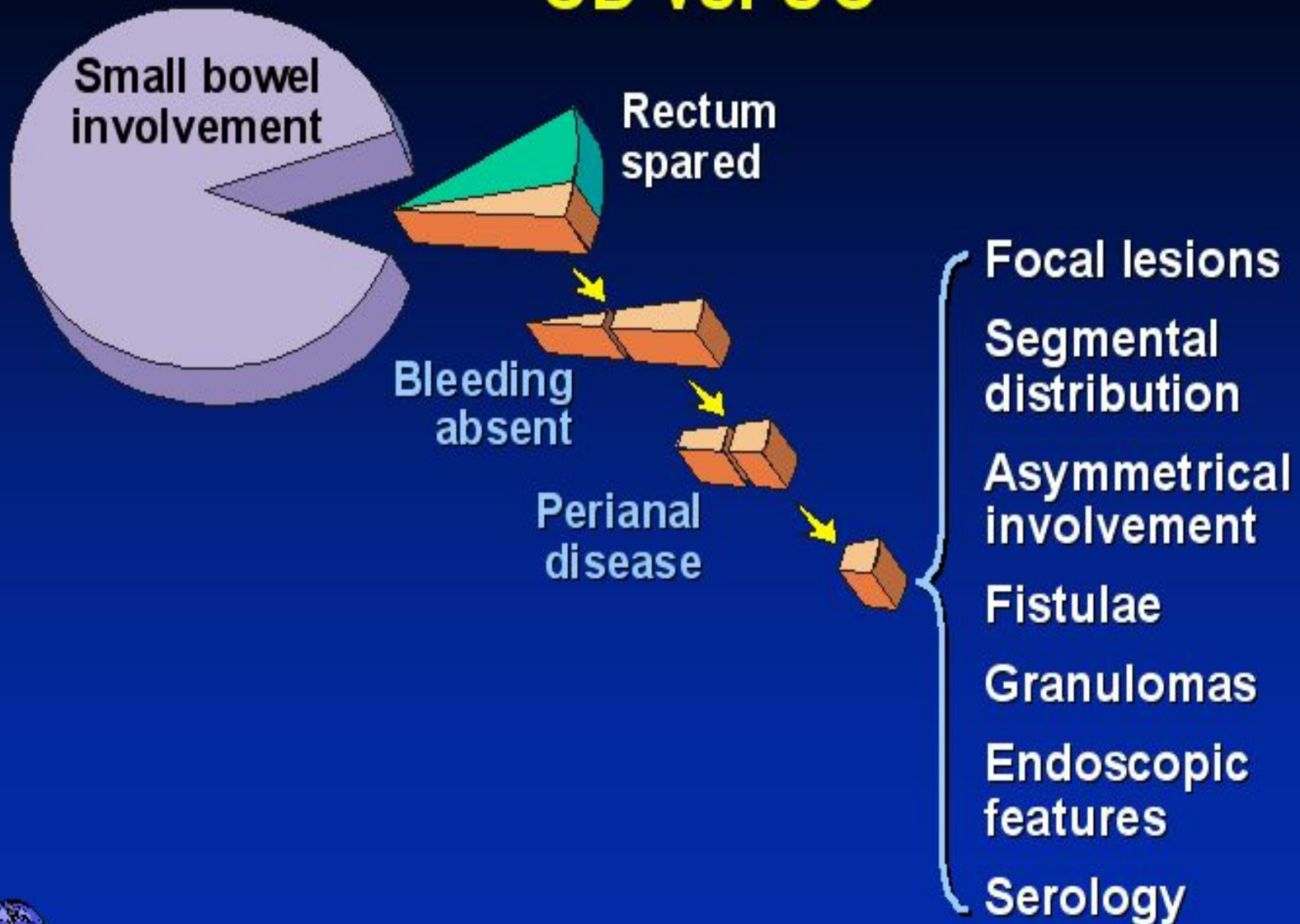
Kaplan-Meier estimates of remaining free of complications in 2,002 patients with Crohn's disease since onset of the disease.

2065 pts  
Follow up 1974-2000



Kaplan-Meier 20-year cumulative incidence of strictureing and penetrating complication

# CD vs. UC



# Extraintestinal Manifestations

- Arthritis
  - Peripheral -dependent on disease activity
  - Axial-independent of disease activity
- Ocular
  - episcleritis, uveitis
- Skin
  - erythema nodosum
  - pyoderma gangrenosum
- Liver
  - PSC

# Extra-intestinal manifestations, co-morbidities and complications of CD



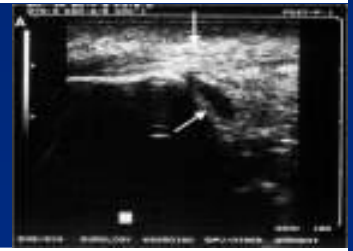
Uveitis<sup>1</sup>



Pyoderma gangrenosum<sup>2,3</sup>



Psoriasis<sup>4</sup>



Spondyloarthropathy<sup>5</sup>

# Extraintestinal Manifestations Rheumatologic

## Peripheral arthritis- 15–20% of IBD patients

- more common in CD
- worsens with exacerbations of bowel activity
- asymmetric, polyarticular, and migratory and most often affects large joints of the upper and lower extremities
- In severe UC, colectomy frequently cures the arthritis

## Ankylosing spondylitis

- more common in CD than UC
- HLA-B27 antigen
- AS activity is not related to bowel activity

# Extraintestinal Manifestations Rheumatologic

## Sacroilitis

- Symmetric
- equally in UC and CD
- often asymptomatic
- does not correlate with bowel activity
- does not always progress to AS

# Extraintestinal manifestations - Skin

## **Pyoderma gangrenosum- more in UC patients**

- may occur years before the onset of bowel symptoms
- independent of the bowel disease
- respond poorly to colectomy
- very difficult to treat and often require intravenous antibiotics, intravenous glucocorticoids, dapsone, azathioprine, thalidomide, intravenous cyclosporine, or infliximab



# Extraintestinal Manifestations - Skin

- **Erythema nodosum** (15% of CD patients and 10% of UC patients)
  - correlate with bowel activity
  - concomitant active peripheral arthritis
- Perianal skin tags are found in 75–80% of patients with CD
- Aphthous stomatitis and "cobblestone" lesions of the buccal mucosa
- Metastatic CD- cutaneous granuloma formation

Erythema nodosum



# Extraintestinal Manifestations

- **Ocular:**
  - The most common are conjunctivitis, anterior uveitis/iritis, and episcleritis
  - Uveitis is associated with both UC and Crohn's colitis
  - Prompt intervention, sometimes with systemic glucocorticoids, is required to prevent scarring and visual impairment
- **Hepatobiliary**
  - Fatty liver
  - Cholelithiasis is more common in CD than UC
  - PSC- 1–5% of patients with IBD have PSC, but 50–75% of patients with PSC have IBD
    - fatigue, jaundice, abdominal pain, fever, anorexia, and malaise
    - Ds: ERCP or MRCP
    - cholangiocarcinoma
    - increased risk of colon cancer
    - ursodeoxycholic acid (ursodiol)

# Extraintestinal Manifestations

- **Urologic**

- calculi, ureteral obstruction, and fistulas
- nephrolithiasis (10–20%) occurs in patients with CD
  - hyperoxaluria

- **Metabolic Bone Disorders**

- Low bone mass
  - risk is increased by glucocorticoids, cyclosporine, methotrexate and total parenteral nutrition (TPN)
  - Malabsorption and inflammation mediated by IL-1, IL-6, and TNF
- Osteonecrosis
  - bone scan or MRI
  - within 6 months of starting glucocorticoids

# Extraintestinal Manifestations

- **Thromboembolic Disorders**

- increased risk of both venous and arterial thrombosis

- **Other Disorders**

- cardiopulmonary manifestations: endocarditis, myocarditis,  
pleuropericarditis
- interstitial lung disease
- amyloidosis

# Diagnosis

- History
  - How long?
  - How bad: no. of stools? Blood?
- Signs of rectal involvement (urgency, frequency incomplete evacuation)
- Pain (nature, awakes at night, location, relation to defecation)
- Additional inflammatory signs: fever, weight loss (anorexia, diarrhea, sitophobia)
- Additional signs of complications: arthritis, rashes, ulcers, perineal diseases

# Diagnosis

- Laboratory tests- non specific and reflect disease severity & involvement
- Anemia- normocytic normochromic (chronic disease), Iron ↓, B12 ↓ (CD of TI, BOG), FA ↓ (malabsorption due to disease involvement)
- Electrolytes- K ↓, Ca ↓, Mg ↓, Zn ↓
- Albumin ↓ (malabsorption, protein losing)

# Diagnosis

- Stool: Steatorrhea (mild), WBC in stool, Increased calprotectin
- Disturbed Liver function tests  
(Alk. P- PSC, TA- inflammation)

# Diagnosis

- Determine anatomic involvement
- Determine nature of involvement  
(UC Vs CD Vs others)

# Diagnosis

- Endoscopic examinations:  
Rectosigmoidoscopy- rectum? Mucosal morphology?  
(ulcer type, skip areas)  
Colonoscopy- Same + disease extent + terminal ileoscopy
- Pathologic examination: biopsies  
(granulomas in 10-25 % of cases), other features less specific

