PEPTIC ULCER DISEASE

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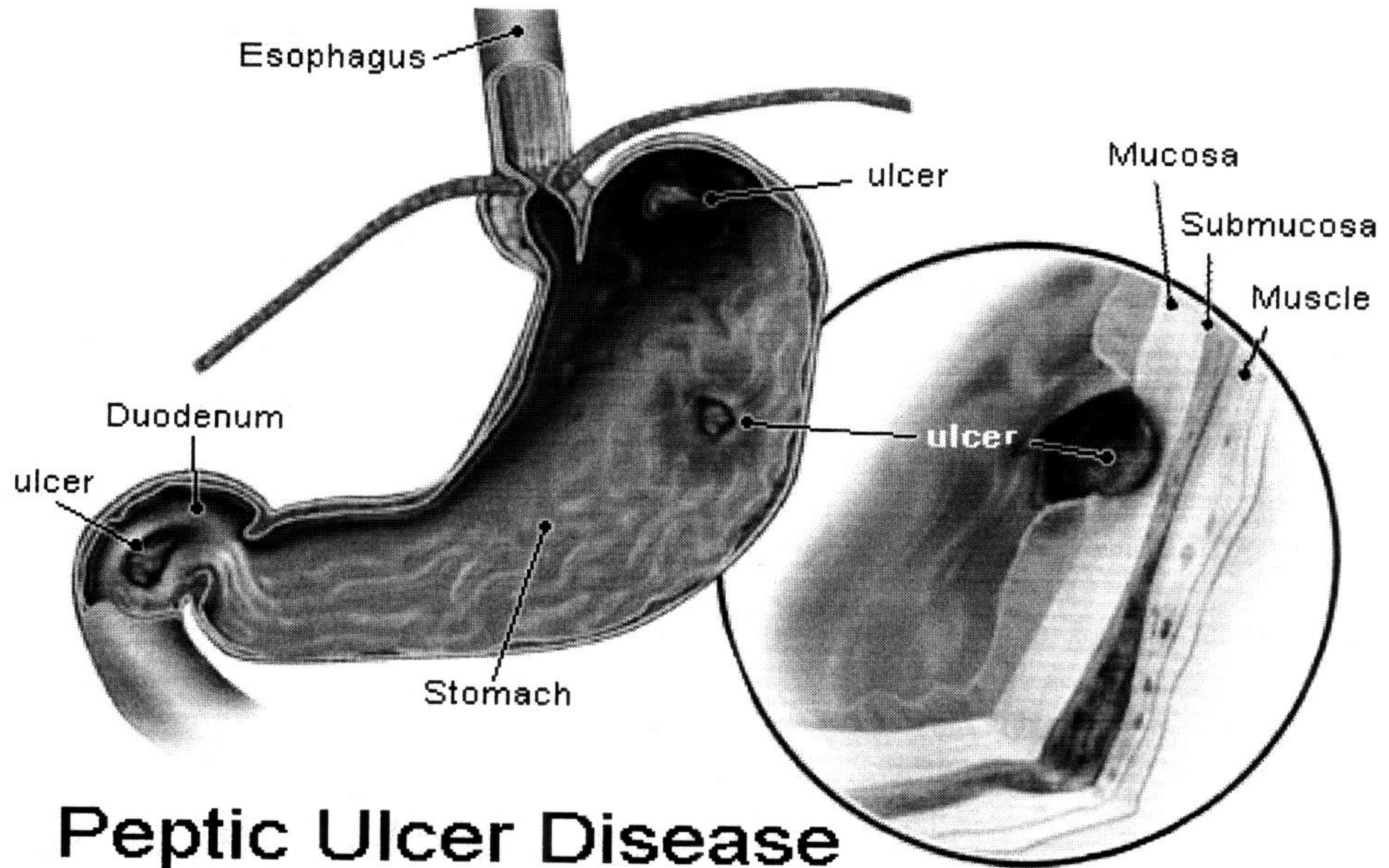

Esophagus
ulcer
Mucosa
Submucosa
Muscle
Duodenum
ulcer
ulcer
Stomach
Peptic Ulcer Disease

- **Breach in the GI mucosa**
- **Extending through the muscularis mucosa that arise**
- **When normal mucosal defensive factors are impaired or are overwhelmed by aggressive luminal factors.**

