

## CROHN'S DISEASE

Non-specific chronic inflammatory bowel disease affecting any part of GI tract from mouth to anus

### EPIDEMIOLOGY

Age: 15-30 Gender: 2/3m Race: White/Ashkenazi Geo: Urban environment \*worse with smoking\*

### AETIOLOGY

**1. Genetics:** abnormal interaction between **mucosal immune system** and **environmental** factors

**CARD15** most notable (younger/ileal/ileocaecal resection/re-operation) | | 22% CD pts have IBD sFDR | | earlier onset = higher fam. prevalence

**2. Infection theory: *M. paratuberculosis*** starts granulomatous process

### PATHOGENESIS

**(i) Lose ability to suppress immune-mediated inflammatory response to dietary/microbial/environmental agents**

Excess **Th1 activation** (suppress Th3/Tr (regulatory cells) | | **IL-1, IL-6, TNF-a** stims macrophages/PMN's | | Abnormal **antigen** recognition/dendritic cell processing

**(ii) Mucosal hyperpermeability**

### PATHOLOGY

Patterns: anywhere from **mouth to anus**

**Transmural inflammation** and **skip lesions**

#### Microscopic:

**Transmural inflammation** (inflammatory infiltrate → oedema+fibrosis)

Submucosa/muscularis mucosae/propria **thicken with fibrosis** (submucosa muscularises)

Non-caseating **granulomas** (70%)/intralymphatic granulomas/granulomatous vasculitis \*3 hallmarks\*

**Lymphoid aggregates** (aphthous ulcers form here)

**Crypt abscesses**

#### Macroscopic:

**Hosepipe bowel:** thickened bowel wall (oedema+fibrosis) → **narrowing**

**Fat-wrapping:** mesentery **thickens**; fat **advances** over serosa

**Cobblestone mucosa:** serpiginous **ulcers/fissures** with **intervening oedema** (usually mesenteric side)

**Fistula/abscesses:** fistulate into any hollow **viscus/cutaneous**

**Aphthous ulcers:** on surface of **lymphoid aggregates** \*earliest macroscopic sign\*

**Polyps:** hyperplastic

#### Phenotyping:

Site: small bowel alone (30-35%), colon alone (25-35%), small+colon (30-50%), perianal (50%), UGI (5%)

Clinical features vary by **age/site/behaviour** (Vienna classification) and 46% change behaviour over 10 years

A1: <16	L1: ileal (30-35%)	B1: NPNS
A2: 17-40	L2: colonic (25-35%)	B2: Strictureing
A3: >40	L3: ileocolonic (30-50%)	B3: Penetrating
	L4: isolated UGI (5%)	(p): Perianal (added-on)

## CLINICAL FEATURES

### **GI:**

PAIN: inflammation/obstruction

DIARRHOEA: (i)TI: steatorrhoea(malabsorption) (ii) Colon: bloody, mucoid (iii)Rectal: reduced compliance (+tenesmus)

MALABSORPTION: inflamm/fistulation/bact o'rgrowth/short gut→wt loss/B vits+folate/albumin/bile salts/mg<sup>2+</sup>/zn<sup>2+</sup>

BLEEDING: 50% of colonic disease

FISTULAE/ABSCESS: into hollow viscus/cutaneous

BOWEL OBSTRUCTION: fibrosis (strictures/adhesions) + oedema

BOWEL PERFORATION: acute abdomen, often localised so less dramatic

PERIANAL DISEASE (10-50%): associated w/ ileal+colonic, not proximal disease/more severe luminal disease/earlier onset

*Bacterial overgrowth: stasis/blind loop/colo-enteric fistula*

**EXTRA GI:** (*commoner in colonic>SB Crohn's; 50% of pats; 30% persist for life*)

	Related to disease activity (colectomy beneficial to limit)	Unrelated to disease activity
MSS	Polyarthropathy( <i>commonest in both IBDs</i> )	(i)Ank Spond (ii)Sacroiliitis
HPB		PSC
DERM	(i)Erythema Nodosum (ii)Pyoderma gangrenosum ( <i>cf UC</i> )	
EYES	Episcleritis( <i>commoner in CD</i> )	Uveitis( <i>commoner in US</i> )

*Other=gallstones/renal calculi(oxalate)*

### **Diff dx:**

Acute: Appendicitis/adenitis/caecal diverticulitis/acute gynae/acute ileitis eg *Y. enterocolita*

Chronic: TB/lymphoma/diverticular disease/bowel cancers/carcinoid

### **Special scenarios:**

Children: (i)nonspecific eg growth failure (ii)arthropathy may precede bowel symptoms by years (15%)

Pregnancy: conception during active disease → abortion/prem/relapse in preg 50% cf 25% if non-active

## INVESTIGATIONS

1. **Bloods:** (i)Inflammation: ESR(*not in SB*)/CRP (ii)Serology: **ASCA +ive** in 50% (1% in UC) | **pANCA** only if colitis (iii)Malabsorption

