Vomits, Constipation and Bowel Obstruction

Dr James Davies
Palliative Medicine Consultant
September 2019
Objectives

• Assessment of vomiting

• Managing vomiting

• Constipation

• Bowel obstruction
Some terms

• Nausea and vomiting are distinct entities

• Nausea – the subjective feeling of the need to vomit or retch

• Vomiting (emesis) – oral expulsion of GI contents (active)

• Regurgitation – effortless passage of gastric contents into the mouth

• Retching – muscular events of vomiting without the expulsion of vomitus

• Dyspepsia – epigastric burning, gnawing, bloating, pain
Case study

• 42 year old man

• Diagnosed with oesophageal cancer 4 months ago

• Started on oxycodone last week due to epigastric pain

• Presents with vomiting

• Initial thoughts?
- S – out of his mouth
- O – very suddenly after lunch on Sunday
- C – undigested food
- R – no diarrhoea
- A – pain got worse after eating
- T – now after eating anything or drinking anything
- E – Exacerbated by eating, nothing relieves
- S – feels dehydrated and unwell

- Thoughts now?
What makes people feel nauseated/vomit?
What makes people feel nauseated/vomit?

- Mechanical – bowel obstruction, gastric outlet obstruction, gastric paresis, constipation

- Movement – vertigo, travel sickness, BPPV

- Biochemical – electrolyte disturbance, altered pH (sepsis/resp failure/metabolic disturbance), paraneoplastic effects

- Drugs – opioids, chemotherapy, dig toxicity, antibiotics, anaesthetics

- Infection – (sepsis, abx), GI specific infections

- Neoplasm – direct effects of tumours, paraneoplastic effects, effects of treatment (chemo/XRT)

- Central causes – raised ICP, brain mets

- Psychological – anxiety and depression
History and Examination

• Can the symptom be explained?

• Need a systematic approach to elucidate the underlying cause

• This includes a good understanding of their presenting diagnosis and current treatment

• Sometimes you might need further investigations e.g. CT head, OGD

• Reverse the reversible
Understanding the mechanisms

<table>
<thead>
<tr>
<th>PHARMACOLOGIC CLASS</th>
<th>Drugs in Class</th>
<th>DOPAMINE (D₂)</th>
<th>ACETYLCHOLINE (MUSCARINIC)</th>
<th>HISTAMINE</th>
<th>SEROTONIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticholinergics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scopolamine</td>
<td></td>
<td>+</td>
<td>+++</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>Antihistamines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclizine</td>
<td></td>
<td>+</td>
<td>+++</td>
<td>++++</td>
<td>–</td>
</tr>
<tr>
<td>Dimenhydrinate, diphenhydramine, hydroxyzine</td>
<td></td>
<td>+</td>
<td>++</td>
<td>++++</td>
<td>–</td>
</tr>
<tr>
<td>Promethazine</td>
<td></td>
<td>++</td>
<td>++</td>
<td>++++</td>
<td>–</td>
</tr>
<tr>
<td>Anti-serotonins</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dolasetron, granisetron, ondansetron, palonosetron, ramosetron</td>
<td></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>++++</td>
</tr>
<tr>
<td>Benzamides</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domperidone</td>
<td></td>
<td>+++</td>
<td>–</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>Metoclopramide</td>
<td></td>
<td>+++</td>
<td>–</td>
<td>–</td>
<td>++</td>
</tr>
<tr>
<td>Butyrophenones</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Droperidol</td>
<td></td>
<td>++++</td>
<td>–</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Haloperidol</td>
<td></td>
<td>++++</td>
<td>–</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>Phenothiazines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td></td>
<td>++++</td>
<td>++</td>
<td>++++</td>
<td>+</td>
</tr>
<tr>
<td>Fluphenazine</td>
<td></td>
<td>++++</td>
<td>+</td>
<td>++</td>
<td>–</td>
</tr>
<tr>
<td>Perphenazine</td>
<td></td>
<td>++++</td>
<td>+</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Prochlorperazine</td>
<td></td>
<td>++++</td>
<td>++</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Steroids</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Betamethasone, dexamethasone</td>
<td></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>
## Common antiemetics

