

## SOLUTION

# ANTI SECRETARY, ANTACID AND ANTI ULCER DRUGS

1. Antacid are the weak base that react with the gastric HCL and form water and salt.
2. Multiple ulcers may occur in GIT as in the **Zolinger-Ellison syndrome**, or in the **Meckels's diverticulum**.
3. Gastric acid secretion is divided into two periods- (1) Interprandia (basal secretion) and (2) Postprandial (Stimulated secretion during and after meal)
4. Three phase of acid output are recognized- (1) cephalic (2) gastric (3) Intestinal or terminating phase.
5. **Cephalic phase is mediated by vagouse nerve.**
6. Pepsinogen is inactive precursor of the proteolytic enzyme pepsin, is synthesized, and stored in the chief cell of the oxyantic glan area.
7. Gastric and duodenal ulcer is a result of imbalance between cytoprotective and aggressive agent's like- bicarbonate, mucus, and histamine, gastrin, acetylcholine.
8. Gram-negative bacteria **Helicobacter pylori** are also responsible for the causation of ulcer. Which is gram negative in nature
9. Classification of antiulcer drugs are as follows-
  - (1) Antimicrobial Drug- Amoxiciline, Bismuth compound, Clarithromycin, Metronidazole, Tetracycline.
  - (2) H<sub>2</sub> histamine receptor blocker- Cimetidine, famotidine, Nizatidine, Ranitidine.
  - (3) Proton Pump Inhibitor- Dexlansoprazole, Esomeprazole, Lnsoprazole, Omeprazole, Pantoprazole, Rabeprazole.
  - (4) Prostaglandins- Misoprostal
  - (5) Anacids- Aluminium hydroxide, Calcum carbonate, Magnisium Hydroxide, Sodium Bicarbonate.
  - (6) Mucosal Protective Agents- Bismuth subsalicylate, Sucralfate.
10. To document infection with *Helicobacter pylori* endoscopic biopsy of the gastric mucosa or various noninvasive methods are used, including serologic tests and urea breathe test.
11. <sup>13</sup>CO<sub>2</sub> is used for the analyzing in urea breath test for the confirmation of *Helicobacter pylori* infected ulcer.
12. Gastric acid are secreted by **parietal cell**.
13. **Gastric acid secretion is stimulated by Histamine, Acetylcholine, and Gastrine.**
14. Activation of all three receptor results in activation of Protein Kinase.
15. **Cimetidine may excreted to milk in lactating woman, and may cross placental barrier. It is normally excreted through urine.**
16. **Warferin, Diazepam, Phenytoine, Quinidine, Carbamazepine, Theophyline and Imipramine metabolism in liver is affected by the Cimetidine because it affect the microsomal enzyme P450 in liver and thus the serum level of these drug are increased in blood.**
17. **Galactorrhea (continuous discharge of urine) is the main side effect of Cimetidine.**
18. PPI are prodrugs with an acid resistant enteric coating to protect them from premature degradation by gastric acid.
19. Prostaglandin produced by gastric mucosa, inhibit the secretion of HCL and stimulate the secreration of mucus and bicarbonate.

20. Side effect of misoprostal is that produce uterine contraction and disloading of fetus.
21. Antacid are the drug which show there action by the neutralization of excess HCL in the GIT. The side effect of Aluminum hydroxide is that it causes constipation, where as magnesium hydroxide cause constipation.
22. Sucralfate is the complex of aluminum hydroxide and sulfated sucrose bind to the positively charged protein in mucus of the GIT and protect from the ulcer.
23. Antacid are classified into two types- (1) Systemic- sodium bicarbonate and sodium citrate (2) Non systemic- these are from insoluble in the small intestine or contain a non soluble anaions. Examples- calcium carbonate, magnesium hydroxide, magnesium tricilecate, aluminium hydroxide.
24. Sodium bicarbonate 1.0g neutralizes the 120 ml of 0.1 N HCL. Solution  
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- $$\text{NaHCO}_3 + \text{HCL} \longrightarrow \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2$$
25. It is not recommended for long term use because it causes systemic alkalosis.
26. Calcium carbonate- 1.0 g neutralizes 200ml of 0.1 N HCL.
- $$\text{CaCO}_3 + 2\text{HCL} \longrightarrow 2\text{HCl} + \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$$
27. Magnesium Hydroxide- 1 gm neutralize 500 ml of 0.1 N HCL
- $$\text{Mg}(\text{OH})_2 + 2\text{HCL} \longrightarrow \text{MgCl}_2 + 2\text{H}_2\text{O}$$
28. Magnesium Tricilecate- 1g neutralizes 100 ml of 0.1 N HCL.
29. Aluminum Hydroxide- 1 gm neutralize between 12.5 to 25.0 ml of 0.1 N HCL.
- $$\text{AL}(\text{OH})_3 + 3\text{HCL} \longrightarrow \text{ALCl}_3 + 3\text{H}_2\text{O}$$
30. Aluminum hydroxide is a mild astringent and a demulcent. This agent produce constipation, as the Aluminum phosphate formed relaxes the intestinal smooth muscle.
31. This constipation side effect can be overcome by the addition of magnesium hydroxide.
32. Cimetidine contain Imidazol ring.
33. Cimetidine given in tablet forms 200 mg three times daily and 400 mg each evening for 4 week.
34. Cimetidine is adequately absorbed orally, through bioavailability is 60-80 % due to the first hepatic metabolism.
35. Antacid reduce absorption of all H<sub>2</sub> Blocker.
36. Ketokenazol absorption is reduced by H<sub>2</sub> Blocker due to reduced gastric acidity.
37. Renal failure increase the half life and dialysis shortnes it.
38. Ranitidine- it has a Thiazole ring. Oral dose is 150 mg bid or 300 mg before bedtime.
39. Famotidine- It contains a Furan Ring structure.
40. Nizatidine- it is the newest H<sub>2</sub> receptor antagonist. It has a Thiazole ring and a side ring identical to ranitidine.
41. Helicobacter pylori Eradication regimens- (One week regimen)
1. Amoxucycillin 500 mg tid + Mertronidazole 400 mg tid + Omeprazole 20 mg bid or 40 mg OD for 7 days.
  2. Clarithromycin 250 mg bid + metronidazole 400 mg (or Tinidazole 500 mg) bid+ omiprazole 20 mg bid or 40 mg OD for 7 days.
  3. Amoxycilin 1 g bid + Clarithromycine 500 mg bid + Omiprazole 20 mg bid or 40 mg OD for 7 days.
  4. Lansoprazole 30mg bid + any two of the amoxiciline 1 g bid or Clarithromycin 250 mg bid, Metronidazole 400 mg for 7 days.
42. Triple Therepy (2 Week Regimen)
1. Tetracycline 500 mg tid+ Metronidazole 400 mg tid + colloidal bisbuth 120 mg qid for 14 days.
  2. Amoxycilinine 750 mg tid + Metronidazol 500 mg tid + Ranitidine 300 mgf at night.