## UC - Spectrum of Disease

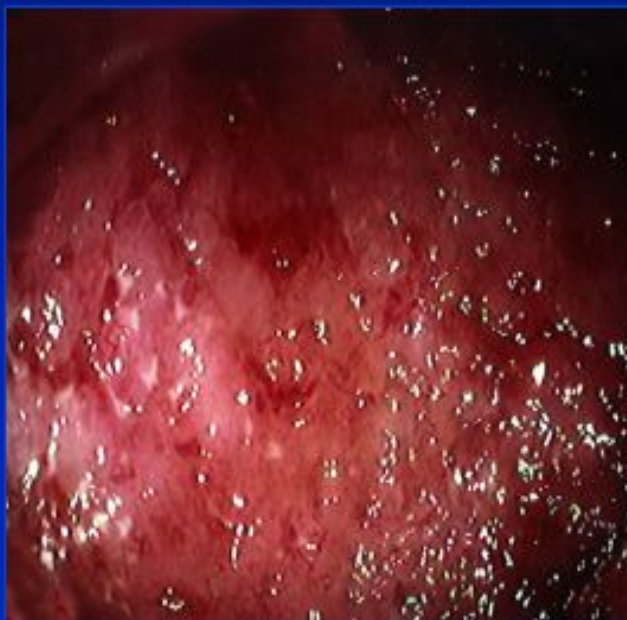
**Normal**



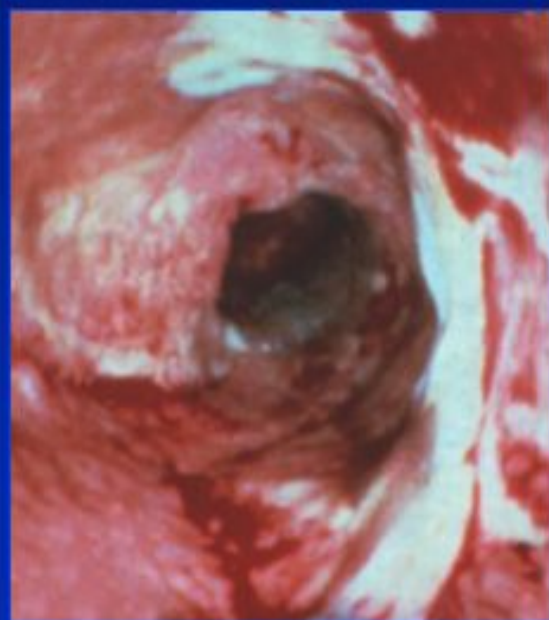
**Mild**



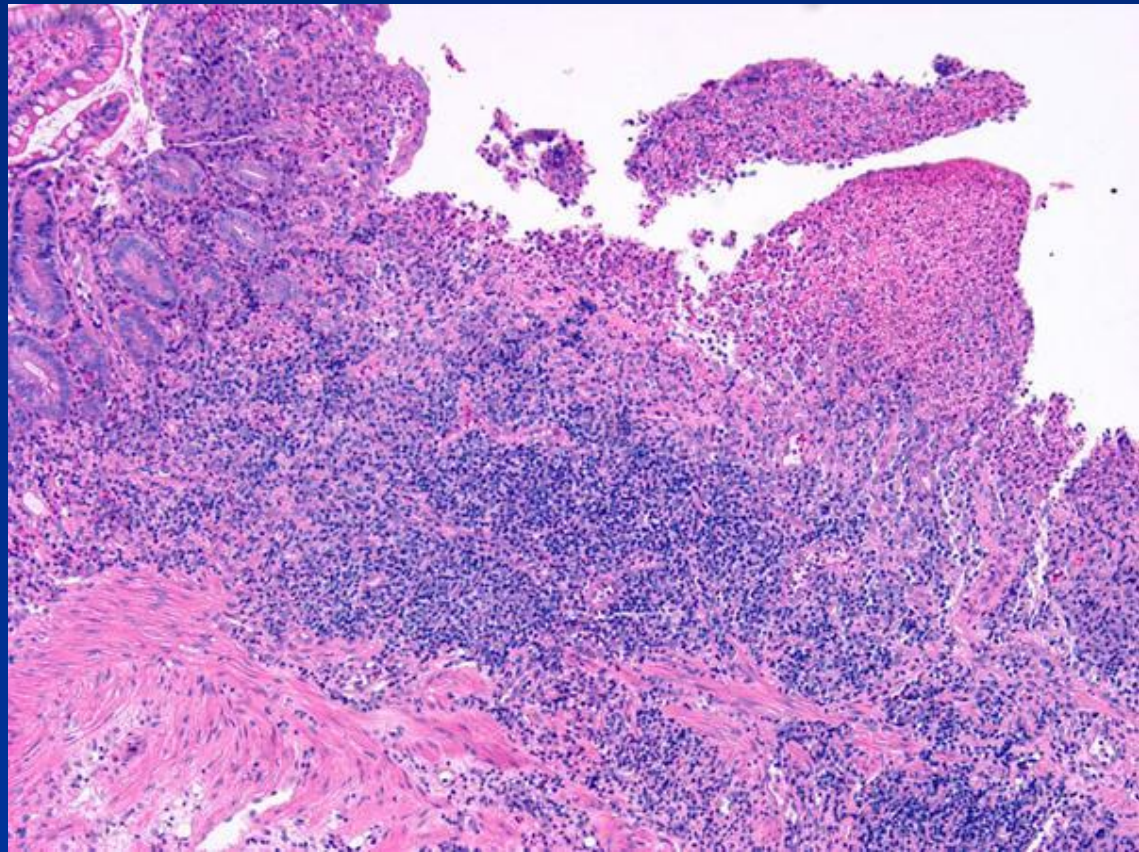
**Moderate**



**Severe**



- Tissue inflammatory infiltration by lymphocytes, plasma cells, and neutrophils with large lymphoid aggregates
- Cryptitis and crypt abscesses
- The lymphoid aggregates in the mucosa and submucosa, (could be located throughout the bowel wall)



**CD**



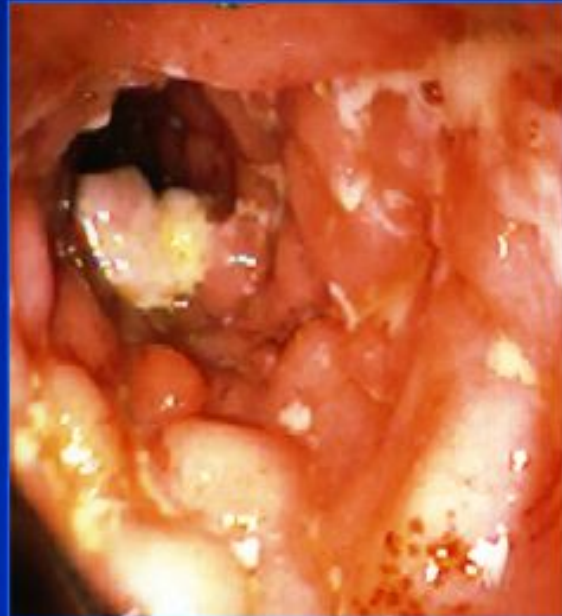
*aphthae*



*stellate ulcer*



*longitudinal ulcer*

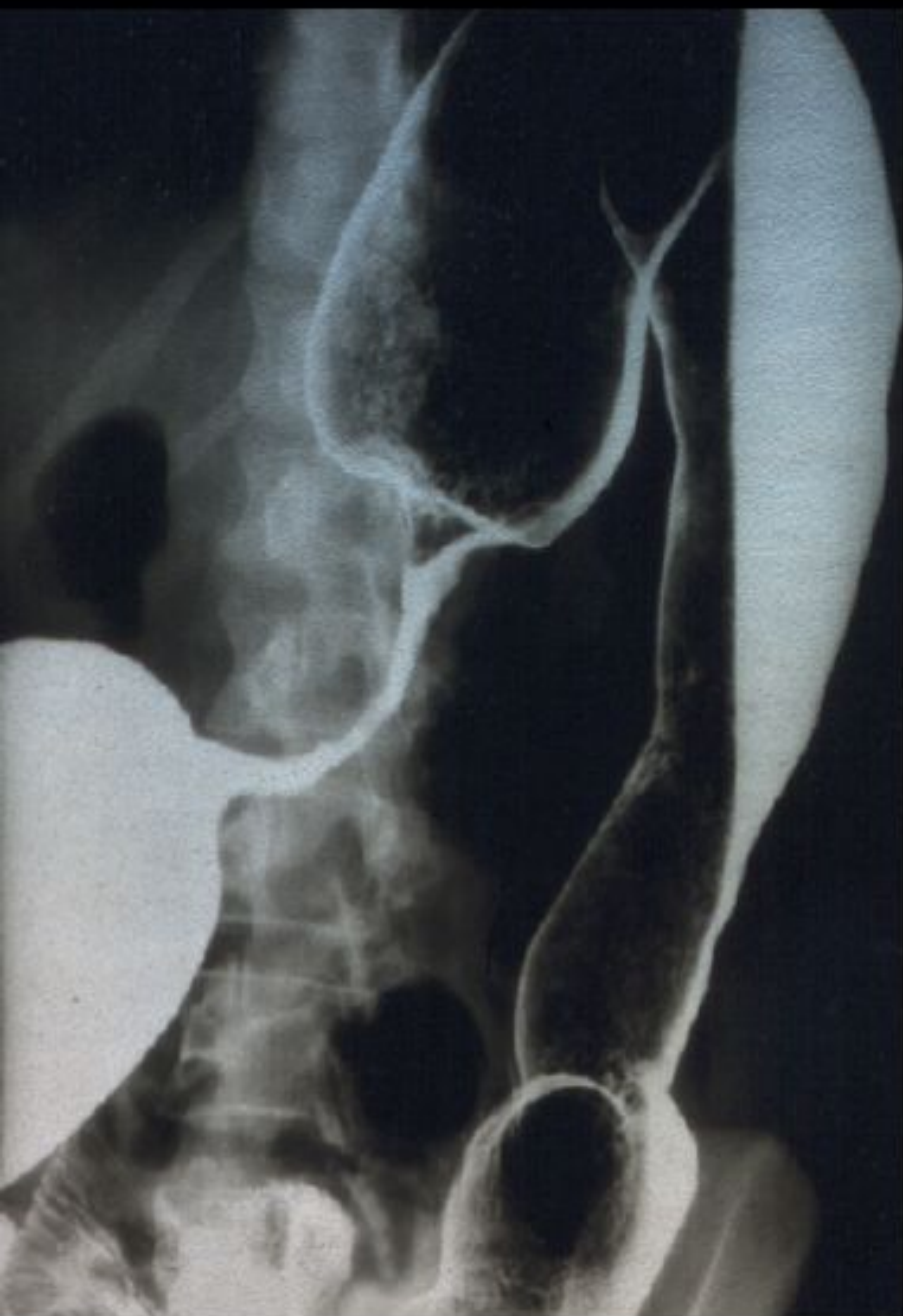


*Macroulcerations and pseudopolyps*

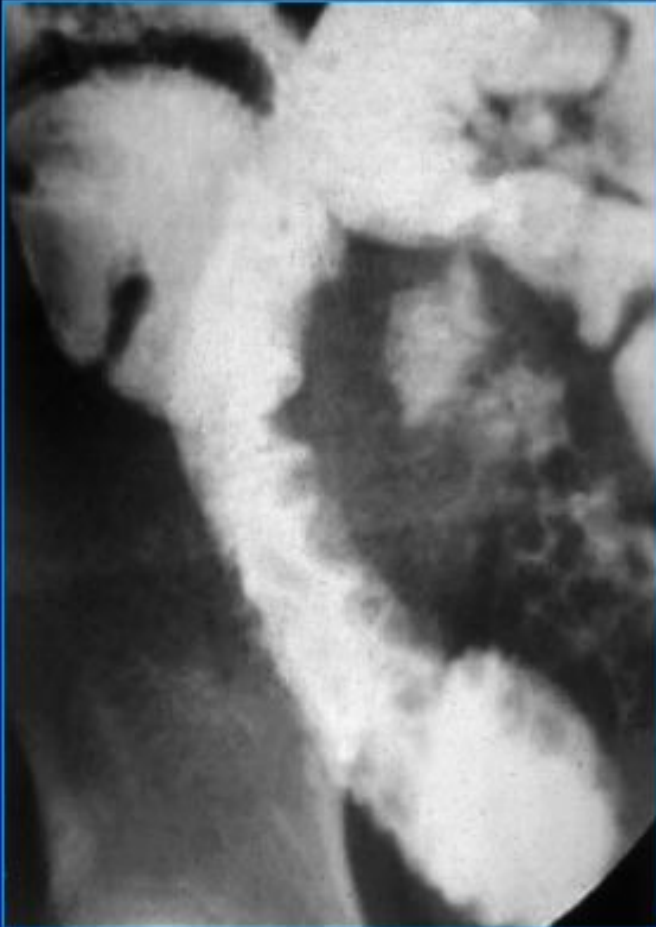


# Diagnosis Radiology

- Barium enema:  
fistula, sinus tract, stricturing (not used today)
- Small bowel follow through- small bowel anatomy and involvement, strictures, fistula (rarely used today)