2. **Stool:** MC&S/faecal calprotectin/faecal elastase (*infection, inflammation, malabsorption*)

### 3. **Radiology:**

AXR: (obstruction/oedema)| US: inflamed bowel| Enteroclysis: SB enema via NG tube| SBFT: best resolution/only assesses lumen

CT/MRE: wall thickening>3mm/oedema in wall+mesentery/fat wrapping/nodes/strictures/fistula/abscess/vasculitis

\*less luminal detail

4. **Endoscopy:** macro assessment + biopsies

## MEDICAL MANAGEMENT

### INDUCING REMISSION

#### **Mild to moderate:**

(i) GLUCOCORTICOID at first presentation/single exacerbation in 12 mths \*20-40mg pred/day for 3 wks then taper\*

(ii)BUDESONIDE if decline GC/contraindicated/not tolerated \*9mg/day\* *Budesonide less effective than GC but fewer side effects*

(iii)5-ASA if decline steroids/contraindicated/not tolerated 5-ASA *less effective than GC/budesonide but fewer side effects*

(iv)ADD-ON: AZA/6MP/Methotrexate + GC/Budesonide to induce remission: (i)2+ exacerbations in 12 months(ii)can't taper GC

*No AZA/6MP/Methotrexate to induce remission unless add-on (slow onset)*

*Do not use GC/budesonide/5-ASA for severe presentation/exacerbation or to maintain remission*

*ORAL+RECTAL better than either alone in left-sided disease (BSG)*

#### **Severe:**

INFLIXIMAB/ADALIMUMAB if (a)severe or (b)fistulating w/non-response, intolerance, contraindication to conventional therapy

\*give until treatment failure or 12 mths (whichever shorter); re-assess if still indicated at 12mth

### MAINTAINING REMISSION

(i)AZA/6MP monotherapy

(ii)METHOTREXATE: AZA/6MP non-response, intolerance, contraindication

\*Do not use GC/bud/5-ASA to maintain remission

\*After surgery: AZA/6MP/5-ASA in adverse factors (>1 resection, complicated disease)

## SURGICAL MANAGEMENT

Resect least amount of bowel to establish normal intestinal function

Gut-wide disease so microscopic involvement at margins doesn't mean recurrence

### SMALL BOWEL/ILEOCOLIC DISEASE

*Indication: obstruction/fistula/abscess/bleeding/perforation*

#### **Gastroduodenal:**

(a) D1/2 or antrum stricture (i) gastrojejunostomy (ii) pyloric/duodenal strictureplasty (better function)

(b) 0.5% fistulating from elsewhere → close with jejeunal serosal patch (not 1<sup>o</sup> closure)

#### **Ileocolic:**

Limited ileocaecal resection: reoperation rate 25% at 5 yrs, 40% at 10 years → op every 10 yrs

Balloon dilatation: short term benefit in 80%, long-term in 60% but perforation risk

#### **Ileal/jejeunal multi-site disease:**

Limited resection: longer strictures

Strictureplasty: up to 10-15cm → 90% symptom relief; 10% septic complications; 30% reoperation at 5 yrs

*\* <10% strictures re-stricture → usually new site\**

### FISTULA/ABSCESS

40% internal, 40% external, 20% mixed → drain along line of least resistance (often associated with abscess)

(i) Spontaneous means diseased segment needing resection

(ii) Post-operative: usually close with conservative management (diseased segment already removed)

Principles: SNAP (resuscitate/nutrition/imaging to assess disease activity, anatomy and obstruction)

Failure to close: diseased segment/anastomotic breakdown >50% circumference/short tract/downstream obstruction

### COLON/RECTUM

#### **Elective:**

Indications: (a) Not controlled well w/ med therapy (b) after control to prevent recurrence (c) stricture (d) suspect Ca

Options: **PPC** – lowest recurrence/perineal wound problems, permanent end ileostomy

**RPC-IAP**: small bowel disease threatens pouch (45% fail, higher than UC)

**TC-IRA**: if rectum spared (50% recur in 5 yrs, 50% retain rectum)

#### **Emergency:**

Toxic dilatation/perforation/bleeding/severe colitis/abscess → SUBTOTAL COLECTOMY + EI (complete procto when healthy)

#### **Other:**

Perineal disease (i) defunction to allow healing (ii) if after PPC → WE+RA flap

### PERIANAL DISEASE

Fissure: posterior/70% fissures heal spontaneously; 30% require surgery/avoid LS in active proctitis

Fistula: active disease → drain+seton until remission || inactive → LOAF/LIFT

Abscess: identify by EUA/MRI → drain+seton

*\* Cipro/metro equally effective but poor long term closure rate → infliximab better\**

#### Recurrence after surgery:

Risk: smoking

Reduction: 5-ASA 15% reduction (NNT=8)

Rates: 5-15% symptomatically annually; 2-10% annual re-operation rate

Cancer risk:

Retained rectum