

Case 5

A 27-year-old woman with nausea and vomiting

Emily Gallen is a 27-year-old teaching assistant. She has been referred to your clinic with an 8-week history of persistent nausea and vomiting. She initially thought it may be acid related, so cut out acidic fruits and drinks with no improvement. She has had a trial of Gaviscon and ranitidine twice daily for 4 weeks with no improvement. She is taking a regular antiemetic, cyclizine three tablets daily, to help to control some of her symptoms.

What questions should you ask her?

Presenting complaint

Take a full history of the nausea and vomiting.

- Timing and frequency of symptoms. What time of day or time of the week does the nausea or vomit occur? Is there any pattern? Are the episodes becoming more severe or frequent or just the same?
- Are there specific precipitants or stimuli?
- Are there any relieving factors or medications?
- The contents and amount of vomit: is it faeculent, bile-stained or altered food? Is there any blood (fresh or coffee ground)?
- Duration of symptoms: have they been present for just 8 weeks or is there a prior history of similar symptoms? How did the prior episode evolve and what settled it?
- Has she been off work because of her symptoms?

Associated symptoms

Isolated nausea and vomiting are rarely organic. The associated symptoms usually narrow the differential diagnosis. The timing of these symptoms and their relationship to the nausea and vomiting should be worked out.

- Is there any menstrual or mood disturbance? Could she be pregnant?
- Does she suffer from abdominal pain? If so, describe the type of pain and its location, radiation, frequency, intensity and relieving and intensifying factors. Is the pain related to eating? This could be peptic ulcer related. Is the pain relieved by defecation? There may be an element of constipation.
- Does she have reflux of acid or heartburn? This may suggest acid-related disease.
- Does she feel bloated or suffer excessive belching and flatulence? There may be malabsorption. There may be a functional component.
- Does she have dysphagia to solids or odonyphagia? She may have a peptic stricture, or perhaps an oesophageal ring or web.
- Has she experienced a change in bowel habit? Is this loose or solid stool? Diarrhoea and vomiting in short duration suggest an infective or obstructive aetiology. Inflammation is more likely in illness longer than this.
- Has her appetite or weight changed? If she has lost weight, how much over how long?
- Has she become jaundiced or itchy? Does she have pale stools or dark urine? Has she been feverish or had rigors? Consider gallstone disease.
- Does she have any neurological symptoms such as headaches, visual disturbance, neck stiffness, weakness or parenthesis or vertigo? Is there a rash? Consider meningeal irritation or inflammation.
- Does she suffer from other symptoms of diabetes such as excessive thirst, excessive urination, weight loss or skin infections?
- Does she suffer from other symptoms of thyroid disease such as temperature dysregulation, weight change, mood disturbances, tremors or palpitations; is there a new goitre?
- Does she suffer from any psychiatric symptoms such as delusions, hallucinations, etc?

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Past medical history

- Does she suffer from diabetes or thyroid disease? Is this well controlled?
- Is there an underlying psychiatric disorder or psychological problems?

Medications

- Causative: is she taking any new medication (prescribed or over-the-counter)? Specifically, non-steroidal drugs, opioids, antiarrhythmic medication, diuretics, hormonal drugs, antibiotics and antivirals, anticonvulsants?
- Treatment: has she tried any medication for the nausea and vomiting? What doses, for how long and did they help?

Social history

- Sexual history: is she sexually active and using contraception? Could she be pregnant?
- Travel: has she travelled abroad in the last few months? Where did she travel, for how long and was she exposed to anyone with an infection?
- Does she drink alcohol to excess? Does this have an impact on her symptoms?
- Does she use recreational drugs?
- Is she in contact with any children in her school who are unwell?
- Any depressive or anxiety issues? Is she enjoying her work?

She confirms an 8-week history of nausea, with intermittent vomiting over the last 2 weeks, especially in the morning. She describes a vague abdominal discomfort in the upper epigastrium with no radiation. She has been experiencing acid reflux since the vomiting started. She has noticed her stool has become harder and less frequent but considered this due to her reduced appetite and oral intake. Her weight is unchanged.

She has no known medical problems. She started taking diclofenac a few months ago for a knee injury that she sustained whilst on a school trip, although only takes one per day. She is sexually active and on the oral contraceptive pill. She had her last withdrawal bleed 1 month ago. There has been no recent travel or contact with infection. She drinks a glass of wine every night and has never smoked. She is overweight and feels rather low in mood about it.

She has worked at the same school for the last 3 years. Her job is busy but she enjoys her work and has no concerns related to this.

