

# **NAUSEA & VOMITING**

***TUCOM  
Internal Medicine  
3<sup>rd</sup> year  
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# NAUSEA & VOMITING

## Learning objectives;

1. Make a definition of vomiting, nausea and regurgitation.
2. Clarify the mechanism of vomiting.
3. List the causes of vomiting.
4. Understand the examination points in patient with vomiting.
5. List the complications of vomiting
6. Outline the treatment of nausea and vomiting.

# VOMITING

- **Vomiting;** Is a forcible ejection of gastric contents, due to synchronous contraction of the diaphragm, intercostal muscles and abdominal muscles, raises intra-abdominal pressure with relaxation of the lower oesophageal sphincter. Is a highly integrated and complex reflex involving both autonomic and somatic neural pathways.
- **Nausea;** Is the subjective feeling of a need to vomit.
- **Regurgitation;** the effortless passage of gastric contents into the mouth.
- **Projectile vomiting;** refers to vomiting that is sudden, usually without nausea, and so vigorous that the vomit is forcefully projected to a distance. Projectile vomiting is associated with increased intracranial pressure or pyloric obstruction.

**Mechanisms;** Vomiting is coordinated by the brain stem and is effected by neuromuscular responses in the gut, pharynx, and thoracoabdominal wall

**Activators of Emesis;** act at several sites.

1. **Cerebral cortex;** by unpleasant thoughts or smells
2. **Cranial nerves;** after gag reflex activation
3. **Postrema;** a medullary nucleus, responds to blood borne emetic stimuli and is termed the *chemoreceptor trigger zone*. Many emetogenic drugs act on the area postrema, as do bacterial toxins and metabolic factors produced during uremia, hypoxia, and ketoacidosis, by activation of 5-HT<sub>3</sub>, M<sub>1</sub>, H<sub>1</sub>, and dopamine D<sub>2</sub> receptor subtypes
4. **Labyrinthine apparatus;** motion sickness and inner ear disorders, by activation of cholinergic muscarinic M<sub>1</sub> and histaminergic H<sub>1</sub> receptors.
5. **Gastric irritants;** such as cytotoxic agents stimulate gastroduodenal vagal afferent nerves