# CD



marked edema and  
nodularity in addition  
to ulceration



narrowing and spasm



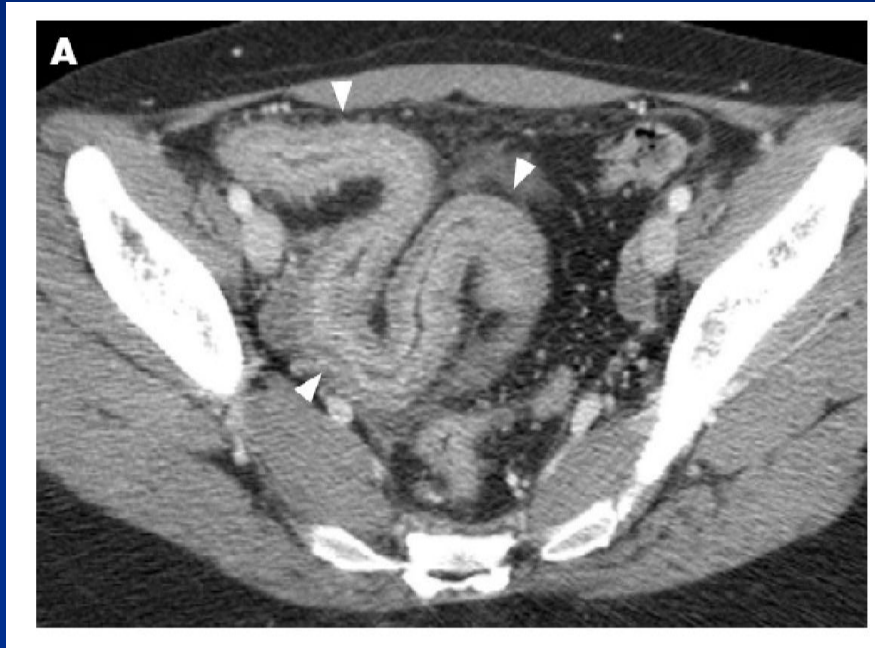
deeper ulceration+  
mesenteric sinus  
tract formation



# Diagnosis

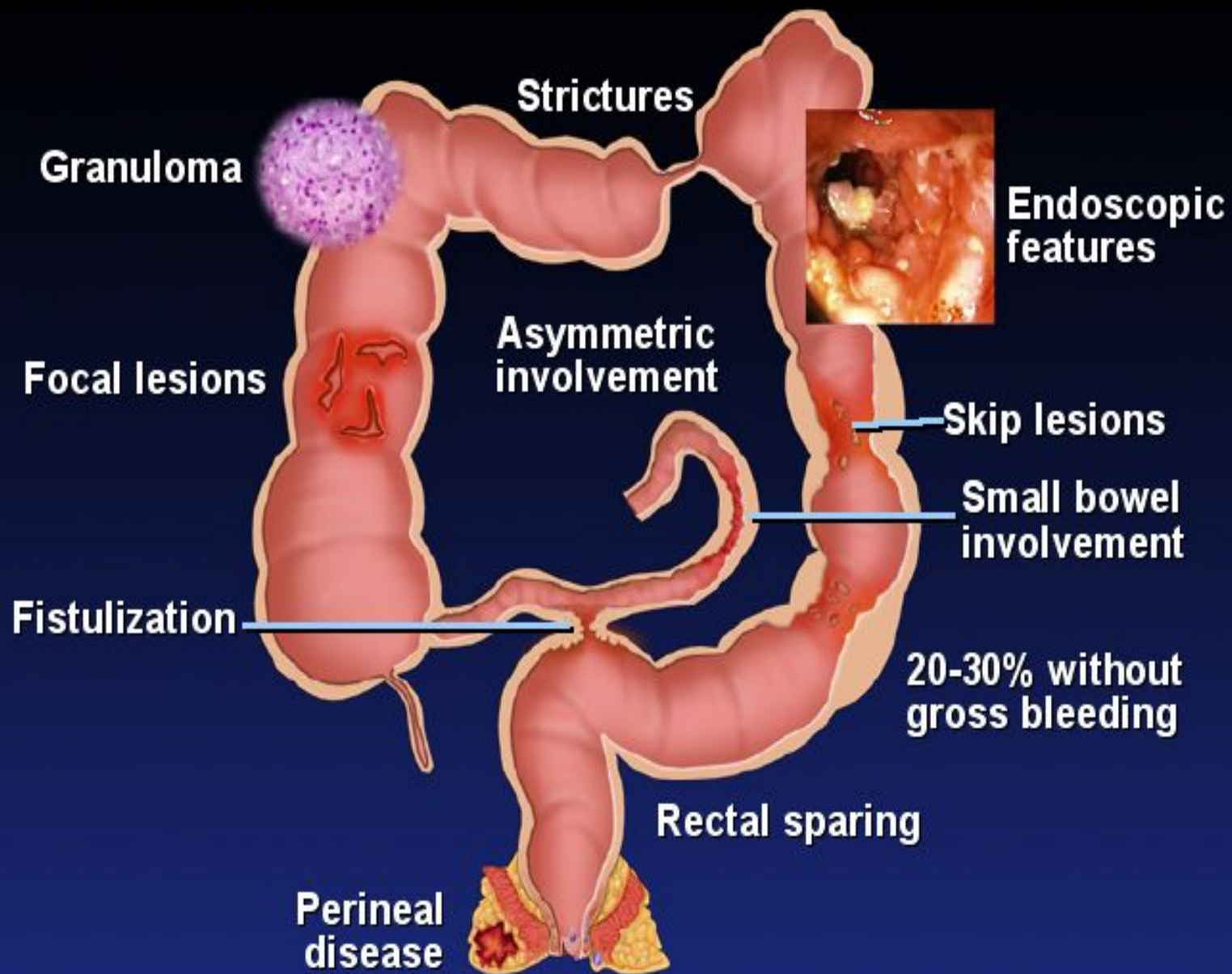
- CT – replaced SBFT, allows for detection of extramural complications ( abscess, fistula, retroperitoneal disease)
- MRI: MRE – replaces CT?
  - MR for pelvic CD
- EUS- pelvic CD, biliary disease

# Abdominal CT in IBD Diagnosis



CT can assess inflammation, bowel wall thickening, fat, strictures and fistula

## CD - Distinguishing Features



# Goals of Therapy

- Induce clinical remission
- Maintain remission
- Enhance quality of life
- Avoid long-term toxicity