- **< 3-5 mm in diameter**
- **Do not penetrate the muscularis mucosa**

- **Prevalence**
  - **In the US**
    - **One year point prevalence is 1.8%**
    - **Life time prevalence is 10%**
  - **Internationally**
    - **Variable**
- **Sex**
  - **Mild predominance in male**
    - **Life time prevalence in male 11-14%**
    - **Life time prevalence in female 8-11%**

- **Age**
  - **Declining rates in younger men**
  - **Increasing rate in older women**
- **Considerable geographical variation**
- **DUs are 2-3 times more common that GUs**
- **Morbidity/ mortality**
  - **Death 1/100,000**
  - **Hospitalization 100/100,000**

- **Common**
- **Point prevalence:**
  - **DU – 12%**
  - **GU – 3.5%**
- **H. Pylori infection rate:**
  - **Very high**
  - **> 80% under 5 yrs children**
  - **90% of asymptomatic adults**

Types

- Acute –shows no evidence of fibrosis
- Chronic

Sites: Common

- **Stomach**
  - **Most commonly in lesser curvature**
- **Duodenum**
  - **Mostly in duodenal cap**

- **Lower oesophagus (with reflux oesophagus)**
- **Jejunum**
  - **After surgical anastomosis to stomach**
  - **ZES**
- **Meckel’s diverticulum**
  - **Contains ectopic gastric mucosa**
- **Ileum adjacent to a Meckel’s diverticulum**

Aetiology

2 major causes

- **H. Pylori infection**
- **Consumption of NSAIDs**

Other causes

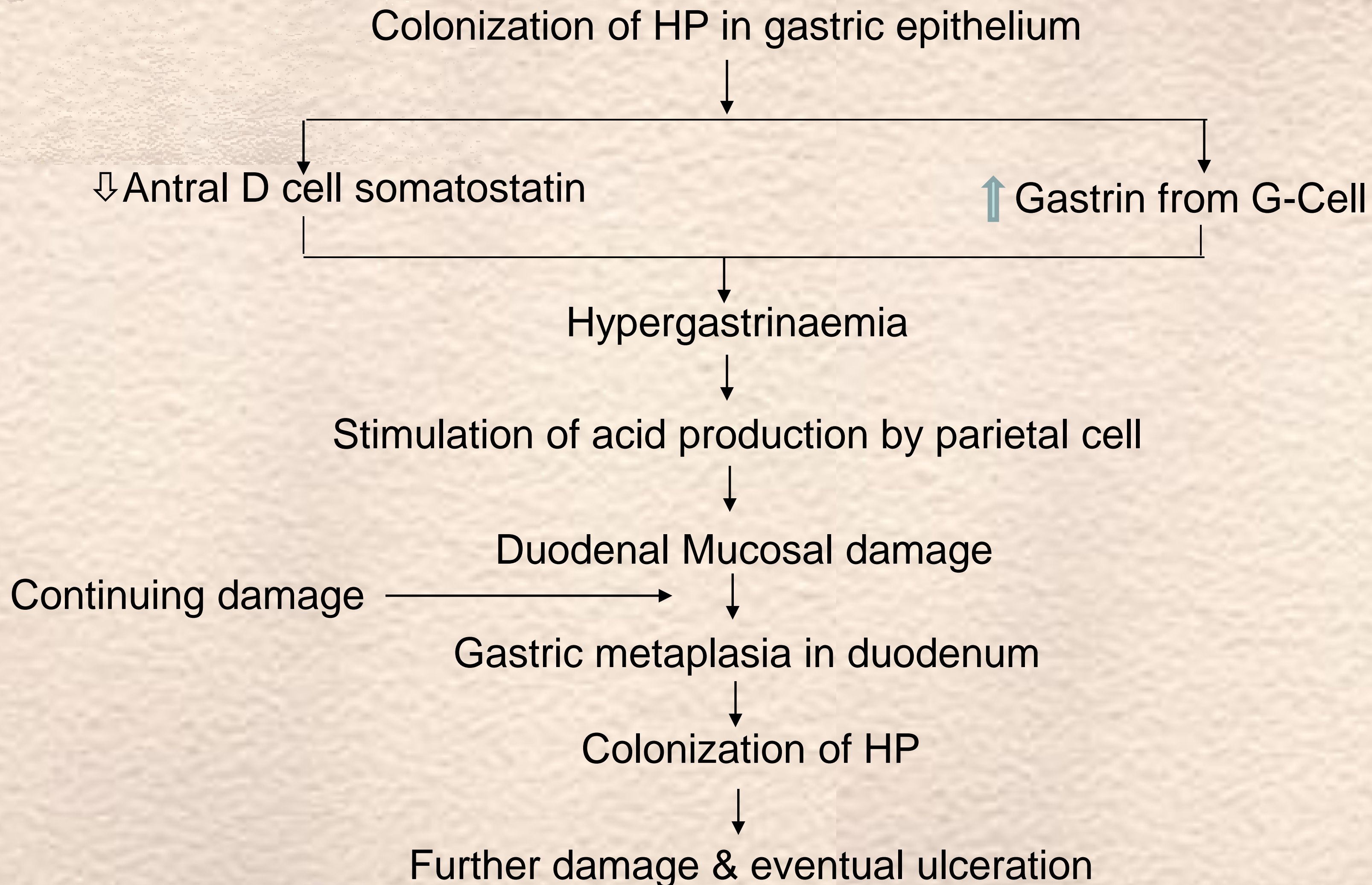
- **Stress ulcers**
- **Acid hypersecretory states**
  eg. ZES

