Nausea and Vomiting

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Overview

- Aims and objectives of session
- Background
- Definitions
- Pathways
- Tea Break
- Approach to the Patient
- Case Studies
- Close

Aims and Objectives

- Aim
- To increase your knowledge and confidence in the causes and management of nausea and vomiting-in Palliative Care other patients
- Objectives
- Describe various patterns of N + V
- Describe the pathways involved
- Consider appropriate investigations/interventions
- Be aware of anti-emetics and their specific receptor activity
- Select an appropriate first (and second) line antiemetic regime

Why is it important?

- A common and debilitating symptom
- Affects up to 70% of patients with advanced cancer
- Many mechanisms, patterns and treatments
- Usually a single cause
- Ranked a highly distressing symptom
- A good understanding can help guide effective treatment

What is Nausea?

What is Vomiting?

Definitions

- **Nausea**: Unpleasant feeling of the need to vomit accompanied by autonomic symptoms (pallor, cold sweat, salivation, tachycardia, diarrhoea)
- **Retching**: Rhythmic, laboured, spasmodic movements of the diaphragm and abdo muscles (usually with nausea-not always)
- **Vomiting**: forceful propulsion of gastric contents through the mouth
- **Regurgitation**: Effortless expulsion of foodstuffs-e.g. oesophageal obstruction

What is it?

- Why do we vomit?
- Think of some occasions when you have vomited-what has been the mechanism?

- Mediated via
- Higher centre-sight, smell, taste
- Receptors in gut
- Chemoreceptor trigger zone
- Vestibular system

What is it?

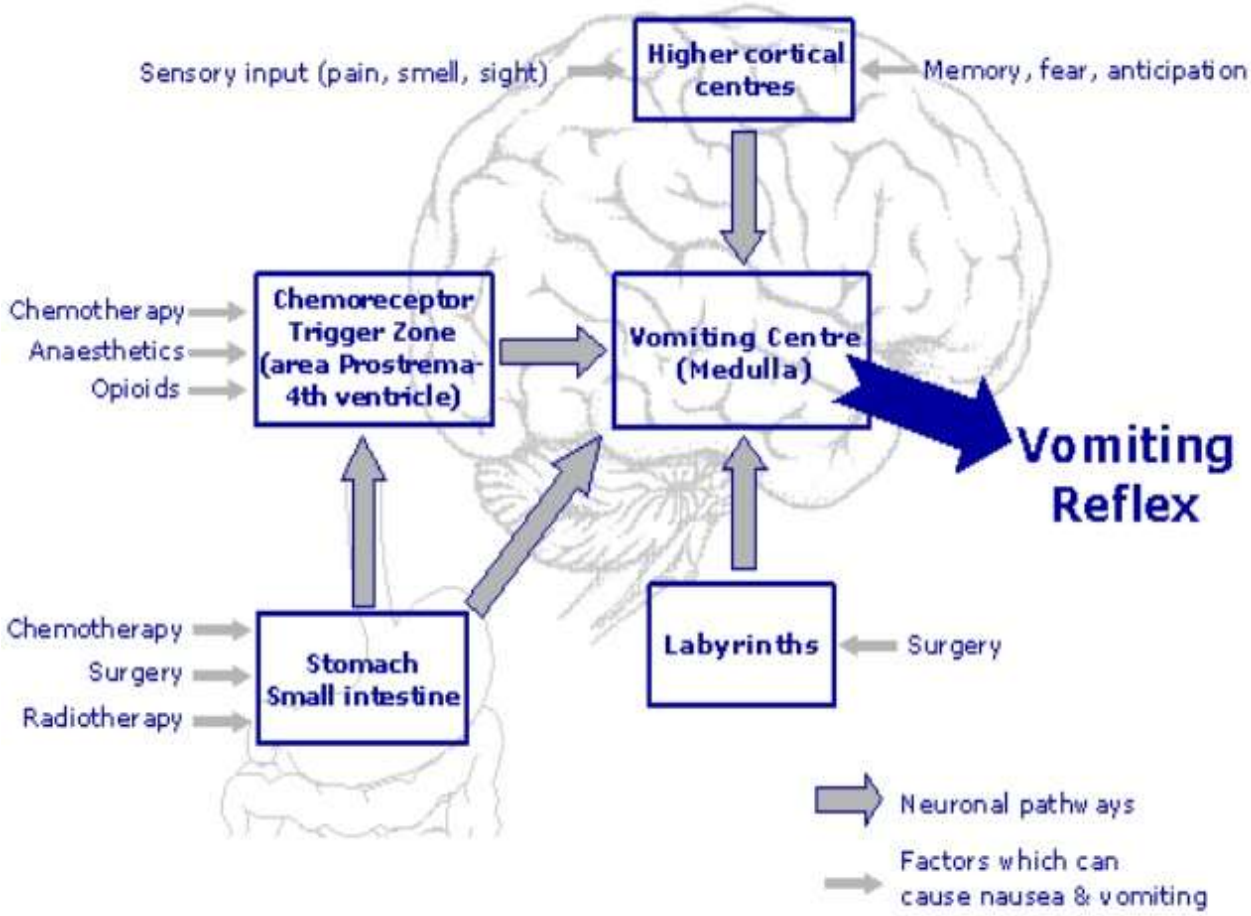
- Controlled by vomiting centre in the medulla
- Stimulated by input from various pathways
- Specific neurotransmitters involved
- Specific drugs act on specific receptors