## Aminosalicylates

Sulfasalazine

Mesalamine

Olsalazine

Balsalazide

## Corticosteroids

Prednisone /

Prednisolone

Budesonide

ACTH

# Conventional Drug Therapies

## Supportive agents

Antidiarrheal

Bile sequestrants

Bulk formers

Antidepressants

Pain management

Anti-spasmodics

## Immunomodulators

6MP/Azathioprine

Methotrexate

Cyclosporine

/ tacrolimus

Anti-TNF

## Antibiotics

Metronidazole

Quinolones

Other

Biologics

Anti- TNF

Anti-cytokine



Anti Migration

# Sulfasalazine



**Sulfapyridine**  
(SP)

**5 - Aminosalicylic acid**  
(5-ASA)



# Aminosalicylates



Sulfasalazine

Oral  
preparations

Mesalamine

Acrylate coated

Ethylcellulose  
encapsulated



Rectal  
preparations



Mesalamine

Balsalazide — Inert vehicle

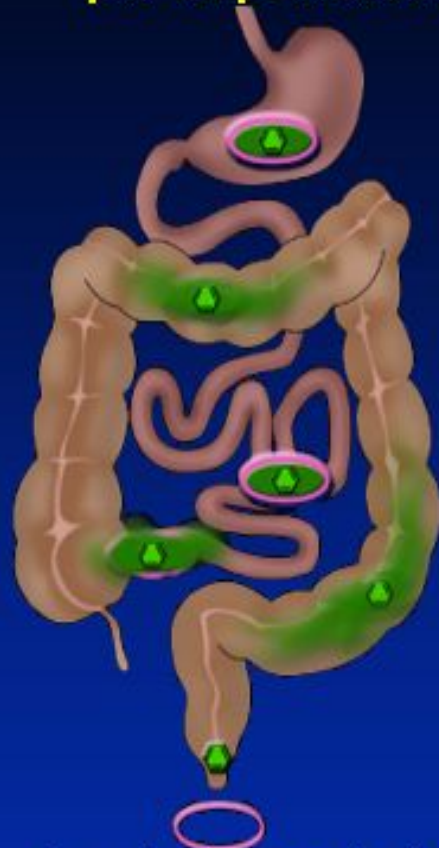


Olsalazine — 5-ASA dimer



## IBD - Oral Aminosalicylate Delivery

**pH-dependent**



**Acrylate-coated  
mesalamine**

**Asacol®, Claversal®,  
Salofalk®, Raffersal®**

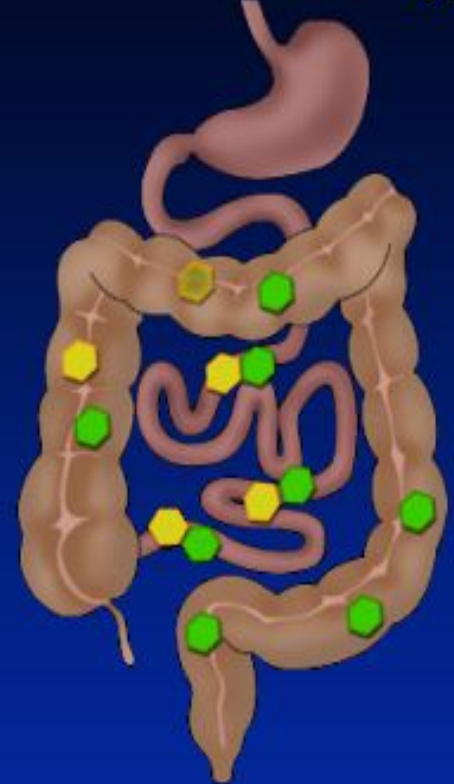
**Time release**



**Ethylcellulose-  
encapsulated  
mesalamine**

**Pentasa®**

**Bacterial cleavage**

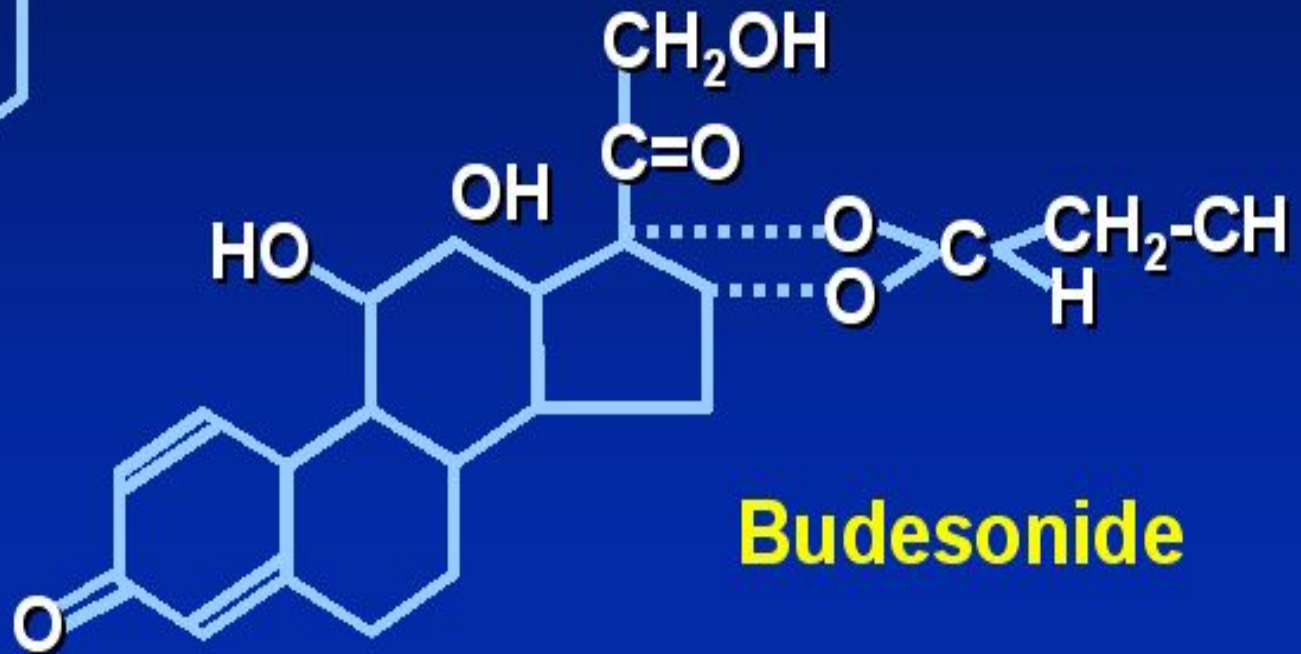
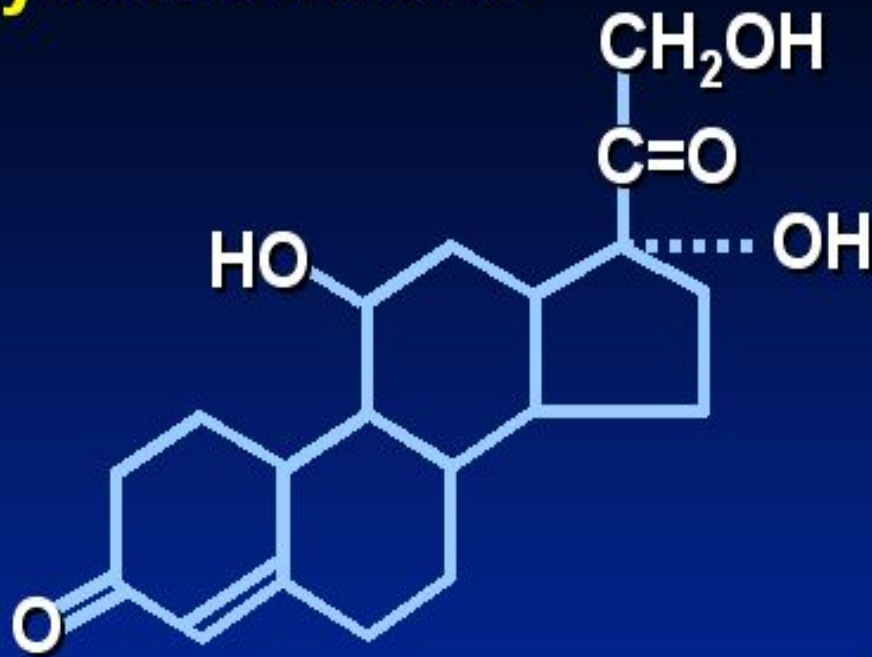


**Azobond - linked  
5-ASA**

**Sulfasalazine - Azulfidine®  
Olsalazine - Dipentum®  
Balsalazide - Colazal®**

# Hydrocortisone

Systemic / Topical



**Budesonide**



# Corticosteroids in IBD

- Role

- Induction of remission in CD and UC

- Toxicity

- Metabolic
- Musculoskeletal
- Gastrointestinal
- Cutaneous
- Neuropsychiatric
- Ocular
- Growth failure (pediatric)

# Immuno-suppressors in IBD

- Azathioprine, 6-Mercaptopurine
- Methotrexate
- Cyclosporin
- Tacrolimus

**Table 1.** Thiopurine-related adverse drug reactions (ADRs)

ADRs	Frequency
<b>Dose-dependent ADRs</b>	
Haematotoxicity	
pancytopenia	0.4–2% <sup>[50,53,57]</sup>
leukopenia	3.8% and 11.5% <sup>[57,58]</sup>
thrombocytopenia	1.2% <sup>[57]</sup>
anaemia	Rarely <sup>[59]</sup>
Liver injury	0.3–9.9% <sup>[50,53,58,60]</sup>
<b>Dose-independent ADRs</b>	
Pancreatitis	1.2–4.9% <sup>[50,53,56,58,61]</sup>
Gastrointestinal disturbances, e.g. nausea, vomiting, diarrhoea <sup>a</sup>	4.6% <sup>[50]</sup>
Flu-like symptoms, e.g. fever, headache, rash, arthralgia, myalgia, malaise <sup>a</sup>	2–6.5% <sup>[50,53,58]</sup>
<b>Rare complications</b>	
pneumonitis	Seven cases <sup>[62]</sup>
acute interstitial nephritis	Single case <sup>[63]</sup>
veno-occlusive disease of the liver	Single case <sup>[64]</sup>
nodular regenerative hyperplasia	Four cases <sup>[65]</sup>
Infections	7.4–14.1% <sup>[53,58]</sup>

<sup>a</sup> Commonly termed as 'azathioprine intolerance'.

# Side effects thiopurines (cont.)

- Small increased risk of developing lymphoma
- Increased risk of non- melanoma skin cancer

# Toxicity of Cyclosporine in IBD

## Major

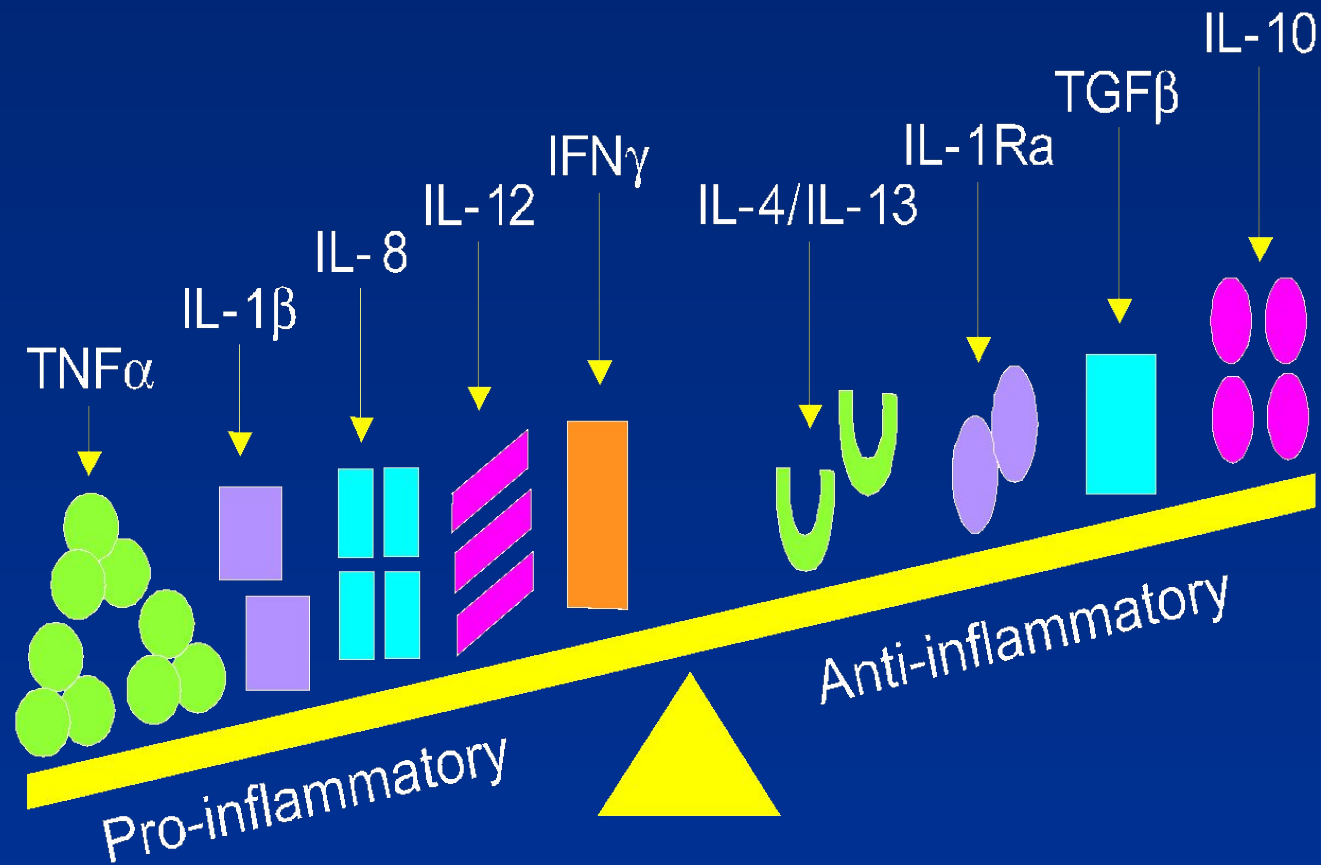
Nephrotoxicity	24%
Infection	20%
Seizure	4%
Anaphylaxis	1%
<b>DEATH</b>	<b>2%</b>

## Minor

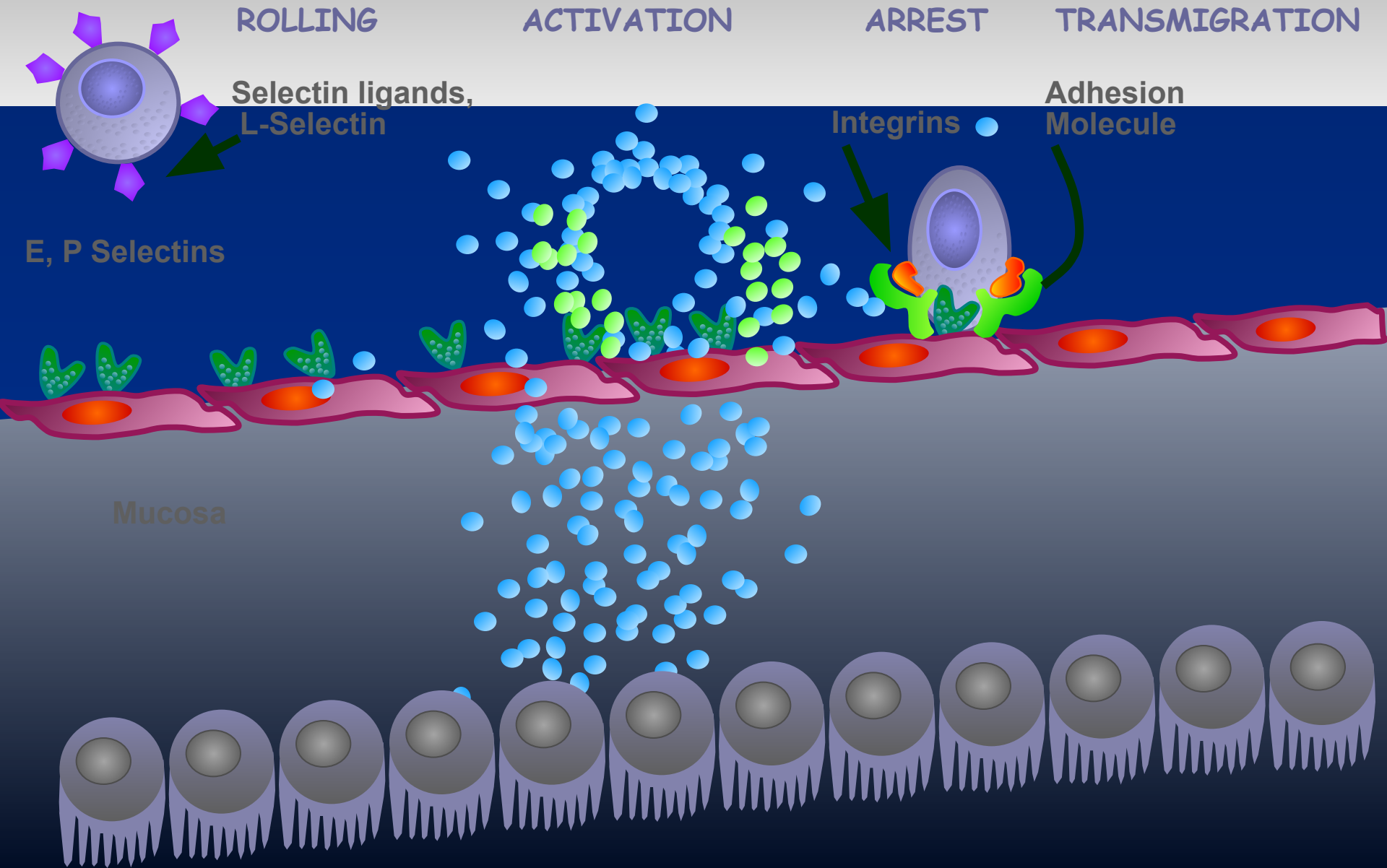
Paresthesias	51%
Hypertension	39%
Hypertrichosis	27%
Hypomagnesemia	20%
Hyperkalemia	13%