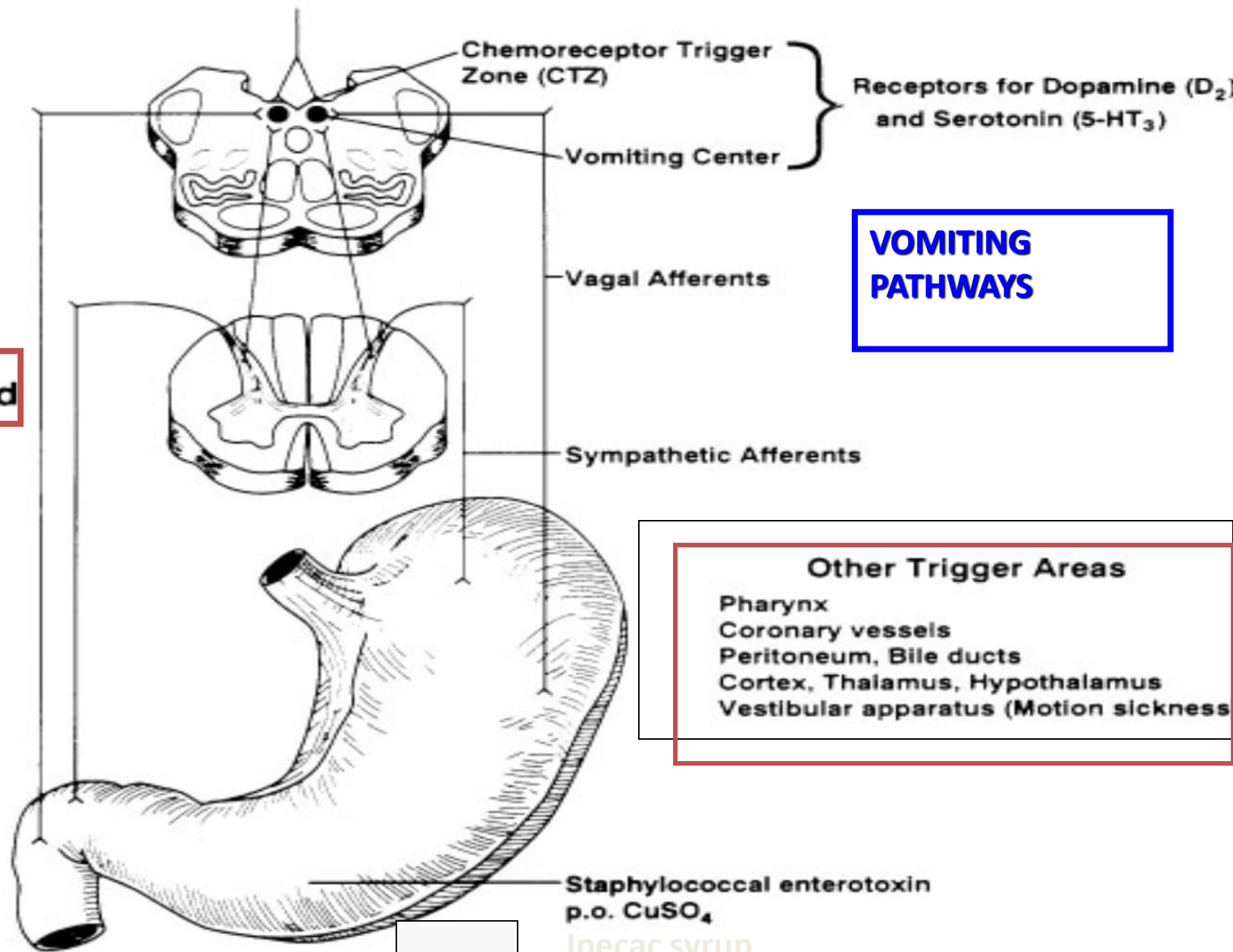
## Drugs/ Chemicals

Dopamine agonists, cancer chemotherapy,  
apomorphine, digoxin, i.v.  $\text{CuSO}_4$

