Helping patients with symptoms other than pain

5: Nausea and vomiting

Aim of this worksheet
To learn how to assess and manage nausea and vomiting.

How to use this worksheet
- You can work through this worksheet by yourself, or with a tutor.
- Read the case study below, and then turn to the Work page overleaf.
- Work any way you want. You can start with the exercises on the Work page using your own knowledge. The answers are on the Information page - this is not cheating since you learn as you find the information. Alternatively you may prefer to start by reading the Information page before moving to the exercises on the Work page.
- This CLiP worksheet should take about 15 minutes to complete, but will take longer if you are working with colleagues or in a group. If anything is unclear, discuss it with a colleague.
- If you think any information is wrong or out of date let us know.
- Take this learning into your workplace using the activity on the back page.

Case study
John is a 54 year old man who had surgery for a carcinoma of the colon. He asks to see you because he has started to feel nauseated with occasional vomiting.
Nausea and vomiting
This is common, occurring in 62% of patients with advanced cancer.
You need to ask the patient about the following:

- **Nausea**: how often, how long, precipitating and relieving factors, and whether it is accompanied by vomiting.
- **Vomiting**: how often, how long, how much, content, precipitating/relieving factors, whether it is accompanied by nausea.

Current treatment
The treatment is based on blocking the effects of specific neurotransmitters:

- **Haloperidol** blocks central dopamine receptors (D<sub>2</sub>) in the chemoreceptor trigger zone (CTZ)
  - i.e. haloperidol is a dopamine antagonist.
- **Cyclizine** blocks histamine receptors (H<sub>1</sub>) and muscarinic receptors (A<sub>chm</sub>) in the brainstem
  - i.e. cyclizine is an antihistamine and an antimuscarinic drug.
- **Domperidone** and **metoclopramide** block peripheral dopamine receptors (D<sub>2</sub>) in the stomach and upper small bowel.
  - They act by restoring motility towards normal.
- **Levomepromazine** (methotrimeprazine: Nozinan) is a useful alternative to cyclizine which has some additional blocking action at dopamine (D<sub>2</sub>), acetylcholine (A<sub>chm</sub>) and 5HT<sub>2</sub> receptors.
- **Olanzepine** has a similar range of actions and comes in a useful buccal ‘melt’ preparation.
- **Ondansetron** and **granisetron** block 5HT<sub>3</sub> receptors. They have been disappointing in palliative care despite their obvious success in chemotherapy vomiting and in post-operative nausea and vomiting.
- **Prochlorperazine** (Stemetil): this has a weak action on the three main receptors (H<sub>1</sub>, D<sub>2</sub> and A<sub>chm</sub>).

Drug doses and routes
Haloperidol is used in very low doses, 1 - 3mg once at night SC or PO. There is no need to give it by continuous SC infusion since it has a 16 hour half life. At these doses, adverse effects are very uncommon.

- **Cyclizine** is given as 25-50mg 8-hourly PO or PR, or 75 - 150mg per 24 hours as a continuous SC infusion.
- **Domperidone** can be given PR or PO, metoclopramide PO or SC. Metoclopramide and domperidone are equally effective and either can be used. Domperidone is very unlikely to cause movement disorders.
- **Levomepromazine** can be given PO or SC 2.5 - 12.5mg mg once at night. Olanzepine is an alternative at doses of 2.5mg PO 12-hourly.

Acupuncture and acupressure
There are 33 randomised controlled trials (12 of high quality) that support the use of the P6 acupuncture point for relieving vomiting due to chemotherapy, morphine or post-operative nausea and vomiting.

- The P6 point is on the middle of the inner wrist, two finger breadths up the arm from the wrist crease. It can be stimulated with pressure or an acupuncture needle.

Clinical decisions and treatment

- **Is the patient mainly troubled by vomiting?**
  - If the vomits are large volume and the patient dehydrating rapidly, consider gastric outflow obstruction as a cause.
  - If the vomits are large volume but hydration is reasonable, this could be gastric stasis. It is usually accompanied by early satiation, epigastric fullness and pain, flatulence, hiccup, large volume vomiting, or heartburn.
  - Metoclopramide or domperidone should help, but they need to start SC or PR to be effective.
  - If the volume of vomit is small consider regurgitation due to dysphagia, stomach paralysis or a ‘squashed stomach syndrome’ (caused by external pressure on the stomach from tumour, ascites or a large liver).

- **Could the cause be drugs, toxins or biochemical?**
  - eg. drugs (morphine, metronidazole, trimethoprim) bacterial toxins, hypercalcaemia or uraemia.
  - Haloperidol or levomepromazine should help.

- **Is the nausea or vomiting worse on movement?**
  - For motion sickness try hyoscine hydrobromide; otherwise cyclizine or cinnarizine may help.

- **Is gastritis present?**
  - Treat the cause if known. Metoclopramide may help reduce nausea and vomiting.

- **Could fear or anxiety be contributing?**
  - See CliP worksheet on Anxiety.

- **Is the nausea and vomiting persisting?**
  - Start levomepromazine 3-6mg PO or 2.5-5mg SC at bedtime.
  - Other antiemetics that occasionally help are low dose olanzepine and dexamethasone. Ondansetron is rarely of help in non-chemotherapy nausea and vomiting, and is very constipating.
Consider the mechanisms involved in the vomiting reflex in the diagram below. The neurotransmitters involved at the peripheral and central sites vary. By selectively blocking receptors with drugs, it is possible to control symptoms in most patients.

This diagram shows a simplified mechanism for nausea and vomiting.

The receptors involved are written in italics.

Place the drugs below into the correct shaded boxes to show their site of action:
- metoclopramide
- cyclizine
- haloperidol
- domperidone

What other antiemetics do you know?

What other treatments do you know?

**Q** What are the possible causes of John’s vomiting?

**Symptoms**
- Non-specific pattern of nausea and vomiting
- Vomiting
- Little nausea
- Hiccups
- Fullness
- Early satiety
FURTHER ACTIVITY: Nausea and vomiting

Find a patient who is troubled with nausea and/or vomiting.
- can you identify a pattern suggesting gastric stasis?
- what possible causes are there in this patient?

FURTHER READING: Nausea and vomiting

Journal articles

Resource books and websites
e-lfh: e-Learning for Healthcare contains a range of online self-learning programmes, including several relating to end-of-life care (e-ecla). Registration is required but is free: http://www.e-lfh.org.uk/projects/e-elca/index.html
*PCF4- Palliative Care Formulary, 4th ed.* Twycross RG, Wilcock A. www.palliativebooks.com

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