# Chronic Inflammation: Imbalance Between Mediators



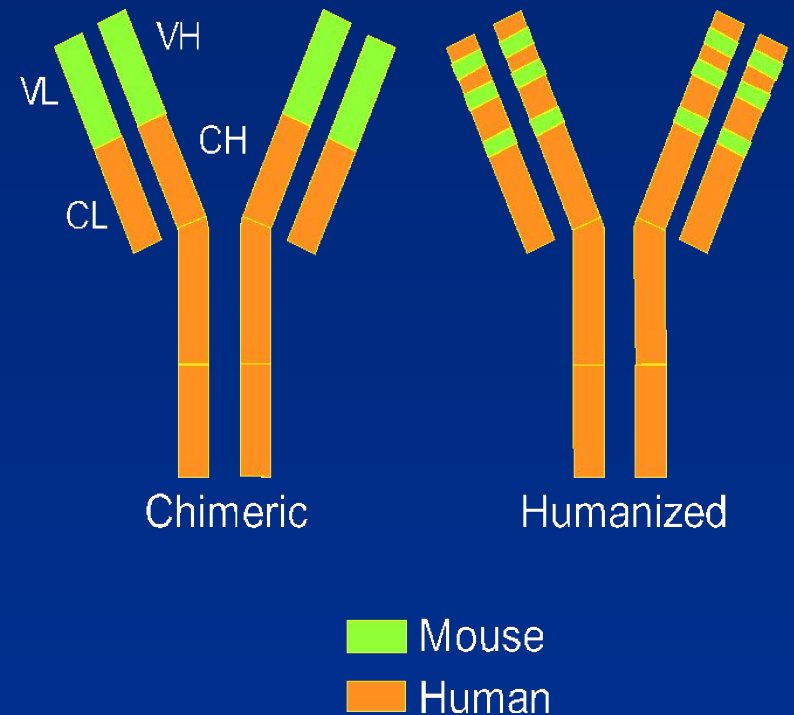
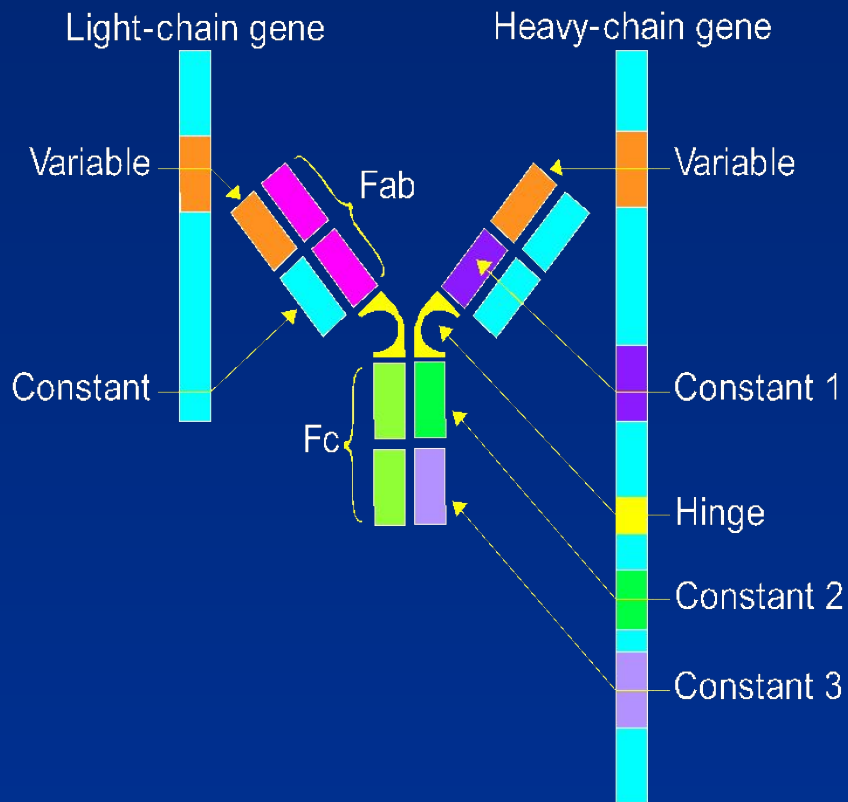
# Migration of Cells into Tissues



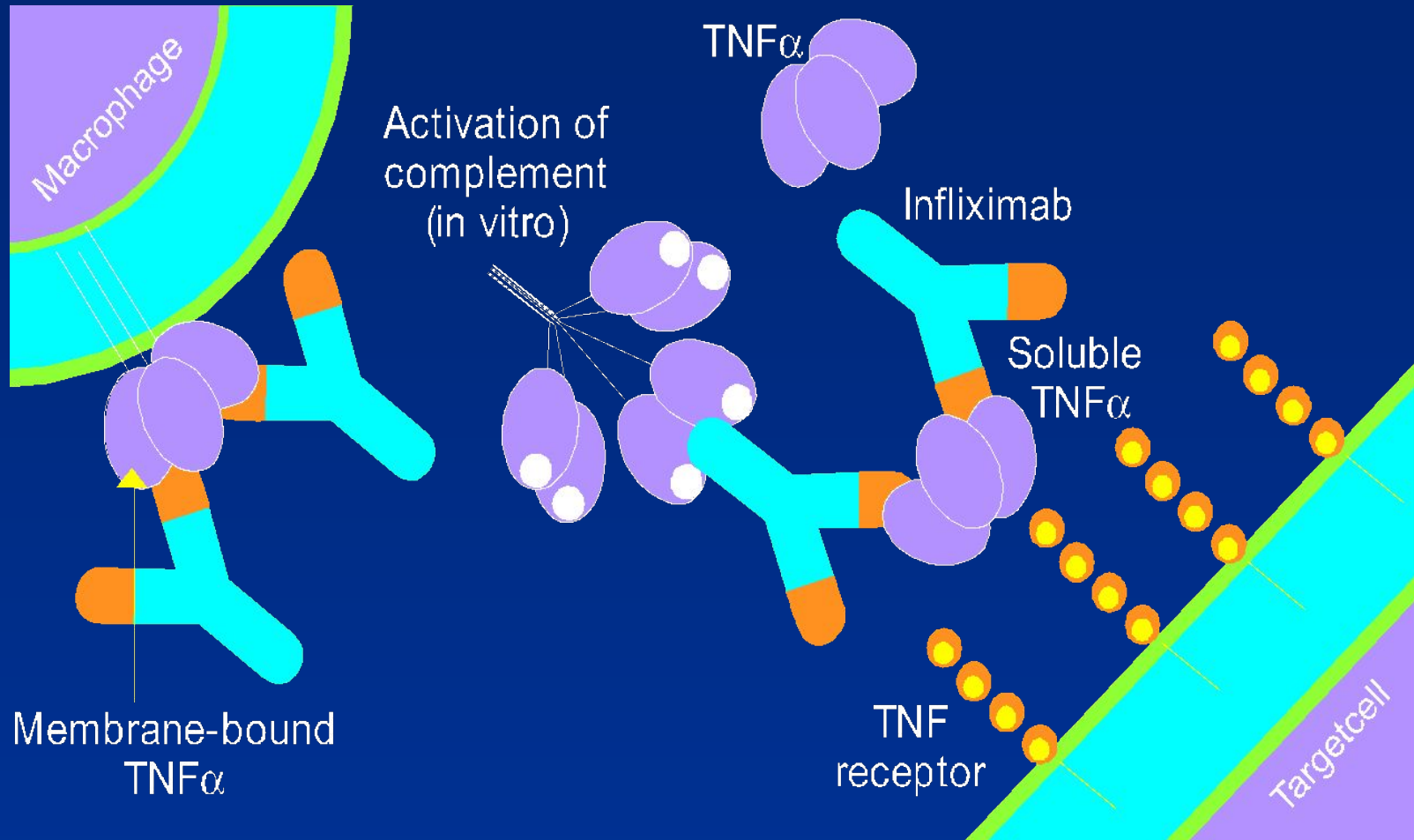
# Biologicals

- **Anti TNF agents:**
  - **Infliximab** (Remicade), **Adalimumab** (Humera),  
Golimumab (Simponi)
- **Anti migration:**
  - Natalizumab
  - **Vedolizumab**  
Binds  $\alpha_4\beta_7$ -integrin heterodimer, inhibits the pathologic effects of  
CD4 T-cell

