

**GASTROESOPHAGEAL
REFLUX DISEASE**

TO SOOTH A “BURNING HEART”

PHARMACOLOGY CASE STUDY # 22

**PRESENTED BY
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OBJECTIVES

- Identify patient-specific factors that may contribute to the development of gastroesophageal reflux disease(GERD)
- Recommend effective non-pharmacologic and non-prescription therapies for patients with GERD
- Assess the severity of GERD based on patient symptoms and history and recognize when patients should be referred for further medical evaluation and treatment
- Know the appropriate role of H2-receptor antagonists, proton pump inhibitors, prokinetic agents, and non-systemic therapies in GERD
- Develop patient specific monitoring parameters for patients with GERD

GERD

- GASTROESOPHAGEAL REFLUX IS BOTH A NORMAL AND PATHOPHYSIOLOGY PHENOMENON
- GERD IS A SYMPTOMATIC CLINICAL CONDITION IN WHICH THE REFLUX OF GASTRIC MATERIAL INTO THE ESOPHAGUS CAUSES SYMPTOMS OR TISSUE DAMAGE OR BOTH.

COMMON SYMPTOMS OF GERD

- HEARTBURN
- REGURGITATION OF GASTRIC CONTENTS
- CHEST PAIN
- DYSPHAGIA
- HOARNESS
- DENTAL DISEASE
- ASTHMA
- WATER BRASH

ETIOLOGY

- TRANSIENT LOWER ESOPHAGEAL SPHINCTER (LES) RELAXATION
- DECREASED LES MUSCLE TONE
- DELAYED STOMACH EMPTYING
- INEFFECTIVE ESOPHAGEAL CLEARANCE
- DIMINISHED SALIVATION
- POTENCY OF REFLUX MATERIAL
- INABILITY OF ESOPHAGEAL TISSUE TO RESIST INJURY AND REPAIR ITSELF

CONTRIBUTING FACTORS

- | | |
|------------------|----------------------------|
| • SMOKING | • ALCOHOL |
| • CAFFEINE | • SPICY FOODS |
| • CHOCOLATE | • CALCIUM CHANNEL BLOCKERS |
| • OVEREATING | • ESTROGEN |
| • TIGHT CLOTHING | • ANTICHOLINERGIC MEDS |
| • HERNIA | • NSAIDS |
| • OBESITY | |
| • PREGNANCY | |

DIAGNOSTIC TEST

- USUALLY SUGGESTED BY PRESENTING SYMPTOMS
- TESTS TO CONFIRM
- BARIUM X-RAYS
- ENDOSCOPY
- ESOPHAGEAL PH TEST
- BERNSTEIN'S TEST

TREATMENT OF GERD

- LIFESTYLE AND DIET CHANGES
- WEIGHT REDUCTION
- MEDICATIONS
- ANTACIDS
- H2 ANTAGONISTS
- PROTON PUMP INHIBITORS
- PROKINETIC AGENTS
- TREATMENT OF ESOPHAGEAL STRICTURES WITH DILATATION
- MONITORING OF BARRETT'S ESOPHAGUS

PATIENT PRESENTATION

- CHIEF COMPLAINT- "I can't eat or sleep anymore without getting heartburn, and sometimes my chest even hurts."

HPI

- HPI- Ricardo Torres is a 53 yo man with a two-year history of epigastric discomfort, bloating, and gas that have increased over the past four months. He states that large meals and lying down makes his symptoms worse, but antacids offer some short -term relief. He denies nausea, vomiting, irregular bowel habits, and weight loss. However, he does admit to skipping some meals to avoid dysphagia.

- PMH- hiatal hernia x 3 years, NIDDM x15 years, HTN x 3 years
- FH - non-contributory
- SH- 10-12 beers/week, smoker x 10 years
- MEDS- Nifedipine XL 30mg po QD, Triameterene/HCTZ 37.5/25 po QAM, Glyburide 10mg po QD, Mylanta DS 30 ml po PRN
- Allergies- NKDA
- ROS- negative except for complaints noted above

PHYSICAL EXAM

- VS - BP 106/80, P 86, R 18, T 36.8 C
- WT. 101.6 kg, HT. 183 cm
- HEENT- No erythema, no candidiasis
- Neck- Supple, no masses present
- Chest- Clear to A&P
- CV- Normal heart sounds, RRR
- ABD- BS present; soft, non-tender, no hepatosplenomegaly

- EXT- WNL
- NEURO- Non-focal
- LABS- NA 139 meq/l, K 3.8 meq/l, CL 96 meq/l, CO2 24 meq/l, BUN 29 mg/dl, serum creatinine 1.6 mg/dl, glucose(fasting) 140 mg/dl

OTHER

- An exercise stress test was performed to rule out ischemic heart disease. The test was positive for chest pain, negative for ischemic ECG changes, and overall inconclusive for ischemic heart disease. The examining physician was unable to dismiss angina as a possible cause of the patient's symptoms, but he attributed the recent complaints primarily to GERD.