- Genetic factors
- Blood group O
- Cigarette smoking
- Systemic disease
  - CRF
  - Cirrhosis
  - Hyperparathyroidism
  - COPD

Risk factors…

- Psychogenic factors
- Duodenogastric reflux of bile
- Disorders of gastric emptying

H. Pylori associate DU: Pathogenesis



H. Pylori associated GU: Pathogenesis…

- Less clear
- HP probably reduced gastric mucosal resistance
- Mechanisms probably include
  - Local HP related inflammation leading to epithelial damage

NSAID ⇨ **Inhibition of cyclo – oxygenase activity**

↓ PG formation

↓ Mucosal PG

↓ Cytoprotection

Mucosal Injury

Ulceration

Mucosal defense

3 lines of defense

- **First line of defense**
  - **Adherent mucous gel**
  - **Gastric bicarbonate secretion**
  - **Duodenal bicarbonate secretion & PH**
- **Second line of defense**
  - **Intrinsic epithelial cell defense**
- **Third line of defense**
  - **Mucosal blood flow**

3 lines of repair

- **First line of repair**
  - **Restitution**
- **Second line of repair**
  - **Epithelial cell growth**
- **Third line of repair**
  - **Acute wound healing**

Histology

- **Break in superficial epithelial cells penetrating down to the muscularis mucosa (3 mm or greater in size)**
- **Fibrosis base**
- **Increase in inflammation**
- **HP – may be found scattered**
- **Associated chronic active gastritis**

Clinical features

- Asymptomatic (Silent)
- Symptomatic

- Recurrent epigastric pain
- Other symptoms
  - Nausea
  - Vomiting
  - Heart burn
  - Water brush
- Symptoms due to complication
  - Haematemesis & melaena
  - Vomiting yesterday's food
  - Peritoneal pain

Epigastric pain

Characteristic feature. Notable characteristics:

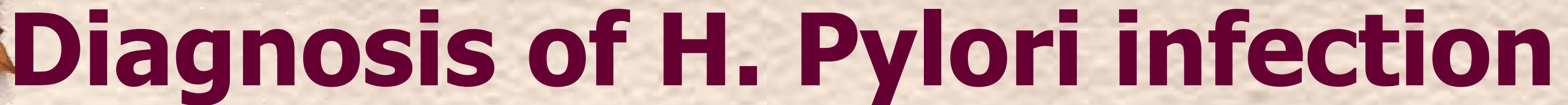
- **Hunger pain**
- **Night pain**
- **Periodicity**
- **Relieved by**
  - **Food**
  - **Milk**
  - **Antacids**
  - **Belching & vomiting**
- **Pointing sign**

Signs

- Uncomplicated PUD
  - No sign
  - Epigastric tenderness
  - Pointing sign
- Signs of complication, eg.,
  - Shock
  - Succession splash
  - Peritonism

- Diagnosis of peptic ulcer
- Diagnosis of H. pylori infection
- Routine laboratory evaluation

- **Upper GI radiology**
  - **Single contrast BA-meal X-ray**
  - **Double contrast BA-meal X-ray**
  - **Hypotonic Duodenography**
- **Endoscopy**
  - **Advantage**
    - **Direct inspection**
    - **Biopsy can be taken**
      - **To detect H. Pylori**
      - **To exclude malignancy with DU**



