HELICOBACTER PYLORI

Campylobacter pyloridi : **gram –ive rod** found in **gastroduodenal** mucosa

Site: adheres to gastric epith in (i)gastric epith in **antrum** (ii)gastric metaplasia in **duodenum**$_{\textbf{(only if gastric metaplasia)}}$

Tricks: (i)**Flagellae** help to invade lam propria in high pH areas (ii)**Urease:** generates $NH_3$to neutralize acid + stimulate gastrin

Damage: (i)**Cytokines (ii)Proteases (iii)Acid (**due to NH_3) → mucosal damage → (i)metaplasia/dysplasia/cancer (ii)Ulcer)

Diagnosis:

Non-invasive (i)**13^c Urea breath test**: ingest+test for 13^cCO_2 (ii)**Serology**: $Ig_{A/C}$ persist for yrs →not for Tx response (iii)**Stool Ag**

Invasive (OGD): (i)**Rapid urease test**: add tissue to urea+phenol red → blue if urea split to NH_3 (ii)**Histology** (iii)**Culture**

Re-testing done with **breath test*

**don't test if abx in past 4 weeks*

Eradication therapy:

(i)First-line – 7 day BD regimen: **PPI** + **Amoxicillin** + **Clarithromycin/Metronidazole** (penn allergic: PPI+Clari+metro)

-Previous clarithromycin: **PPI** + **Amoxicillin** + **Metronidazole** (penn allergic: replace amox w/ bismuth + tetracycline)

(ii)Second-line – 7 day BD regimen: **PPI** + **amoxicillin** + **Clarithromycin/Metronidazole** (whichever not used first-line)

-Previous clarithromycin and metronidazole: **PPI** + **Amoxicillin** + **tetracycline/quinolone**

-penn allergic: PPI + metronidazole + levofloxacin (or bismuth+tetracycline if quinolone prior)

PEPTIC ULCER

Sites: distal oes/lesser curve + antrum/resection margin of gastric resection/D1/Meckel's diverticulum $_{\text{(ectopic parietal cells)}}$

Aetiology: H. pylori/NSAIDS/Steroids/EtOH/stress/head injury$_{\text{(Cushing's)}}$/burns $_{\text{(Curling's)}}$/acute pancreatitis

Pathogenesis: (i)acid (ii)pepsin (iii)H. pylori (iv)ischaemia

Types: I=lesser curve$_{50\%}$ II=gastric+prepyloric/duodenal$_{25\%}$ III=preyloric$_{20\%}$ IV= proximal$_{10\%}$ V= **I+IV normal acid; II+III raised acid**

Gastric ulcer: Lesser curve/antrum ||70% H. pylori/30% NSAID||Parietal cell damage → normal or low acid prod

Duodenal ulcer: D1|| H. pylori: repair acid damage w/metaplasia colonized by HP → duodenitis $_{\text{(acid/pepsin)}}$ → ulcer

Clinical features:

Pain: (i)gastric: related to hunger/periods of fasting (ii)duodenal: relapsing-remitting pattern

Nausea

Heartburn/GOR

Complications:

Emergencies: (a)UGI bleed (haematemesis/melaena) (b)Perforation

Gastric outlet obstruction (scarring/malignancy/oedema→pyloric stenosis) → stomach you hear/hear+see/hear+see+feel

Malignancy: Gastric cancer and lymphoma (70% HP +ive)

Treatment:

1. Triple therapy to heal ulcer → **OGD 6wks** to check healing → discharge if healed

2. Non healing: investigate and treat as for refractory ulcer

REFRACTORY ULCER

No sign of significant healing by 12 (gastric) or 8 (duodenal) weeks

(a)Persistent HP: abx resistance/poor compliance → **breath test** + **biopsy for rapid urease test** $_{\text{(biopsy more proximally ie antrum)}}$

(b)Non-HP: compliance/NSAIDs/ulcer-inducing drug/impaired healing $_{\text{eg smoking}}$/medical $_{\text{ie ZES,PTH,CLD,CRF,Crohns}}$/cancer → **check gastrin**

Management:

(a)No cause: long term anti-secretories/surgery

(b)Elective surgery: acid reduction by (i)resect **parietal** cell mass $^{\text{(antrectomy/subtotal/PPG)}}$(ii) **vagotomy** (iii)antrum resection (**gastrin**)

PEPTIC ULCER PERFORATION

History: (i)**Pain** (sudden onset epigastric/radiating to back then RIF/worse on moving)
(ii)**Nausea** (occasionally vomiting)
(iii)**UGI bleed** (esp posterior D1 → GDA)

Exam: cold, sweating, rapid shallow breathing || rigid abdomen/liver dullness due to pneumoperitoneum ||silent/HS

Time course: (i)0-6hrs= **chemical** peritonitis (ii)6-12hrs **bacterial peritonitis** → SIRS-Sepsis/MOF
Investigations: (i)eCXR: free air in 70% and depends on site (ii)CTAP (iii)subdiagnostic serum amylase
Diff Dx: perforated appendix/acute pancreatitis/MI/perforated appendicitis

Immediate assessment and management

RESUS (oxygen, fluids, iv abx, catheter)
IMMEDIATE TREATMENT: NBM + NG + PPI (high dose)
HISTORY: Pain/differentials, ulcer RFs, cancer sx, PMHx: Medx: drug and EtOH causes; FHx: SHx:
EXAMINATION
INVESTIGATIONS (i)Bloods (FBC, U&E, LFTs, CRP, LIPASE, COAG, G&S, ABG) (ii)Imaging: eCXR for free air/CTAP if in doubt

Surgical treatment: (ulcer/lavage/drain)

Laparoscopy: advantages in low risk patients; not in high risk (>70, comorbid, shock, >24 delay, high WCC)

Gastric: (a)(i)biopsy + pedicle omentopexy OR (ii)excise
(b)Giant= Biopsy and pedicle omentopexy (MDT before radical resection ie resection is last resort)

Duodenal: (a)pedicle omentopexy
(b)Giant (>2cm) → (i)pyloroplasty (ii)distal gastrectomy + R-en-Y (iii)staple prox/Foley in ulcer, gastrojej (if can't do DG)

Drain: conflicting evidence
Lavage:
Gastro-jej/feeding jej: not routinely

Post-operative management

NG (free drainage + 4hrly aspirates), abx, PPI (high dose), alimentation (TPN/clear fluids immediately/feed whenever)
Chest PT/incentive spirometer/mobilise and sit out
Drain out at 48 hours, PCA down ASAP (not large incision)
After discharge: (i)H . pylori eradication (ii)check histology in 1wk

Conservative:

50% perfs seal by presentation → delay with stable picture proves safety
Abx/PPI/NG/IV fluids → gastrograffin follow-through
Home with triple therapy

Poor outcomes: age>75, WCC, shock, comorbs, delay (>24hrs x7 mortality)

PEPTIC ULCER BLEEDING

Resus → prompt OGD and appropriate endoscopic therapy +/- IR +/- surgery
Med tx: PPI pre OGD reduces need for OGD intervention (no overall reduction in M&M/rebleed/surgery)
PPI post-OGD: reduced rebleed if 80mg omeprazole then 8mg/hr 72 hrs *(HK RCT 240 pts)*
No evidence for TXA2

OGD: high failure risk if >2cm, lesser curve, superior/posterior D1 so consider TAE/early surgery

Surgery: Rockall/size >2cm/proximity to major vessel ie GDA in D1, LGA in lesser curve
Duodenum: Duodenotomy + underrun GDA; close longitudinally/HSV+HM (tx giant ulcer as above)
Gastric ulcer: underrun/partial gastrectomy/
IR: TAE useful alternative in those not fit for surgery

GASTRO-OESOPHAGEAL BLEEDING

$PUD_{44\%}$/oesophagitis$_{28\%}$/gastritis$_{26\%}$/$NAD_{20\%}$/duodenitis$_{15\%}$