<table>
<thead>
<tr>
<th>Antiemetic</th>
<th>MoA</th>
<th>When to use</th>
<th>Side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domperidone</strong></td>
<td>D2 receptors in stomach</td>
<td>For prokinesis</td>
<td>Prolong QTc – MHRA alert</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Constipation, Parkinsons</td>
<td>No parenteral formulation</td>
</tr>
<tr>
<td><strong>Metoclopramide</strong></td>
<td>D2 peripherally and centrally (stomach, CTZ, ? VC)</td>
<td>Prokinesis, Partial bowel obstruction Chemo</td>
<td>Parkinsonism Akathesia (restlessness) Some QTc issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Watch for colicky abdominal pain</td>
</tr>
<tr>
<td><strong>Cyclizine</strong></td>
<td>Anti-histamine H1 (vestibular centre, vomiting centre)</td>
<td>Traditionally raised ICP due to mets</td>
<td>Sedating Constipating IV use – get a buzz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Avoid concurrent use with a pro-kinetic</td>
</tr>
<tr>
<td><strong>Ondansetron/Granisetron</strong></td>
<td>5HT-3 (CTZ)</td>
<td>Chemotherapy related “Bowel irritation”</td>
<td>Constipation</td>
</tr>
<tr>
<td><strong>Haloperidol</strong></td>
<td>D2 centrally (CTZ and VC)</td>
<td>Opioid induced, other drug induced Biochemical disturbance</td>
<td>Sedation Falls risk Parkinsonism Safe and effective in low doses</td>
</tr>
</tbody>
</table>
What would we expect?

• An assessment as to the cause

• Consideration as to what is reversible

• A trial of an appropriate anti-emetic given by an appropriate route (if acutely vomiting then needs IV or SC)

• If symptom poorly controlled/not settling/side effects too burdensome seek Specialist Palliative Care advice
What will Sp Pall Care do?

• Re-assess the underlying cause and the potential for reversibility

• We may use other medications
  • Olanzapine
  • Levomepromazine
  • Aprepitant/fosaprepitant (rarely)

• We may use other routes
  • CSCI
  • Transdermal patch
Constipation
Physiology

• Small bowel motility
  • Segmentation to mix food (in response to a meal)
    • Initiated by electrical activity from pacemaker cells
    • Regulated by the myenteric nervous system and autonomic nerves
    • Some propagation
  • Migrating motility complex
    • Repeated waves of peristaltic activity every 90 mins
    • Food residues spend around 2 hours in the small intestines
    • Peristalsis mediated by ACh and VIP
Physiology

- Large bowel motility
  - Slower and less frequent segmentations
  - 4-6 forward peristalsis “mass movements”
  - 2 peaks – one on waking, one after midday meal
  - Food residues spend 18h-3 days in the large bowel
Physiology

- Fluid absorption
  - Around 7 litres fluid produced by gastric, pancreatic, biliary and salivary secretions on top of 1-2 litres of dietary fluids
  - 75% reabsorbed in small intestine, most of the rest in the colon
  - Fluid absorption via active sodium ion transport (\( \text{Na}^+/\text{K}^+ \text{ ATPase} \)) and subsequent osmosis
Defecation

- Distention of the wall of the rectum from a mass movement of faecal matter leads to defaecation reflex
- Mediated by mechanoreceptors
- Rectal contraction, internal anal sphincter relaxation and external anal sphincter (skeletal muscle) contraction
Constipation

- Passage of small, hard faeces infrequently and with difficulty

- Rome criteria – 2 or more for 3 months
  - Straining 25% of the time
  - Hard stools 25% of the time
  - Incomplete evacuation 25% of the time
  - Two or fewer bowel movements a week

- Common
  - 63% of elderly people in hospital
  - 32-87% of “palliative care patients”
Causes of constipation
Causes of constipation

- Multifactorial – unwell person, immobile, reduced oral intake, new environment, bed pans etc
- Drugs – opioids, anticholinergics, iron, diuretics
- Malignant disease – direct effect, sequela
- Others – diabetic neuropathy, haemorrhoids, rectocele
Important aspects of assessment

- History
  - “Normal” stool pattern
  - Environmental factors – bed pans, privacy, mobility, curtains
  - Identify a cause
    - Urge to defecate, unable to – hard stool
    - Urge to defecate absent – colonic inertia
  - Identify bowel obstruction
Important aspects of assessment