Medulla

Spinal Cord

GI Tract



# The major causes of vomiting



## Alcoholism



## Drugs

- NSAIDs
- Opiates
- Digoxin
- Antibiotics
- Cytotoxins



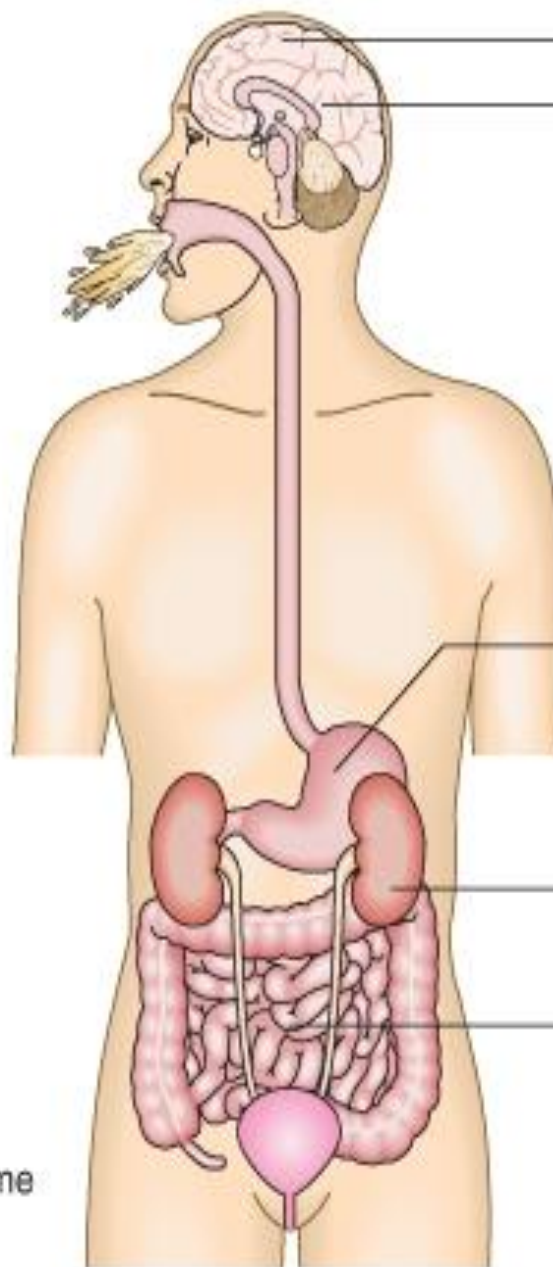
## Infections

- Hepatitis
- Gastroenteritis
- Urinary tract infection



## Metabolic

- Diabetic ketoacidosis
- Addison's disease
- Cyclical vomiting syndrome



## Psychogenic

## CNS disorders

- Vestibular neuronitis
- Migraine
- Raised intracranial pressure
- Meningitis

## Gastroduodenal

- Peptic ulcer disease
- Gastric cancer
- Gastroparesis

## Uraemia

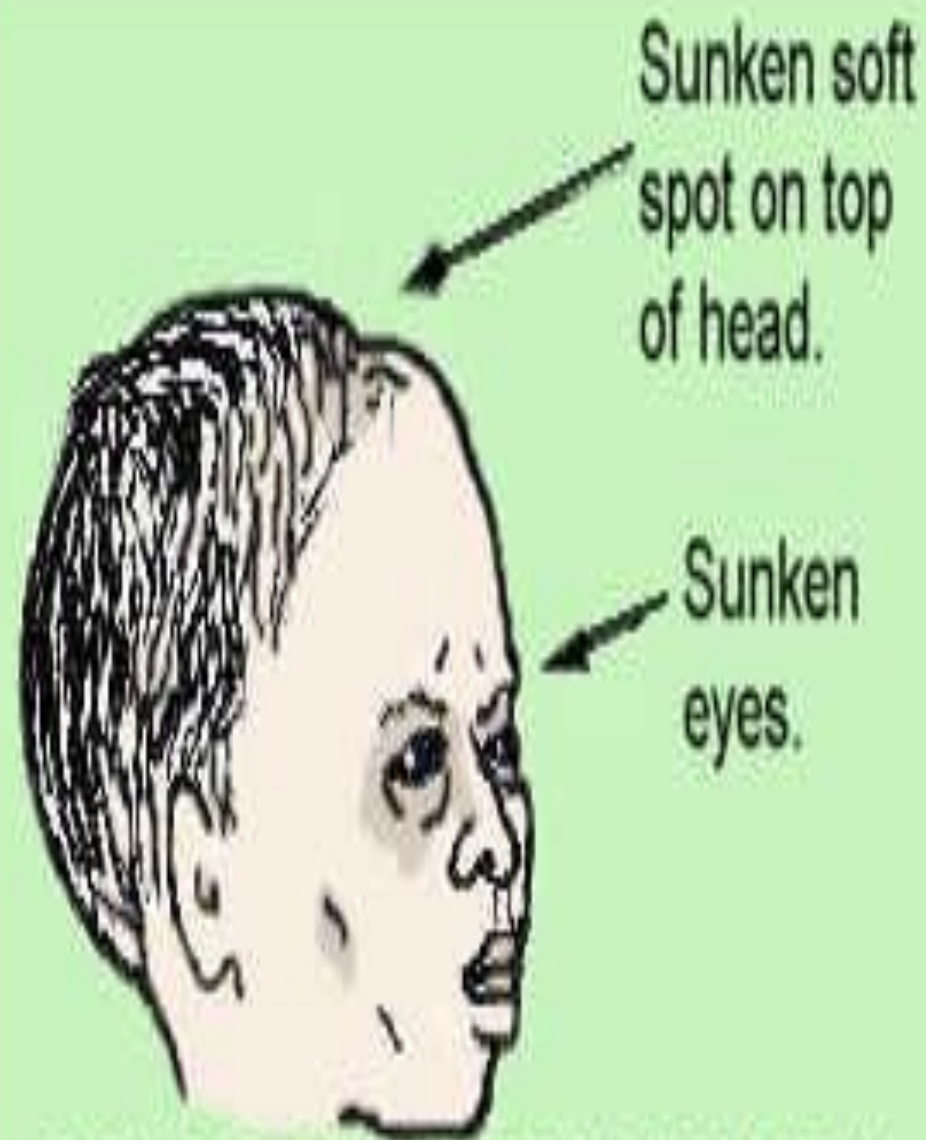
## The acute abdomen

- Appendicitis
- Cholecystitis
- Pancreatitis
- Intestinal obstruction

# **Examination;**

- May reveal signs of dehydration, fever and infection.
- Evidence of abdominal masses, peritonitis or intestinal obstruction must be sought.
- Neurological signs including papilloedema, nystagmus, photophobia and neck stiffness.
- Other findings may suggest alcoholism, pregnancy or bulimia as the underlying diagnosis.
- The diagnostic approach will be dictated by the history and examination





SIGNS OF INFANT DEHYDRATION





# Complications of vomiting

1. Fluid and electrolyte imbalances; Dehydration, metabolic alkalosis, hypokalemia and prerenal azotemia.
2. Nutritional deficiencies
3. Aspiration pneumonia
4. Mallory-Weiss tears
5. Esophageal rupture

# Treatment of nausea and vomiting

1. Treat complications regardless of cause e.g., replace salt, water, potassium losses.
2. Identify and treat underlying cause, whenever possible.
3. Relief the symptoms (nausea and vomiting).
4. Use preventive measures when vomiting is likely to occur (e.g., cancer chemotherapy, parenteral opiate administration).

# Drugs for treatment of nausea and vomiting

## A- Antiemetic agents;

1. Antihistaminergic; Dimenhydrinate, meclizine --- esp. for motion sickness, inner ear disease.
2. Anticholinergic; Scopolamine --- esp. for motion sickness, inner ear disease.
3. Antidopaminergic; Prochlorperazine --- esp. for medication-, toxin-, or metabolic-induced emesis.
4. 5-HT<sub>3</sub> antagonist; Ondansetron, granisetron ---- esp. for chemotherapy- and radiation-induced emesis, postoperative emesis
5. Tricyclic antidepressant; Amitriptyline, nortriptyline -- esp. for chronic idiopathic nausea, functional vomiting.

## **B- Prokinetic agents;**

1. Antidopaminergic; Metoclopramide, Domperidone --- for gastroparesis.
2. Motilin agonist; Erythromycin --- for gastroparesis.

## **C- Special settings;**

- 1- Benzodiazepines; Lorazepam --- Anticipatory nausea and vomiting with chemotherapy.
- 2- Glucocorticoids; Methylprednisolone, dexamethasone --- for chemotherapy-induced emesis

***Thanks***