# Chimerized and Humanized Antibodies

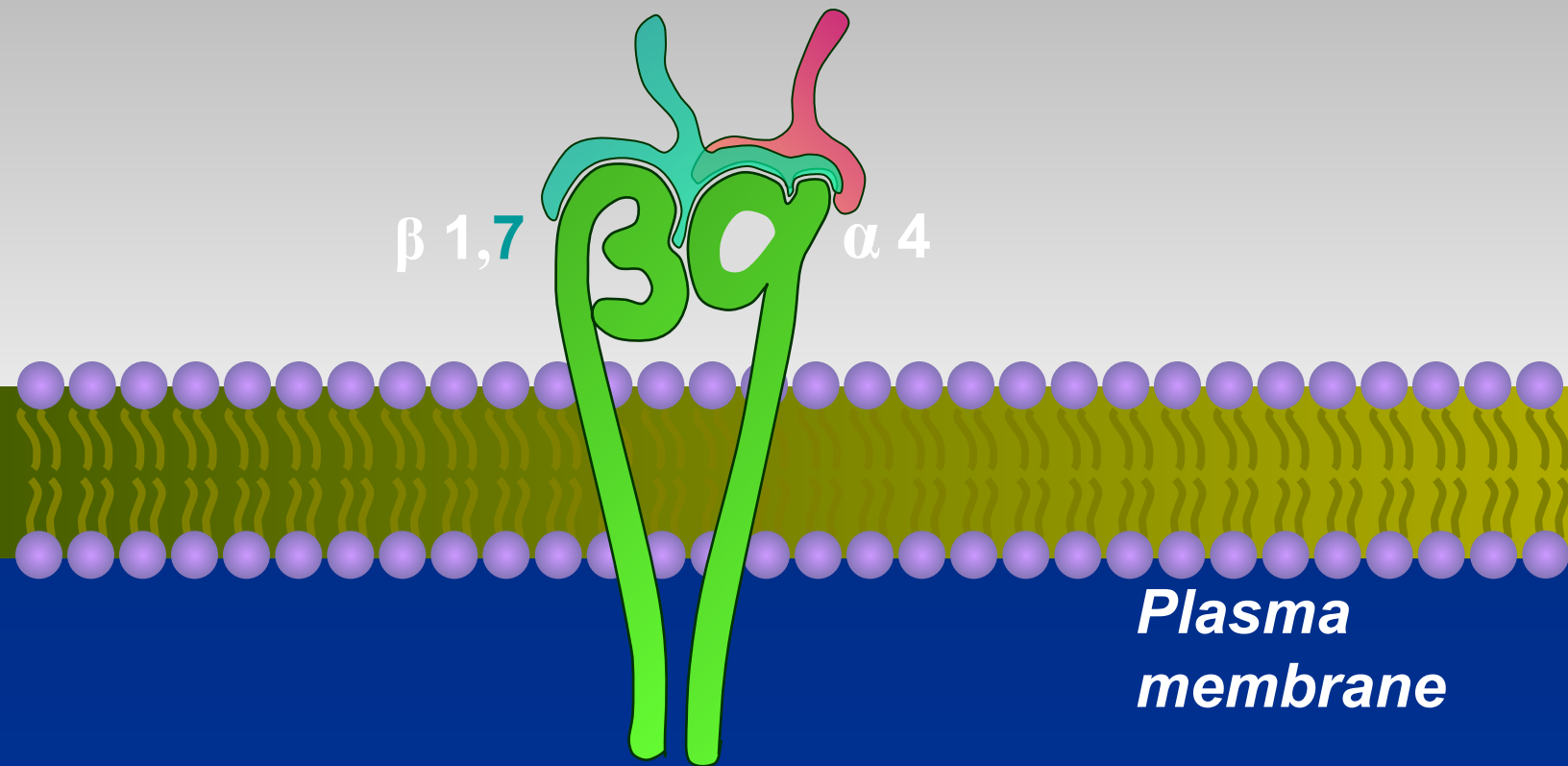


# Infliximab Mechanism of Action



# Integrin Structure

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## Adverse Effects of Infliximab

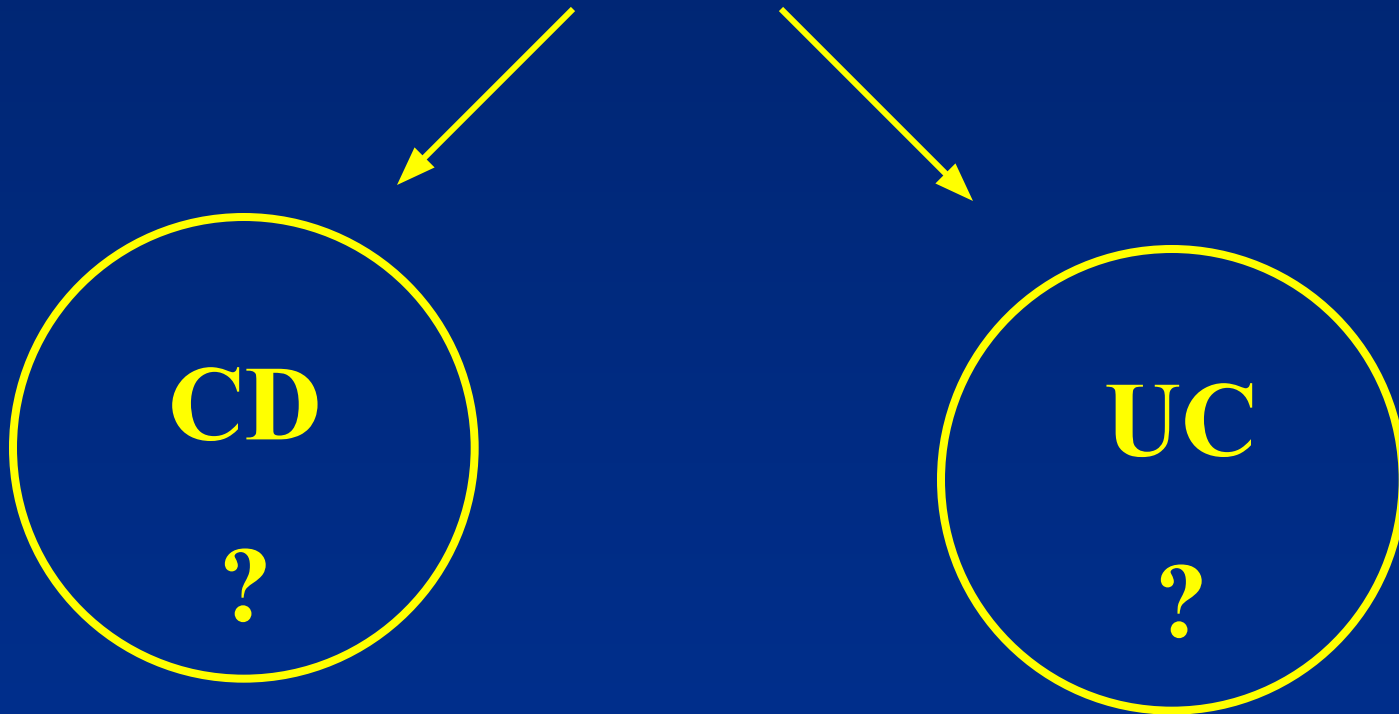
- Immediate infusion reactions  
Headache, flushing, rash, fever, abdominal pain, chest pain, wheezing, anaphylaxis
- Serum sickness-like syndrome  
High human anti-chimeric antibody titers
- “Lupus-like” syndrome
- Infection  
URI, peri-rectal abscess, reactivation TB
- ? Worsening of strictures
- ? Risk of cancer

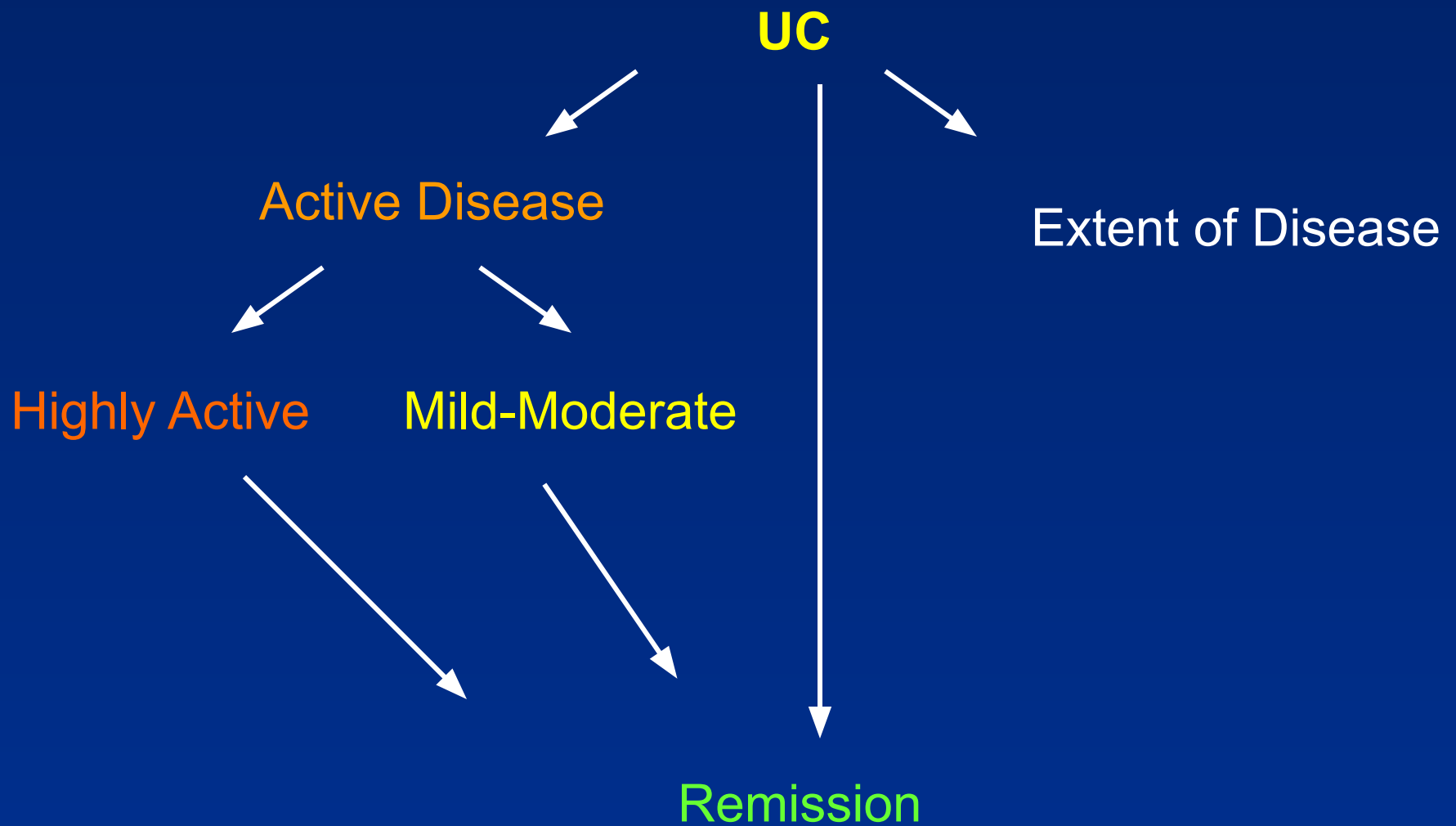


# Biologicals: Pre-therapy preparations

- TB exposure: Skin test/quantiferon + Rx
- HBV, HIV, Varicella exposure
- Immunize: Pneumovax, Influenza (HBV, varicella)

# Diagnosis





# Main clinical points to address

Factors that affect treatment choice:

- Disease distribution (proctitis, left sided, extensive)
- Disease behavior (frequent relapse?)
- Response to previous medications
- Side effects
- Extraintestinal manifestations

# Patient assessment

- Exclusion of infectious agents:

STD in proctitis

Bacterial (including C. Diff) and parasitic infections

CMV- in the context of immune suppression (biopsy)

- Endoscopic evaluation:

Infectious?

Crohn's?

Mucosal prolapse?

IBS & haemorrhoidal bleeding ?