- Examination
  - Abdominal examination – can palpate faecal mass in the line of the colon.
  - Digital rectal examination – hard stool, empty rectum, soft stool, rectal tumour, anal stenosis, lax anal sphincter (associated with colonic hypotonia in SCC)
- Stool examination
- Investigations – not that helpful. If suspect obstruction or hypercalcaemia then investigate
Things not to miss

• Impaction with overflow presenting as diarrhoea

• Colicky pain due to constipation – should be revealed in history

• Bowel obstruction
Management aims

• Re-establish comfortable bowel habit to satisfaction of patient

• Address environment issues if possible

• Reduced pain/discomfort from defecation

• Prevent other symptoms – nausea, distention, vomiting

• On going prophylaxis
Oral Laxatives

- Surfactant laxative – Docusate Sodium
  - Acts as a detergent to increase water penetration
  - Time to action 1-3 days
  - Up to 600mg in divided doses daily
  - Comes in a capsule or as liquid (tastes horrible)
Oral laxatives

- Macrogols (Polyethelene glycol) – Laxido, Movicol
  - As a non-degraded polymer it provides a source of non-absorbable water that softens the stool.
  - Time to action 1-3 days
  - 2 sachets daily, often divided, in 125mls of water.
  - Can also be used for faecal impaction, 8 sachets daily in 1litre of water.
  - Large volume, not pleasant tasting
Oral laxatives

- Osmotic laxatives – lactulose, mannitol
  - Exert an osmotic effect within the gut lumen to retain water
  - Time to action 1-2 days
  - 10-15ml BD
  - Very sweet, can cause flatulence, particularly at higher doses
Oral Laxatives

- Saline laxatives – magnesium hydroxide, sodium sulphate
  - Increase intestinal water secretion, exert an osmotic effect and increase peristalsis
  - Time to action 1-6 hours
  - 25-50mls daily, comes in a suspension
  - Can produce a strong purgative action (sulphate>magnesium)
Oral laxatives

• Anthracenes (Senna and Danthron) and polyphenolics (bisacodyl, picosulphate)
  • Direct stimulation of the myenteric plexus nerve endings to stimulate peristalsis. Net reduction in absorption of water through inhibition of Na/K ATPase
  • Time to action 6-12 hours
  • Senna 15-30mg daily, bisacodyl 10mg daily, danthron 50mg daily, sodium picosulphate 5mg daily
  • Cramping abdominal pain. Danthron irritant to skin, can turn urine pink
Oral laxatives

• Combination preparations (softner and stimulant) – codanthurusate: danthron and docusate, codanthramer: danthron and poloxamer

  • Time to action 6-12 hours
  • Comes in capsule or suspension form
Bulking agents

- Isphagula husk, bran
  - Increase stool bulk, softening hard stool and firming loose stool
  - Need to make up with 200-300mls water
  - If taken with inadequate water creates a viscous mass
  - Effectiveness in severe constipation doubtful
Rectal laxatives

- Faecal lubricants – arachis oil, olive oil
  - Softening agent, to increase water penetration of stool
  - Time to action can be rapid (1 hour) but often used as a retention enema to soften stool over night if hard impacted faeces followed by phosphate enema
  - Contraindicated in peanut allergy or IBD
Rectal laxatives

- Surfactants – docusate enema, microlax enema (sodium lauryl sulphoacetate)
  - Softening agent to increase water penetration
  - Time to action 5-20 minutes
  - Proprietary enemas available but can use the docusate elixir given orally
  - Can cause some anal/rectal burning – avoid in haemorrhoids
Rectal laxatives

- Osmotic laxatives – glycerol suppositories
  - Osmotic effect to soften stool
  - Time to action up to one hour
- Saline laxatives – phosphate enema
  - Exert an osmotic effect, increase intestinal water secretion and stimulate peristalsis
  - Time to action 30-60 minutes
Rectal laxatives

• Polyphenolic laxatives – bisacodyl suppositories
  • Promote colonic peristalsis through direct stimulation of nerve endings
  • Time to action 15-60 minutes
  • Must come into contact with bowel wall
Choosing the approach