What are the causes of N and V?

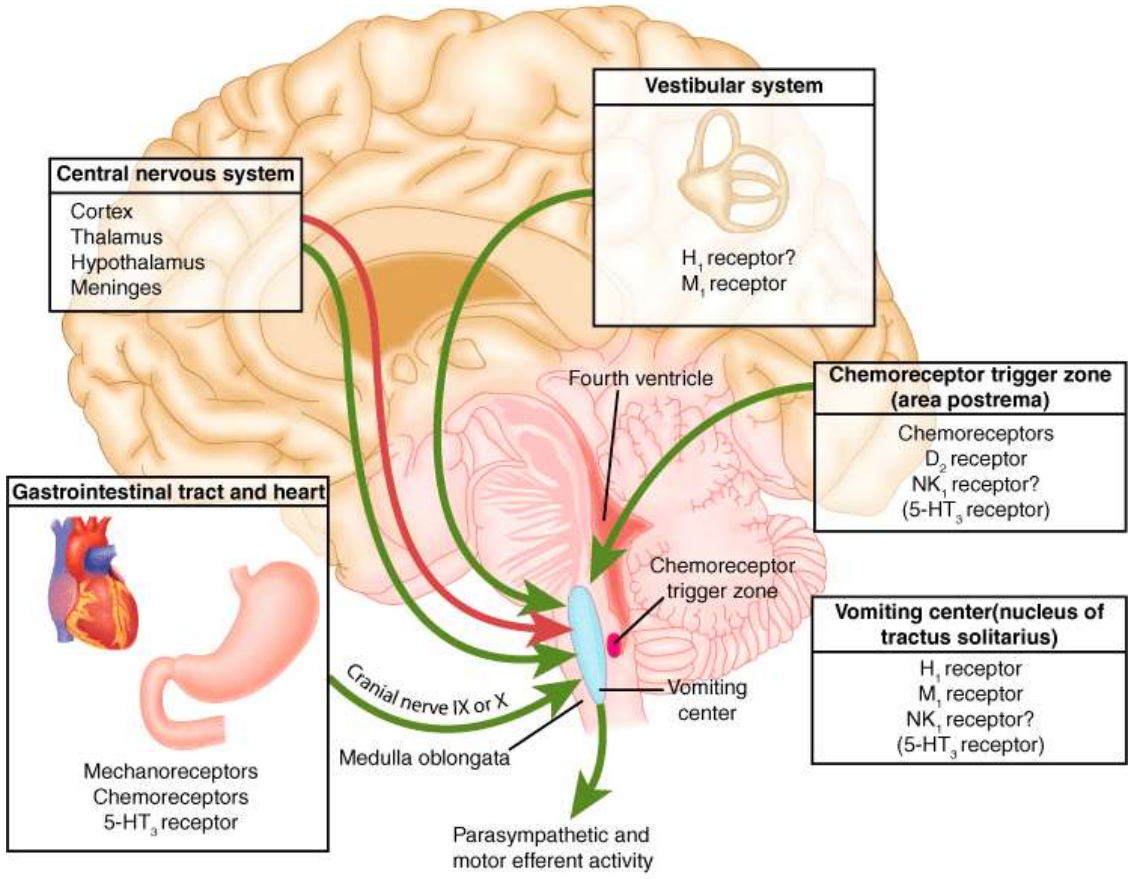
Causes

- Drugs- opioids, chemo, digoxin etc, etc
- Radiotherapy-especially gut
- Biochemical- hypercalcaemia, uraemia
- Liver Failure
- Gastric Stasis
- Bowel obstruction
- Constipation
- Raised Intracranial pressure
- Cerebellar metastases
- Anxiety, fear, anticipation

