Nausea and vomiting

Karen van Rensburg
(B.Pharm)
Amayeza Information Services

Nausea can be described as the overall unpleasant sensation of needing to vomit. It is often accompanied by pallor, chills and sweating. Should nausea progress to vomiting, the ejection of gastric contents through the mouth occurs, often requiring a forceful event. Vomiting is sometimes valuable, as it rids the body of toxic matter.

Nausea can occur due to various reasons, e.g. pregnancy, head trauma, viral or bacterial gastrointestinal infections, motion sickness and travel sickness. Many medicines can also lead to nausea, like anticancer agents, digoxin, antibiotics and non-steroidal anti-inflammatories.

But how and why does nausea occur? Within the brain there is an area called the vomiting centre. Various factors can cause this area of the brain to be stimulated, leading to a sensation of nausea, and often progressing to vomiting.

Factors that trigger nausea include:

- **Chemoreceptor Trigger zone**
- Gastro-intestinal Irritation
- Toxins
- Medication
- Vestibular nuclei in the ear

*The chemoreceptor trigger zone, also located in the brain, is especially sensitive to the stimulation of its receptors. Substances that can stimulate these receptors include the neurotransmitters dopamine and serotonin. Histamine can also be released in response to e.g. allergies.

What to ask the patient with nausea

It is important to try and determine the cause of nausea when a patient enters the pharmacy requesting help. The choice of treatment will often depend on the underlying cause, and will also determine if the patient should rather be referred.

- **Age of the patient**
  - How old is the patient? Nausea and vomiting in the very young and the old can quickly progress to dehydration and needs to be referred for further evaluation.

- **Duration of symptoms**
  - If symptoms persist for a prolonged period of time and increase in severity, it might be necessary to refer the patient for further evaluation. Under the following conditions, patients should be referred:
    - Adults: if vomiting has been present for longer than two days
    - Children younger than 2 years: vomiting for more than 24 hours
    - Neonates: vomiting for more than 12 hours

- **Medication history**
  - Various medications can cause nausea. Medicines known for doing this include many agents used in the treatment of cancer, e.g. dactinomycin, cisplatin and ifosfamide.
  - Other medications include digoxin, oestrogens, morphine, iron preparations and aminophyllin, diuretics, oral hypoglycemics and anti-hypertensives.
  - Medicines that can cause irritation of the gastro-intestinal tract also need to be taken
into consideration. Oral antibiotics and non-steroidal anti-inflammatories are common medications that can cause symptoms.

- **Travel history**

Nausea, vomiting and diarrhoea are the most common illnesses in persons travelling from resource-rich to resource-poor regions.

People who have recently travelled, might have come into contact with various bacterial, viral and parasitic organisms, usually through contaminated food and water, causing bouts of nausea and diarrhoea.

Symptoms last between one and five days, and are usually self-limiting. Symptoms can also include abdominal cramps, a low-grade fever and feeling tired and listless.

If the symptoms do not resolve, referral might be necessary to assess the possibility of parasitic infestations, e.g. *Giardia lamblia* and more serious causes of diarrhoea, like cholera and typhoid, depending on the areas visited by the patient.

Disease can be prevented by certain prophylactic measures. Patients should be advised on the importance of making wise choices regarding food and water while travelling. Fruit salads, lettuce and chicken should be avoided. Bottled drinks are advised on the importance of making wise choices regarding food and water while travelling. Fruit salads, lettuce and chicken should be avoided. Bottled drinks are

- **Recent food intake**

Enquiring about the latest meal a patient had, can assist in determining if recent nausea and vomiting could have been caused by contaminated food. Checking if anyone else in the family has recently had the same symptoms, can also help in determining the source of contaminated food.

Most common bacterial food borne pathogens are:

- *Campylobacter jejuni*
- *Clostridium perfringens*, the "caferteria germ"
- *Salmonella* species – *S. typhimurium* infection is often caused by consumption of eggs that are not adequately cooked
- *Escherichia coli*

Some food-borne illnesses are caused by exotoxins, substances excreted by the cell as a bacterium grows. Exotoxins can continue to produce illness even after the microbes that produced them have died. Examples include *Clostridium botulinum*, *Clostridium perfringens*, *Staphylococcus aureus* and *Bacillus cereus*.

- **Motion sickness**

Motion sickness occurs when a disagreement exists between visually perceived movement and the vestibular system’s (found in the ear) sense of movement. It can be caused by travelling in a car, by air or on sea.

Motion sickness can be prevented by taking prophylactic measures. Cinnarizine or promethazine taken half an hour before the journey can alleviate symptoms.

- **Pregnancy**

About 70% of pregnant women experience nausea during the first trimester. Not all anti-emetics are suitable for use during pregnancy, and therefore it is important to enquire about the possibility of a pregnancy. By doing so, the correct treatment can be recommended to the patient and potential harm to a developing foetus will be avoided.

### Management of nausea and vomiting

General approaches to management of nausea and vomiting should always include the replacement of fluids and electrolytes to prevent dehydration. Other strategies include consumption of small meals, reduction of the fat content of meals, and avoidance of dairy products.

The overall goal of anti-emetic therapy is to prevent nausea and vomiting, and by achieving this goal with as little side-effects from medication as possible.

Medication to control the sensation of nausea is based on interaction with receptors that can potentially be stimulated to cause nausea (dopamine, serotonin and acetylcholine). Medications that prevent these transmitters from binding to the receptors are known as antagonists. Thus, various antagonists can be used in the prevention of nausea, e.g. metoclopramide (dopamine antagonist), ondansetron (serotonin antagonist) and cinnarizine (anti-histamine).

### When to refer to the doctor

- If fever, pain and lightheadedness accompany the symptoms.
- If signs of dehydration are present, e.g. dry mouth, sunken eyes, fast breathing and a sunken fontanel in babies.
- If the vomited stomach contents contain blood.
- If there has been no response to treatment within an 8 hour period.
- Children under the age of two years.

### References

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