• Patient factors – e.g. can they swallow large volumes

• Rectum impacted with hard faeces
  • Soften with local measures

• Rectum loaded with soft faeces
  • Peristalsis stimulating laxatives

• Little or no stool in rectum
  • Peristalsis stimulating drug, but stools will likely need softening so add a softener or consider combined preparation

• Opioid induced constipation suspected – if laxatives (appropriately titrated) ineffective discuss with Palliative Care
Titrating treatment

- If oral laxatives used, should suspect a bowel action within 3 days
- If not, combine stimulant and softener
- Titrate dose on daily or alternate day basis until bowel action achieved
- If develop colic, titrate softener relative to stimulant
- If leakage, titrate stimulant relative to softener
- No good evidence (Candy, B et al 2011, Cochrane Review) to choose one laxative over another, certain agents will suit certain patients
What do we expect?

- Assessment as to the cause
- Consideration as to what is reversible
- A trial of a laxative including titration of the dose
- Refer to Sp Pall Care if symptom not improving
What will Sp Pall Care do?

• Repeat the assessment and look for other reversible factors

• Opioid switch

• Use of “rarer” laxatives – danthron, peripheral opioid antagonists
Malignant Bowel Obstruction

• Mechanical obstruction of the bowel lumen (complete or partial)

• OR

• Peristalsis failure
Features

• Depends on site and nature of obstruction
  • Intermittent nausea often relieved by vomiting undigested food
  • Worsening nausea and/or faeculent vomiting (as obstruction progresses and small bowel contents are colonised by colonic bacteria)
  • Continuous abdominal pain due to tumour and/or nerve infiltration (e.g. coeliac plexus involvement)
  • Colic (in mechanical obstruction); altered bowel sounds
  • Abdominal distension (may be absent in gastro-duodenal obstruction or patients with extensive peritoneal spread)
  • Faecal incontinence
Assessment

• History and examination
  • Large emptying vomits with undigested food
  • Intermittent opening of bowels
  • Colic
  • Palpable diffuse peritoneal mets
  • Abdominal distention/lack of abdominal distention
  • Bowel sounds
  • PR – impaction?

• Investigations
  • Abdominal X-ray vs CT abdomen – what’s on old imaging?

• Need to decide is this peristalsis failure or mechanical obstruction? – this isn’t always easy – Sp Pall Care can support
Surgery?

• Diffuse intra-abdominal cancer seen at previous surgery, or shown radiologically.
• Diffuse, palpable intra-abdominal masses.
• Massive ascites which recurs rapidly after drainage.
• High obstruction involving the proximal stomach.
• Non-symptomatic but extensive metastatic disease outside the abdomen.
• Frail or elderly patient with poor performance status or nutritional status.
• Previous radiotherapy to the abdomen or pelvis.
• Small bowel obstruction at multiple sites
Management

• General
  • Mouth care
  • Hydration
  • Consideration of NG tube in acute phase

• Medications
  • If peristalsis failure
    • Stop constipating medications (cyclizine, TCA, ondansetron, hyoscine)
    • Give prokinetics with laxatives (stimulant laxatives may cause colic)
    • May needs opioids to manage pain – but they can constipate
Management

- If mechanical obstruction
  - If complete obstruction then laxatives unlikely to be helpful
  - Prokinetics will likely cause colicky pain
  - Aim is to manage the nausea, the vomits and the pain

- Pain due to tumour and peristalsis against the obstruction
  - WHO ladder, Opioids, and hyoscine

- Nausea due to bowel distention, possibly translocation of bacteria and toxins
  - Haloperidol, cyclizine, anticholinergic

- Vomits due to bowel secretions so use anti-secretory agents
  - Octreotide has the best evidence – but it’s expensive,
  - Buscopan (hyoscine butylbromide)
Other interventions

- Stenting – proximal obstruction, colonic obstruction

- Venting gastrostomy in proximal small bowel obstruction can help with symptoms

- Surgery – palliative stoma formation

- TPN and long term IV hydration

- In these situations it’s likely Pall Care should be involved as need to ensure good advance care planning and discussions of exit strategies
Summary

• Assessing a symptom – need to think about underlying cause

• Take a mechanistic approach to management

• Refer to Sp Pall Care if complex/need advice