Pathways


Sensory input (pain, smell, sight)
Higher cortical centres
Memory, fear, anticipation
Chemotherapy
Anaesthetics
Opioids
Chemoreceptor Trigger Zone (area Prostrema-4th ventricle)
Vomiting Centre (Medulla)
Vomiting Reflex
Chemotherapy
Surgery
Radiotherapy
Stomach Small intestine
Labyrinths
Surgery
Neuronal pathways
Factors which can cause nausea & vomiting

Receptors



Source: Katzung BG, Masters SB, Trevor AJ: *Basic & Clinical Pharmacology, 11th Edition*: http://www.accessmedicine.com

Drugs

Drug	Receptor	Site of Action
cyclizine	H1, ACh	VC
domperidone	D	CTZ/stomach
metoclopramide	D, 5-HT4	CTZ, stomach, gut
haloperidol	D2	CTZ
procloperazine	D2, Ach/H1	VC/VCN
levomepromazine	5-HT2, D, Ach/H1	Broad spectrum
Hyoscine Hydrobromide	Ach/H1	VC/gut
Hyoscine butylbromide	Ach/H1	gut
ondansetron	5-HT3	Gut/CTZ
Aprepitant	NK1	CTZ

Other options

- Dexamethasone
- Octreotide
- Antacids/PPI
- Laxatives
- Sedation

Management

- **Relies on-**
- Recognising patterns of N + V
- Identify likely cause in the individual patient
- Consider non-drug measures
- Understand mode of action of commonly used anti-emetics
- Prescribe most appropriate anti-emetic
- Choose most appropriate route
- Ensure compliance
- Regular review

Assessment

History

- Is it vomiting, expectoration or regurgitation?
- When did it start?
- Exacerbating/relieving factors?
- Contents
- Volume
- Timing
- Severity
- Review drug regime

Examination

- General- pallor, BP, Pulse etc
- Examine Mouth, pharynx
- Examine abdomen, PR
- Fundi if raised ICP possible

Investigations

- Urea, creatinine, calcium, albumin, dig levels
- Blood Glucose
- CXR
- Abdo film
- CT if appropriate

Management

- Correct the reversible-pain, infection, cough, Hypercalcaemia, raised ICP, constipation, address fears/anxiety
- Non-drug measures
- Control malodour
- Fresh air
- Good oropharyngeal hygiene
- Distractions
- Nurse upright
- Avoid emetogenic smells and foods

Patterns of N + V

- Gastric stasis
- Chemical or metabolic
- Motion sickness
- Raised ICP
- Bowel Obstruction
- Unknown or multiple causes

Gastric Stasis

Characterised by

- Epigastric fullness
- Early satiety
- Large volume vomits
- Hiccups
- Regurgitation
- Nausea often quickly relieved by vomiting

Causes

- Stomach emptying problems e.g. gastroparesis, gastritis
- Compression of gastric outflow
- Drug side effects e.g. anticholinergics, opioids

Treating Gastric Stasis

- Reduce oral intake-little and often
- Reduce gastric secretions e.g. PPI, ranitidine
- Pro-kinetic agents D2 antagonists
- Metoclopramide
- Domperidone
- NG/venting gastrostomy (uncommon)

Chemical or metabolic N and V

Characterised by

- Constant nausea
- Less or variable vomiting
- Worsened by sights, smells

Contributing factors

- Stimulation of CTZ D2 and 5-HT3 receptors
- Drugs-opioids, antibiotics, NSAIDS, Chemo
- Metabolic-Renal/liver failure, hypercalcaemia, hyponatraemia, sepsis