- **Urease assay**
  - **Rapid urease assay of the gastric biopsy maternal**
  - **Urea breath test using ^{13}C or ^{14}C**
- **Histology of gastric mucosa samples**
- **Culture of the gastric mucosa samples (Diagnostic gold standard)**
- **Serology**
  - **Ab (IgG* & IgA) to H. pylori protein (by ELISA)**

Routine lab evaluation

- **Not essential**
- **Complications require detailed investigations including**
  - **HB – estimation**
  - **S. electrolytes**
  - **B. urea**
  - **S. creatinine**
  - **Plain X-ray abd. in erect posture**

Treatment of PUD

- **Relief of symptom**
- **Healing of the ulcer crater**
- **Prevention of recurrence**
- **Prevention of complication**

- **Eradication of H. Pylori & cure of the disease**

Modalities of treatment

- **Medical management**
- **Surgical management**

Medical treatment of PUD

- Eradication of H. pylori
- Acid suppression/ Acid neutralizing therapy

Goal

- To promote ulcer healing
- To prevent relapse
- To eliminate the need for long term therapy

Indication

- All pts. with proven acute or chronic DU
- Those with GU who are HP-positive

Eradication of H. Pylori…

Drugs for H. Pylori eradication

- **Proton pump inhibitor**
  - **Omeprazole**
  - **Lansoprazole**
- **H_2 receptor antagonist**
- **Antibiotics/Antimicrobials**
  - **Clarithromycin, Amoxycillin, Tetracycline, Metronidazole, Furazolidine**
- **Bismath compounds**

No Single agent is optimally effective.

Triple therapy is encouraged

Choice of regimens: **Based on**

- **Local rates of resistance to imidazoles**
- **Resistance to clarithromycin**
- **Resistance to amoxycillin**

Currently recommended regimens

- **European H. Pylori study group (sept/96)**
  - **Tripple therapy - 1 week**
    - **Proton pump inhibitor**
    - **Two of the following antimicrobiols (Clarithromycin, Metronidazole Tinidazole and Amoxycillin)**

Eradication of H. Pylori…

<u>Currently recommended regimens…</u>

- **PPI based triple therapy**
  - **OAM/ OAT – 14 d**
  - **OAF – 14 d**
- **H_2RA based triple therapy**
  - **R (or F or R) AF – 14 d**
- **Bismath based regimens**
  - **CAM/CAT -14d**
  - **CAF – 14d**

Confirmation of eradication

- **Repeat endoscopy with gastric mucosal biopsy**
  - **Reserved for patients with complicated ulcer disease (eg. bleeding)**
- **Urea breath test**
  - **Serologic test in unreliable**

Eradication of H. Pylori…

<u>Failure of eradication</u>

- **Causes**
  - **Microbial resistance**
  - **Non/ Poor compliance**
  - **Ecological niche of the organism**
- **I wk quadruple drug therapy**
  - **OBTM**
    - **Successful in about 50%**

- Now used as
  - Adjunctive therapy
  - Symptomatic relief of DU
  - Maintenance therapy (when eradication therapy fails)
- Different agents
  - Antacids
  - H2RA
  - PPI
  - Prostaglandins
  - Coating agents (Sucralfate, colloidal bismath)
  - Anti – cholinergic agents (Pirenzepine)

- **Avoid**
  - **Smoking**
  - **Coffee, caffeine containing beverages**
  - **Aspirin, NSAIDs**
- **Restrict alcohol intake**
- **No special dietary advice**

Assessment of effectiveness of treatment

- Symptomatically
- Endoscopic follow up
  - No need for DU

- **Rarely necessary**
  - **H2 receptor antagonist introduction 1970**
  - **Availability of other safe potent acid suppressing agents**
  - **Cure of most PUD by HP eradication therapy**

Surgical treatment

Indication:

- **Emergency**
  - **Perforation**
  - **Haemorrhage**
- **Elective**
  - **Complication e,g, Gastric outflow obstruction**
  - **Recurrent ulcer following gastric surgery**

Complication of PUD

- Haemorrhage
- Perforation
- Gastric outlet obstruction

- **Withdrawal of NSAIDs**
- **Healing and prophylaxis of ulcer**
  - **Proton pump inhibitor**
  - **Misoprostol**
- **Prevention**
  - **Substitution : Paracetamol/ Cox-2 inhibitor**
  - **Concureent use :H_2RA/PPI/PGE1 analogue**
- **HP eradication – controversial**

Thank you all