GI pharma summary

Lecture 2+3 GERD and peptic ulcer

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• **Lifestyle modification: 1st line**

• Head of bed elevation

• Avoiding smoking, heavy alcohol consumption, large evening meals, nighttime snacks, and high dietary fat intake.

• **Weight loss is encouraged in overweight GERD patients**.

• **All patients with GERD should avoid NSAIDs** because of their role in disrupting physiologic mucosal protection mechanisms.

• Drug therapy:-

1. Antiacids→ work by chemically neutralizing the acid without interacting with any receptors or enzymes**(given on occasional symptoms)**

2. H2 histamine antagonists/ blockers**(given daily)**

3. Proton pump inhibitors**(given daily)**

Antacids:-

Antiacids are **weak bases**.

Neutralize gastric acidity by :-

1- **Reacting with gastric acids** to form salts and water

2- **Diminishing pepsin activity** as pepsin is inactive at PH above 4

Antiacids vary in their chemical composition , acid neutralizing capacity, **sodium content(**beware of renal failure patients!)**,** and Palatabilityالمذاق

Antacids			
Aluminum hydroxide:	Magnesium hydroxide:	Calcium carbonate (Tums):	• Sodium bicarbonate:.
• **Useful in hyperphosphatemia** It **binds to phosphate in the gastrointestinal (GI)** tract and subsequently **prevent the absorption of phosphate.** • **Tend to cause constipation.** **So if a patient has diarrhea, give aluminum hydroxide**	•**Tend to cause diarrhea.** • **Aluminum hydroxide and magnesium hydroxide are usually combined to minimize the impact upon bowel function.**	• **Excessive dose** can lead to **hypercalcemia.**	**Systemic absorption** can cause **transit metabolic alkalosis** and **produce significant sodium load (specially in patients with heart failure, hypertension and renal insufficiency)** . Not recommended

Antacids duration of action

• Antiacids **afford fast symptoms relief**.

• Have **short duration of action.**

• **Duration of action of an antacid** is related primarily to the **length of time the medication remains in the stomach**:

In the fasting state, the duration of action is relatively short and **can be prolonged by giving an antacid after food**.

Contraindications and precautions

• **Absorption of cations** (Mg, Al, Ca) from antiacids is usually **not a problem in patients with normal renal function**, however, **accumulation and adverse effect** may occur in **patients with renal failure.**

• **Chronic administration of calcium carbonate** containing antacids **should be avoided** because of **hypercalcemia.**

Drug interaction

• All antiacid may affect the absorption of other medications by:

1- **Binding the drug** → reducing its absorption

2- **Increasing intragastric PH** so that **the drug solubility is altered.** So **antiacid shouldn't be given within 2 hours of doses of tetracycline, fluoroquinolone, itraconazole and iron.**

GERD during pregnancy

Mild to moderate: antiacid or H2 receptor antagonist.

Severe : PPIs

Peptic ulcer

Peptic ulcers usually occur due to **imbalance** in **aggressive factors like HCl** and **defensive factors like mucus** in stomach lining	
Aggressive factors	**Defensive factors**
Endogenous: **1. Hcl. 2. Pepsin. 3. Bile.** Exogenous: 1. **Smoking 2. Stress**	**Mucus.** **Na HCO3.** **Integrity of gastric mucosa**: tight junctions between cells prevent back diffusion of Hcl. **Prostaglandins** : decreases with age, with increased incidence of PU. NSAID Inhibits prostaglandin via inhibiting **Cox-1** and **Cox-2**

Other causes of ulcer(they might come in a case):-

Idiopathic, hypersecretion of gastric acids (Zollinger-Ellison syndrome), viral (CMV), vascular insufficiency (cocaine), radiation, Chemotherapy, infiltrating disease (Crohn's disease).

أدوية نحاول نخفف منها عند مرضى االل ulcer

Drugs increasing Hcl secretion

1) **NSAIDs** : by decrease prostaglandins.
2) **Corticosteroids** : by decrease prostaglandins.
3) **Nicotine** (smoker's ulcer): by stimulation of nicotinic receptors.
4) **Cholinomimetics** : by muscarinic M3 receptor stimulation.
5) **Alpha methyl dopa: by parasympathetic predominance.**
6) **Gastrin**: by stimulation of gastrin receptors.
7) **Histamine**: by stimulation of H2 receptors.
8) **Calcium**: increases gastrin. → long term
9) **Caffeine**: by increase cAMP.
10) **Alcohol**.

cox2

تؤثر ايضا على muscrinc ال receptor

Risk Factors Associated with (NSAID)–Induced Ulcers

• Age >65

• Previous peptic ulcer

• Previous ulcer-related upper GI complication

• High-dose NSAIDs

• Multiple NSAID use

• Selection of NSAID (selective COX-2 inhibitors are less likely to cause ulcers)

• NSAID-related dyspepsia

• Aspirin (including cardioprotective dosages)

• Concomitant use of :

NSAID plus low-dose aspirin

Oral bisphosphonates(e.g., alendronate)

Corticosteroids Anticoagulant or coagulopathy

Antiplatelet drugs (e.g., clopidogrel)

Selective serotonin reuptake inhibitor

Diagnosis of peptic ulcer

Epigastric pain and point tenderness, rhythmicity (relation to meals, nocturnal) & periodicity (symptoms for weeks or months).

DU: fasting or nocturnal, relieved by food.

GU: increased by food.

For H pylori ulcer diagnosis: **urea breath test or fecal antigen test**.

Stop antimicrobials 4 weeks, PPIs 2 weeks and H2 antagonists 24 hours before. Endoscopy with biopsy for H pylori and to exclude malignancy. Cancer in GU is > DU.