# Outpatient assessment of the severity of active UC:

**T&W-** Important not to miss severe progressive disease

	Mild	Moderate	Severe
<b>Bloody stools/day</b>	<4		≥6
<b>Pulse</b>	<90bpm		>90bpm
<b>Temperature</b>	<37.5°C	In between	>37.8°C
<b>Hb</b>	>11.5g/dL		<10.5g/dL
<b>ESR</b>	<20mm/hr		>30mm/hr

o  
r  
or  
or

- Easy to remember, easy to apply, defines severe attacks

# UC - Mild to moderate activity

- **5-ASA/SZP:**

Both induction of remission and maintenance

Dose – dependent

Combine topical & systemic

If Failure:

- **Steroids:**

Induction of remission only

Combine topical & systemic

Start high doses and taper

# UC - Left sided & Pan colitis

## Mild to moderate activity

If steroid dependent:

- Azathioprine/ 6-MP

If non responsive:

- **Infliximab**  
Can be used to induce & maintain remission

Note: Role of Adalimumab & Methotrexate not formally established for UC

# Severe UC

- Prevalence ~ 20% for first and recurrent attacks
- Severe active UC with systemic toxicity →hospitalize
- Usually IV, hydrocortison 100 mg X 3 for 5 days
- Lower doses – less effective, > 7-10 days – no benefit
- Systematic review 32 trials (1991 pts) <sup>2</sup>:

Response	67%
Colectomy	29%
Death	1%

# Severe UC

- Correct:  
Hypokalemia, hypomagnesemia (toxic dilatation ↑)  
Hemoglobin  
Nutritional support  
(complications enteral Vs parenteral 9% Vs 35%)<sup>1</sup>  
Withdraw anticholinergics, antidiarrheals, NSAID, opioid  
Abx – only if infection suspected or preoperative
- Cyclosporin **monotherapy** = 40 mg Methylprednisolone  
use in steroid intolerant

# **Ulcerative Colitis**

## **INDICATIONS FOR SURGERY**

- **Exsanguinating hemorrhage**
- **Toxicity and/or perforation**
- **Suspected cancer**
- **Significant dysplasia**
- **Growth retardation**
- **Systemic complications**
- **Intractability**

Active UC

**Mild**

**SZP, 5-ASA**

**Rectal, PO**

**Combination**

**Severe Disease**

**IV steroids, cyclosporine**

**Infliximab**

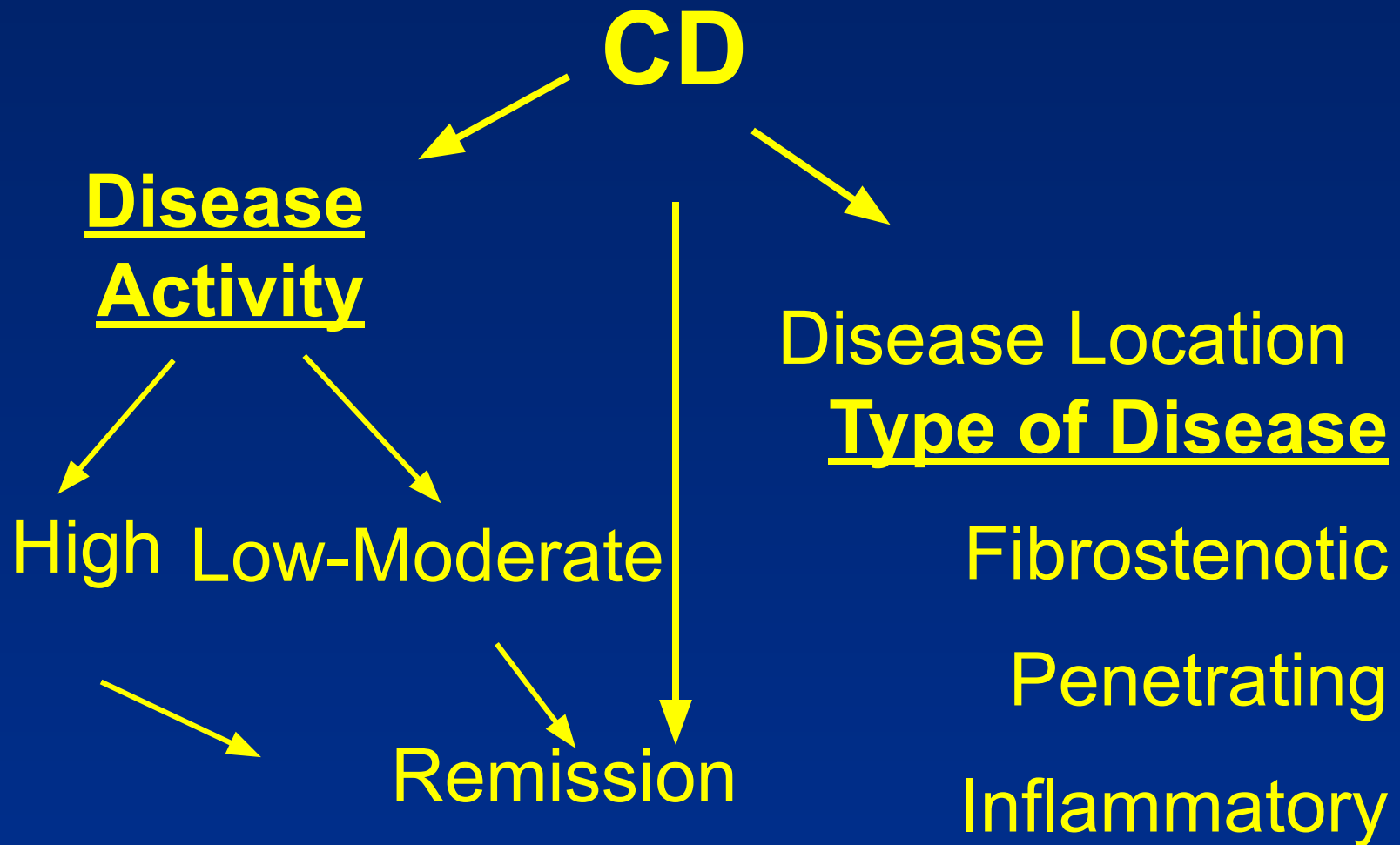
**Surgery**

**Moderate Severe**

**Steroids, AZA, 6-MP,  
Infliximab**

**Remission** →

**5-ASA, AZA, 6-MP,  
Infliximab**



# CD- Colon Mild -Moderate

- SZP-/5-ASA for colonic disease only
- Side effects: paradoxical diarrhea, nausea, vomiting, headache, hypersensitivity
- Need to check renal function  
Allowed in pregnancy

# CD-Small Bowel

- **Steroids:**

Generally try to avoid due to side effects

- Controlled trials show definite efficacy
- Use steroids with less side effects

- **Budesonide:** 90% first pass effect

- TI & RT colon
- Similar effect to prednisone less SE
- Need to FU: Bone density, glucose levels allowed during pregnancy

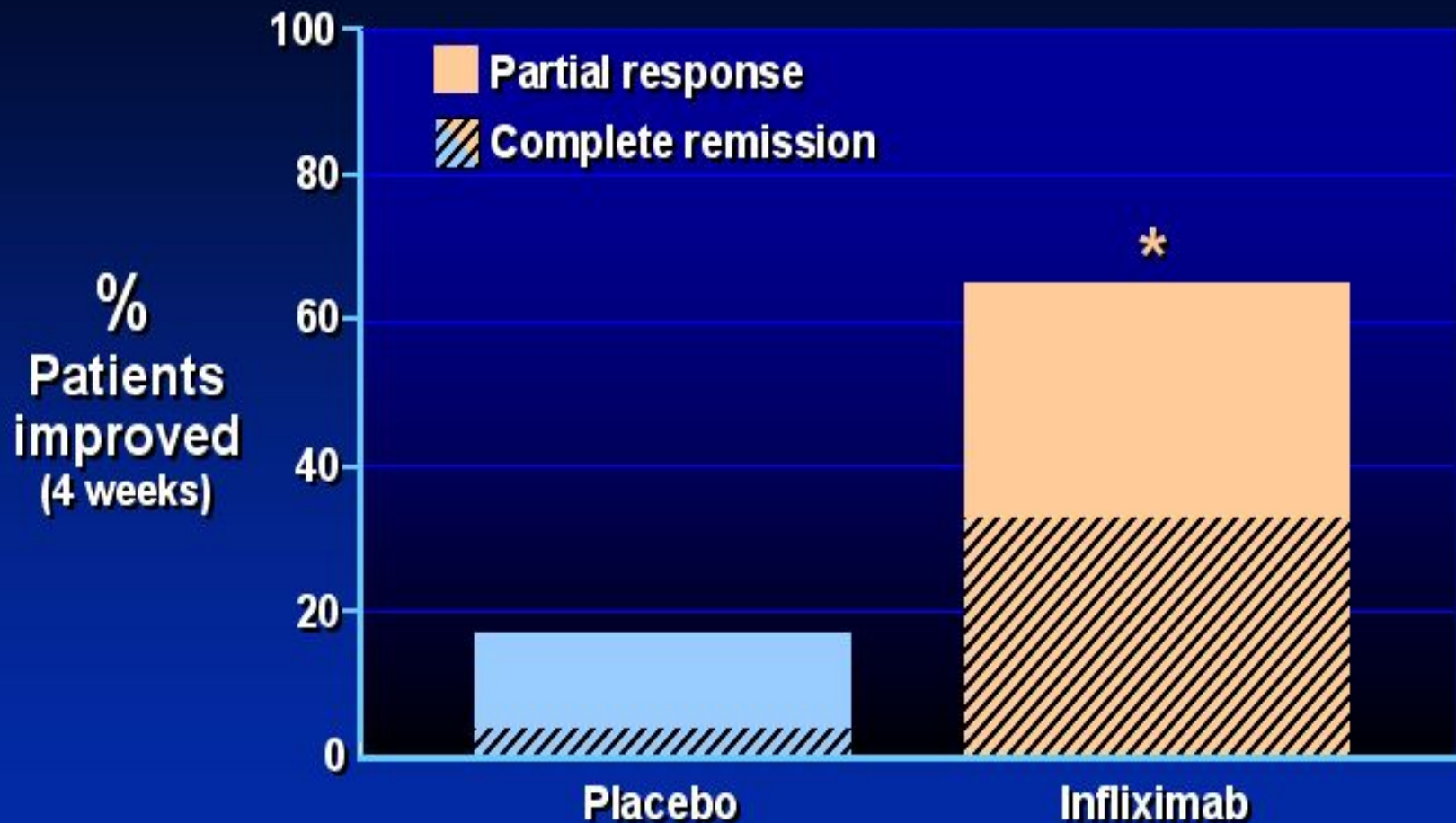
# CD – Moderate Activity

- Immunosuppressive agents
- Azathioprine, 6 MP
- Steroid dependent or resistant disease  
Steroid sparing
- 30-60% response
- Up to 6 mo to initial effect, most start earlier
- FU: CBC, LFT, Pregnancy OK

# CD-Moderate Disease

- Methotrexate
  - IM - 40% efficiency for 16 wks
  - Reduced Steroid use
  - Max efficiency - 6 wks
  - SE: leukopenia, nausea, vomiting, diarrhea  
Possible liver fibrosis
  - FU: CBC LFT
  - Contraindicated in pregnancy

# Anti TNF therapy in Crohn's disease



# Biologicals

- No difference between Infliximab and Adalimumab for efficacy
- Different modes of administration
- Loading, scheduled therapy
- Loss of response:  
Dose escalation/switch
- Antibodies formation

# CD- Severe Disease

- Hospitalization
- IV steroids
- If abscess, fistula- drain, consider TPN
- Anti TNF Abs

# CD- Effect of Disease Type

- Perianal & fistula:  
Antibiotics  
Azathioprine/6 MP  
Infliximab
- Surgery
- Treatment sequence: Image, classify, drain  
sepsis – medical treatment

# CD- Effect of Disease Type

- Fibrostenotic disease
  - Need to differentiate inflammation/scare
- If scare: surgery
- Medical therapy as inflammatory

# CD- Maintenance of Remission

- **Not Steroids !**
- 5-ASA: low efficiency (1:13), SE ↓
- May benefit post surgical
- Not good for remission post medical Tx
- Chemopreventive?