Treating Chemical N+V

- Treat the reversible
- Correct biochemical abnormalities
- Stop drugs if you can
- Consider D2-antagonist-Haloperidol, metoclopramide
- Consider 5-HT3-antagonist-ondansetron, granisetron

Motion Sickness

Characterised by

- Vomiting on movement
- Dizziness
- ?nystagmus

Stimulation of vestibular system

- H1 and Ach receptors
- Opioids can increase vestibular sensitivity
- Consider-brain mets
- CVA

- Treat with anti histamine and anticholinergics eg cyclizine

Raised ICP

- Treat with cyclizine
- If SOL ? Steroids, radiotherapy, neurosurgery

Bowel Obstruction

- Partial or complete?
- Stomach-similar to gastric stasis
- Small bowel-partially/undigested food, large volume
- Large bowel-faeculent vomiting

Bowel Obstruction

- Reverse the reversible ? Surgery, treat constipation
- Consider steroids
- If partial consider prokinetics
- If complete levomepromazine or cyclizine/haloperidol
- Consider hyoscine butylbromide to reduce spasms and secretions
- Consider octreotide
- NG/venting gastrostomy
- ?TPN

Unknown or multiple

- Levomepromazine is broad spectrum
- Consider non-drug measures
- Address anxiety
- Acupuncture/acupressure
- Ginger

Warnings

- Extra-pyramidal side effects - haloperidol, metoclopramide and levomepromazine can all cause these

MHRA-metoclopramide

- Risk outweigh benefits in long-term or high-dose treatment.
- In adults indicated for
- Prevention of post-op N+V
- Radiotherapy-induced N+V
- Delayed chemo-induced N+V
- Acute migraine
- Second-line option post chemo and post-op in children
- Contraindicated below 1 years old

MHRA-domperidone

- Small risk of serious cardiac side effects especially in over 60's, doses above 30mg and with concurrent use of drugs causing QT prolongation or CYP3A4 inhibitors
- Restricted to use in relief of N+V
- Lowest effective dose-shortest possible time
- Avoid where cardiac conduction impaired, heart failure, other medications as above

Quick aside

QT prolongation

- Antiarrythmics eg amiodarone, flecainide
- GnRH agonists and antagonist eg zoladex
- Antibiotics-macrolides
- ‘nibs’
- Methadone, oxycodone
- Antipsychotics, TCAs, SSRIs
- Cocaine

CYP3A4 inhibitors

- **Moderate** fluconazole, erythromycin
- **Strong** clarithromycin, antiretrovirals

Cautions

- IV metoclopramide + IV ondansetron
- May cause serious cardiac dysrrhythmias
- Metoclopramide/domperidone + cyclizine-in theory actions oppose each other
- Dopamine antagonist-acute dystonic reactions, oculogyric crisis-especially in young women

Management-general points

- Route-consider a syringe driver
- Make PRNs available
- Reassess regularly

Case Discussion 1

- A 63 year old man with a history of lung cancer presents with left-sided weakness
- He is nauseated all the time
- What is the likely cause?
- How should you proceed?

Case Discussion 2

- A 71 year old man with prostate cancer and bone metastases presents with pain.
- He is started on diclofenac and morphine MR 10mg b.d.
- A week later he presents with nausea and vomiting
- What are the possible causes?
- What is your management?

Case Discussion 3

- A 36 year old woman with breast cancer had chemotherapy 2 weeks ago
- She presents with nausea and vomiting
- What should you consider?
- How would you proceed?

Case Discussion 4

- A 55 year old woman with ovarian cancer has advancing abdominal disease.
- Her most recent scan shows hydronephrosis
- She develops nausea and vomiting
- How would you proceed?

Case Discussion 5

- A 49 year old woman with breast cancer has brain, bone and liver metastases.
- She develops nausea and vomiting.
- What are the possible causes of her nausea and vomiting?
- What might your management be?

Case Discussion 6

- A 56 year old man a history of bowel cancer presents with nausea and large volume vomits. He has colicky abdominal pain
- He is found to be in bowel obstruction and is not fit for further surgery.
- What are the options for managing his symptoms?

Case Discussion 7

- A normally well 24 year old patient presents with severe nausea and vomiting .
- They report previous episodes that have started at a similar time of day.
- They have felt well in between.
- What questions do you need to ask?

Any Questions?