Varices$_{12\%}$/Portal $HTN_{7\%}$

Cancer$_{5\%}$/Mallory-Weiss$_{5\%}$/Vascular malformation$_{3\%}$

	0	**1**	**2**	**3**
AGE	<60	60-79	80+	
BP	Normal	HR>100 SBP>100	HR>100 SBP<100	
COMORBS	Nil	Nil	CHF/IHD Other major comorbidity	Liver/renal failure; metastatic cancer
DIAGNOSIS	M-W	ALL OTHERS	GI CANCER	
EVIDENCE	NONE		Active spurt/visible vessel/adherent clot/blood in lumen	

INITIAL:

1.RESUS (airway, O2, blood)

2. IMMEDIATE (NG, PPI, abx, catheter)

3.HISTORY: HPc=diff dx of acid, cancer, M-W, variceal) PMx: liver/PU disease Medx: NSAIDS, steroids, smoking, EtOH/anticoag/PPI

FHx: cancer SHx: stress

4. EXAMINATION: stigmata of liver disease/peritonitis

5. INVESTIGATIONS (i)Bloods (FBC, U&E, LFTs, Coag, G&XM

6. MANAGEMENT: (i)OGD first (ii)TAE second (coeliac/SMA if 1mls/min) (iii)SURGERY last resort (duodenotomy for GDA; HMP)

Endoscopic techniques (i)Adrenaline$_{1:10000}$= small/focal lesions (ii)Clips (iii)APC= superficial/diffuse/malignant

Peptic ulcer: dual therapy (adrenaline + clip) → TAE → underrun/resect

Oesophagitis: PPI

Gastritis: PPI only; APC if diffuse erosive gastritis → TG if fails

Duodenitis: PPI

Varices/Portal HTN: separate notes

Cancer: APC→TAE→surgery

Mallory-Weiss: self-heal but may need adrenaline

Vascular malformation: (Dieulafoy's) clip/band ligation

7.REPEAT OGD: high risk of rebleed (Rockall 1+)

8. REBLEED: decide which modality to start with (difficult OGD control/pathology-specific/stability)

GASTRITIS

Inflammation of gastric mucosa

Aetiology: H. pylori/autoimmune (parietal cell autoAbs →atrophic gastritis with achlorydria/IF deficiency)

Type A gastritis: autoimmune autoabs vs parietal cells → atrophic gastritis → hypochlorydria → gastrin from antrum → NET

Type B gastritis: antral gastritis → pangastritis (H. pylori) → gastritis/PUD and metaplasia/cancer inc lymphoma

Stress gastritis: ischaemia of superficial mucosa

Erosive gastritis: NSAIDs/EtOH disrupt mucosal barrier

Reflux gastritis: bile reflux → foveolar hyperplasia

Lymphocytic gastritis

DYSPEPSIA

Definition:

Investigation: **review meds** (CaChBs/nitrates/NSAIDS/bisphosphonates/theophyllines/steroids) + **TWR OGD if bleeding**

Diff Dx: **cardiac/biliary** disease

Management: (i)**Test and treat H. pylori** (ii)empirical full-dose **PPI 4 weeks** (H_2RA if inadequate; dose up/down to control sx)
(iii)Lifestyle: **avoid precipitants** (EtOH/smoking/caffeine/chocolate/fatty foods) (iv) **lose weight**

Follow-up: (i)**annual review** if need long-term management of symptoms (ii)self-treat with antacid/alginate if resolving

Functional dyspepsia:

Eradicate H. pylori *do not routinely re-test*

Persistent after eradication: low-dose PPI/H_2RA 4 wks → step up/down to control symptoms → PRN

Post-gastrectomy syndromes:

Recurrent Ulcer: inadequate parietal debulking/ZES/incomplete vagotomy → resection margin

Early dumping

Late dumping

Small stomach syndrome

Bile reflux

Malnutrition: malabsorption/Vit B12/Iron/Vit C

Post-Vagotomy syndrome:

Diarrhoea/steatorrhoea/gallstones

ERCP PERFORATION

Retroperitoneal, peritoneal, bile duct injury

Features:

Investigations: Bloods inc lipase, ABG, contrast CTAP (not eCXR)

Treatment: abx; surgery if peritonitic