# CD- Maintenance of Remission

- Immunomodulatory drugs
- Azathioprine/6MP: efficient regardless of therapy mode
- MTX: Good for pts that entered remission with MTX
- Anti TNF agents

# Active CD

```
graph TD; A[Active CD] --> B[Mild Disease]; A --> C[Moderate/Severe]; B --> B1[Colon: 5ASA/SZP]; B --> B2[SB: Budesonide]; C --> C1[Steroids]; C --> C2[Prednisone/Budesonide]; C --> C3[Immunomodulatory agents]; C --> C4[AZA/6MP]; C --> C5[MTX]; C --> C6[Infliximab]; C --> D[Surgery when indicated];
```

## Mild Disease

Colon:

5ASA/SZP

SB: Budesonide

## Moderate/Severe

Steroids

Prednisone/Budesonide

Immunomodulatory agents

AZA/6MP

MTX

Infliximab

Surgery when indicated

**CD in Remission**



**Post Surgical -5ASA  
/AZA+MTZ/INFX**



**Medical**

**Immunomodulation**

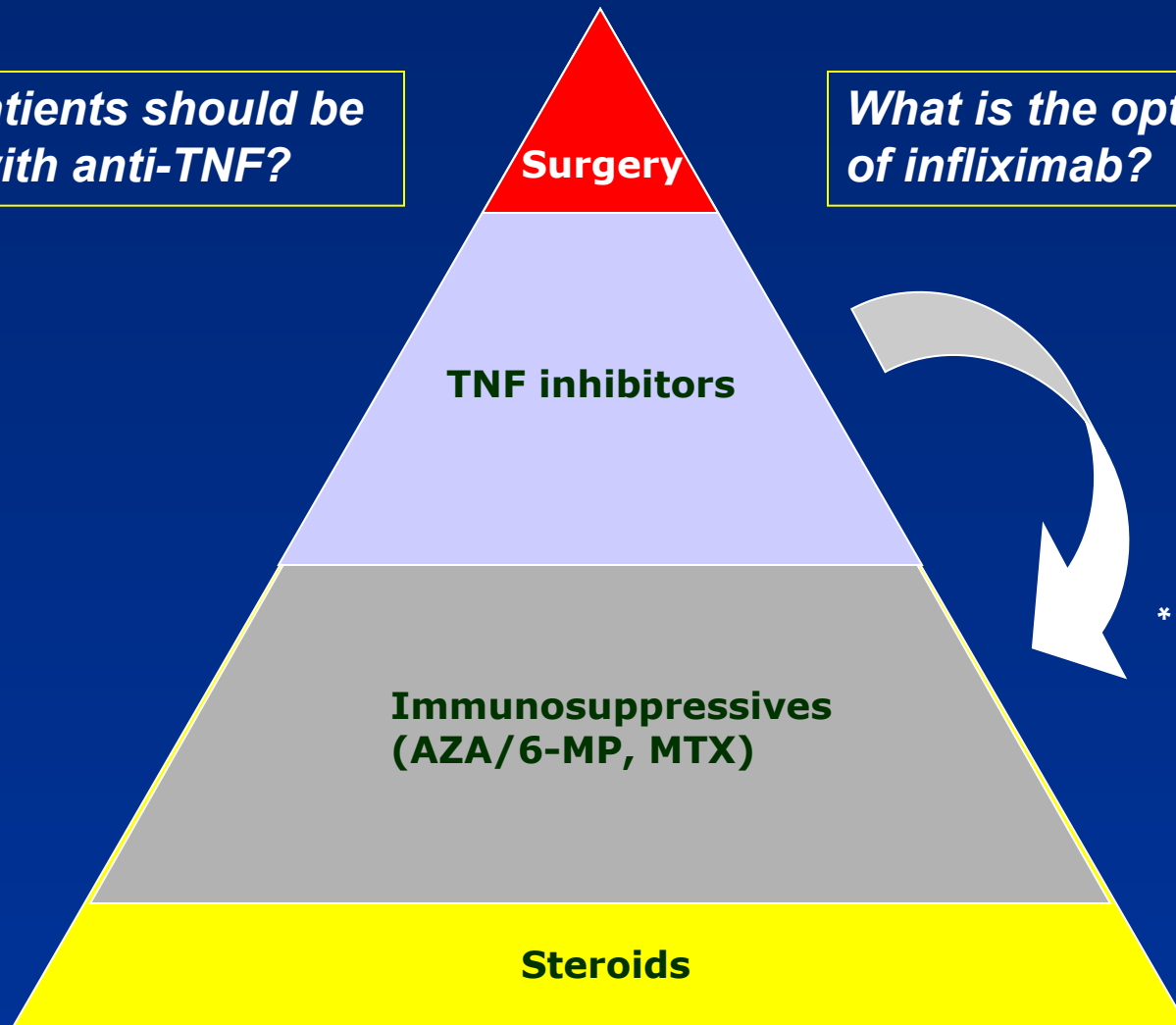
**AZA/6MP/MTX**

**Infliximab**

# The evolution of therapy: Should we invert the pyramid?

*Which patients should be treated with anti-TNF?*

*What is the optimal use of infliximab?*



# Future evolution

- Should we aim for mucosal healing?
- Should we perform early surgery?
- Risk / benefit analysis of treatments and outcomes

# Case Study

30-year-old woman was admitted with a 4-week history of increasing bloody diarrhea and abdominal pain; she had lost 3kg in weight. She smoked 1 pack of cigarettes a day. On examination, she was not clinically anaemic and, apart from a temperature of 37.8°C and some tenderness over the right iliac fossa, there were no abnormal physical signs.

The perineum was normal but sigmoidoscopy to 15cm showed a red, granular mucosa with aphtous lesions and contact bleeding. Laboratory investigations showed a low haemoglobin (10.8g/l) with a raised CRP (67 mg/l) but a normal white-cell count. Urea and electrolytes, serum vitamin B<sub>12</sub>, folate, iron, ferritin and iron-binding capacity were normal. Her total serum proteins were 5.4g/l (NR 6.2-8.2) with a serum albumin of 2.9g/l (NR 3.5-5.0). Faecal examination and culture revealed no ova or Campylobacter. Clostridium difficile toxin was negative

# Case Study

The rectal biopsy : many crypt abscesses were present. The lamina propria contained a heavy infiltrate of lymphocytes, plasma cells and macrophages. Two non-caseating granulomas were present.

A CT and a colonoscopy were performed to assess small-bowel barium infusion to determine the extent of disease. Inflammatory strictures were seen at a number of separate sites (skip lesions) in the ascending and transverse colons. She was treated with corticosteroids and a 3-month course of metronidazole with symptomatic improvement. She was strongly advised to stop smoking.

י.ע. 9/2011

- בת 54, מזה כחודש וחצי סובלת משלשולים רבים, יציאות דמיות וריריות לסירוגין, ירידה במשקל של כ-5 ק"ג בתקופה זו. אירועים מעירים משינה, מלווים בכאבי בטן.
- לפני כשבועיים בוצעה קולונוסקופיה: פאן קוליטיס.
- טופלה בפנטסה ופלג'יל ללא שיפור משמעותי.

י.ע. 9/2011

- אושפזה בפנימית להמשך בירור וטיפול.
- בקבלתה הוחל טיפול בסטרואידים ורפסל. במהלך אשפוז שיפור ניכר בתלונות.
- לאחר 3 ימי טיפול ללא כאבי בטן, 3-4 יציאות ליממה ללא דם, CRP ירד לנורמה.
- בתשובת פתולוגיה ממצאים מתאימים ל IBD מסוג UC Active.
- בהמשך הועברה לטיפול פומי בסטרואידים.

י.ע. 18/10/2011

- באשפוז הקודם הותחל גם טיפול גם ב-MP-6. שוחחתי ארוכות עם החולה ובעלה אודות הסיכונים שבטיפול זה והצורך ההדוק במעקב.
- החולה תמשיך חפיפה עם סטרואידים ותגיע בעוד כחודש לביקורת.

י.ע. 18/10/2011

- הגיעה לביקורת, טופלה עד כה בפרדניזון עם ירידה הדרגתית וסיימה לפני שבועיים.
- בנוסף הותחל טיפול גם ב MP-6 (פורינטול) אך הפסיקה לפני שבועיים. למרות ההמלצות בשחרור לא נוטלת כרגע פורינטול או רפסאל!!! מקבלת פוליקס. אסימפטומטית לחלוטין.
- לויקופניה 4350, נויטרופניה של 8.8, Hb 670. עקב הירידה בלויקוציטים, במיוחד בנויטרופילים, ובהמוגלובין – לא מחדש בשלב זה טיפול בפורינטול.
- ממליץ: לתת רפסאל 2 גראם פעמיים ביום, לחזור על CBC.

י.ע. 26/12/2011

- שני אשפוזים בפנימית: פעם אחת בשל החמרה שטופלה בסטרואידים, פעם שניה בשל מחלת ריאות משנית לטיפול ברפסל.
- כאשר הפחיתה לפרדניזון 10 מ"ג השלשולים נשנו.
- בתחילת דצמבר אנמיה Hb 10, לויקופניה גבולית 4920 ותרומבוציטופניה.
- תלוייה בסטרואידים, ASA-5 אינן באות בחשבון בשל התפתחות פנאומוניטיס מסכנת חיים, ולכן האופציה הבאה היא התחלת טיפול בפורינטול או אימוראן (אם WBC ו Plt יהיו תקינות) במינון הדרגתי.
- במקביל פרדניזון 30 מ"ג ולרדת בהדרגה.
- יהיה צורך במעקב CBC ואנזימי כבד ולבלב.
- דיברנו על סיכון קטן ללימפומה.

י.ע. 23/7/2012

- מזה 4 ימים עלייה בתדירות היציאות, 6-7 ליום, חלקן עם דם. כאבי בטן מטרימים.
- התלקחות של UC בדרגה בינונית, לאחר טיפול במינון מספק של פורינוטול ולמשך זמן מספק.
- ננסה טיפול בחוקני בטנזול
- לשמירה על רמיסיה ננסה אם כך טיפול ברמיקייד.  
לפני כן יש לשלול שחפת ישנה.

י.ע. 17/06/2013

- אושפזה עקב החמרת UC והוחל שוב טיפול בסטרואידים.
- כעת רמיקייד כל 6 שבועות, הפסיקה ליטול פרדניזון לפני שבוע.
- עושה רושם שכעת ע. ברמיסיה
- 8/9/13: כעת על פרדניזון 25 מ"ג ליום, העלינו מינון רמיקייד לאחת ל-4 שבועות (מינון כפול)
- 8/10/13: כעת ברמיסיה, עדיין ב"זנב" הטיפול בפרדניזון. תמשיך טיפול ברמיקייד כל 4 שבועות.