- A subsequent upper GI endoscopy was negative for strictures or ulcers but showed multiple, early erosive lesions in the distal esophagus (Savary- Miller score II/IV) consistent with mild to moderate erosive esophagitis

PROBLEM LIST

- GERD
- HIATAL HERNIA
- NIDDM
- HTN
- OBESITY
- NICOTINE DEPENDENCE
- R/O ALCOHOL ABUSE/DEPENDENCE

**FACTORS CONTRIBUTING TO
ESOHAGITIS IN THIS PATIENT**

- HIATAL HERNIA
- SMOKING
- OBESITY
- ALCOHOL
- SPICY FOODS
- CALCIUM CHANNEL BLOCKERS

**DESIRED OUTCOME
GOALS OF PHARMACOTHERAPY FOR
GERD**

- ALLEVIATE /ELIMINATE SYMPTOMS
- DECREASE FREQUENCY AND
DURATION OF REFLUX
- PROMOTE HEALING OF INJURED
MUCOSA
- PREVENT DEVELOPMENT OF
COMPLICATIONS

THERAPEUTIC ALTERNATIVES

- SHOULD CHANGES BE MADE IN CURRENT DRUG THERAPY?
Could consider changing HTN medication from a calcium channel blocker.

**NON-DRUG INTERVENTIONS
LIFESTYLE CHANGES**

- DIETARY CHANGES
- SMOKING CESSATION
- AVOID ALCOHOL
- ELEVATE HEAD OF BED
- AVOID TIGHT-FITTING CLOTHES
- WEIGHT LOSS

**PHARMACOTHERAPEUTIC
ALTERNATIVE REGIMES**

- PHASE I- ANTACIDS/OTC H2 ANTAGONISTS
- PHASE II
- PHASE II A. STANDARD DOSES OF H2 ANTAGONISTS FOR 8-12 WEEKS
- CIMETIDINE 400mg QID or 800mg BID
- RANITIDINE 150mg BID
- FAMOTIDINE 20mg BID
- NIZATIDINE 150mg BID

PHASE II

- PHASE II A - OR
- B. MUCOSAL PROTECTIVE AGENTS
(ALTERNATIVE TO H2 ANTAGONIST)
- SULCRAFATE 1gm after meals and HS
- OR
- C. PROKINETIC AGENTS
- METOCLOPRAMIDE 10mg before meals
and HS (up to 15mg QID)

PHASE II A -CONTINUED

- C. PROKINETIC AGENTS
- CISAPRIDE 10MG QID(up to 20mg QID)
- BETHANECHOL 25mg QID

PHASE II B

- A. TITRATION OF H2 ANTAGONIST TO
1.5 - 2 X STANDARD DOSE
- OR
- PROTON PUMP INHIBITORS
- OMEPRAZOLE 20mg QD X 8 WEEKS
- LANSOPRAZOLE 30mg QD X 8 WEEKS

**PHASE III NON-
PHARMACOTHERAPEUTIC
ALTERNATIVES**

- SURGERY
- NISSEN FUNDOPLICATION
- LAPAROSCOPIC FUNDOPLICATION
- HILL POSTERIOR GASTROPEXY
- BELSEY FUNDOPLICATION

**PHARMACOTHERAPEUTIC PLAN FOR
THIS PATIENT
AND MONITORING OF THE PLAN**

- RANITADINE 150mg PO BID x 12 WEEKS
- MONITORING - PATIENT COMPLIANCE, ADVERSE REACTIONS, DRUG INTERACTIONS, FREQUENCY AND SEVERITY OF SYMPTOMS.

PATIENT COUNSELING

- PATIENT EDUCATION MATERIAL ON GERD REGARDING LIFESTYLE CHANGES AND PHARMACOTHERAPY- INCLUDING: DIETARY RESTRICTIONS, AVOID OVEREATING AND EATING BEFORE BEDTIME, LOSE WEIGHT, AVOID TIGHT - FITTING CLOTHING , ELEVATING HEAD OF BED, REPORTING SYMPTOMS, AVOID ALCOHOL, STOP SMOKING, MEDICATION REGIMEN, MEDICATIONS TO AVOID.

CLINICAL COURSE

- Mr. Torres experienced initial relief of symptoms, but at three months he complained of worsening symptoms and increased need for antacids for the previous several weeks. A repeat endoscopy revealed multiple faint erythematous lesions and occasional erosions.

POSSIBLE CAUSES FOR RECURRENCE OF SYMPTOMS

- Non-compliance with medication regimen
- Non-compliance with lifestyle changes
- Calcium channel blocker
- Titration of H2 Antagonist needed
- Other medication interactions (NSAIDS, OTC , herbal products, etc)

ALTERATION OF THERAPY

- ADD PPI
- CHANGE HTN MED FROM CALCIUM CHANNEL BLOCKER
- CONTINUE TO EMPHASIZE IMPOTANCE OF REQUIRED LIFESTYLE CHANGES

CHRONIC MAINTENANCE THERAPY IN GERD

- High rate of relapse of symptoms upon discontinuing therapy, therefore maintenance regimens required for most
- Primary goal to keep patient in remission using lower doses than those routinely used therapeutically.

SELF STUDY

- CISAPRIDE EFFECTIVENESS AND COMPARISON TO H₂- RECEPTOR ANTAONISTS AND PROTON PUMP INHIBITORS
- COST OF EQUIVALENT TREATMENT REGIMENS USED TO TREAT GERD IN YOUR AREA
- COUNSEL OF PATIENT ABOUT THE LONG-TERM SAFETY OF PROTON PUMP INHIBITORS FOR MAINTENANCE THERAPY