What is your differential diagnosis at this stage?

The differential diagnosis of nausea and vomiting can be broad. The abdominal discomfort and drug history may narrow the possibilities.

- Pregnancy (intrauterine or ectopic). Despite being on the oral contraceptive pill and having withdrawal bleeds, this must be excluded before more invasive tests are organised. A simple urinary test can be done in the first instance.
- Peptic ulcer disease. Given the history of reflux, an ulcer should be excluded.
- Drug induced from her NSAIDs. NSAID-related gastric and small bowel ulceration and inflammation may occur. This responds to discontinuation of medication.
- Gallstone disease. This may also cause abdominal discomfort, reflux, nausea and vomiting. It is less common in younger individuals.
- Functional disorder such as irritable bowel or non-ulcer dyspepsia.
- Metabolic disorder such as hypercalcaemia. Symptoms include constipation, nausea and vomit, renal stones, mood disturbance and abdominal pain. The most common cause in this age group is related to the parathyroid.
- Endocrine disorder such as Addison's disease. This is an important cause in young patients and can be easily missed if not considered.
- Psychological disturbance. Consider once organic pathology is excluded and if there is a corroborative history. Referral to a psychologist for cognitive and behavioural therapy may be needed.

What examination findings may help to confirm a cause?**General examination**

- Look for signs of dehydration such as dry mucus membranes and loss of skin turgor. This may be due to poor oral intake or an inability to keep fluids down.
- Look at her teeth for signs of dental enamel loss. Does she have halitosis from severe reflux or bulimia?
- Look at her body habitus for signs of rapid weight gain or loss. Does she look malnourished?
- Look at her skin for pigmentation. This is a sign of Addison's disease.
- Look at her neck and eyes. Does she have a goitre or proptosis of thyroid disease?
- Look for focal neurological signs or localising signs.

Abdominal examination

- Look for visible peristalsis. Can you elicit a gastric succussion splash of obstruction?
- Feel for abdominal tenderness. Is there guarding or rebound?
- Feel for an abdominal hernia or mass. Is there a palpable uterus or ovarian mass?
- Consider intrauterine or ectopic pregnancy. Consider ovarian cysts and uterine fibroids.
- Listen for bowel sounds. Are they hyperactive?

She looks well from the end of the bed. There are no signs of clinical dehydration. Abdominal examination reveals abdominal distension and generalised tenderness. There are no masses and no evidence of a prominent uterus. She has a normal neurological examination.

KEY POINTS

- There are many causes of nausea and vomiting so a detailed history is important.
- Do not forget neurological, endocrine and metabolic causes.
- Do not forget pregnancy in women of childbearing age.

Box 5.1 Causes of nausea and vomiting

This depends on the clinical picture:

- Mechanical obstruction such as pyloric stenosis and small intestinal strictures
- Motility disorders such as achalasia
- Functional disorders such as gastroparesis, irritable bowel syndrome, non-ulcer dyspepsia or pseudo-obstruction
- Gastrointestinal infections and food poisoning
- Organic disease such as peptic ulcer disease, pancreatitis, hepatitis, cholecystitis, mesenteric ischaemia or gastric cancer
- Drugs such as chemotherapy agents, analgesics, antiarrhythmics and diuretics, hormonal drugs, antibiotics and antivirals, anticonvulsants and anti-parkinsonian medications
- Alcohol and nicotine
- Intracranial pathology such as raised intracranial pressure, meningitis, migraine, seizures or tumours
- Ear problems such as labyrinthitis or menders

- Endocrine disorders such as diabetic ketoacidosis, Addison's disease or hyper/hypoparathyroidism
- Metabolic such as uraemia, hypercalcaemia or hyponatraemia
- Pregnancy
- Psychological and psychiatric disorders including bulimia, depression, voluntary emesis and strong emotions such as disgust

What investigations would you do?

Urine sample

- Beta-human chorionic gonadotrophin (β -HCG) to exclude an intrauterine or ectopic pregnancy.
- Dipstick for ketones (starvation and ketoacidosis), glucose, leucocytes and nitrites (urine infection).

Blood tests

- Urea (uraemia) and electrolytes (hyponatraemia).
- Liver function (hepatitis, cholecystitis) and amylase (pancreatitis).
- Glucose (impaired glucose tolerance and diabetes) and calcium (hypercalcaemia).
- Bicarbonate level for evidence of metabolic alkalosis in severe vomiting.
- Short synacthen test for Addison's disease. A random cortisol is not sufficient for diagnosis.

Endoscopy

- To look for peptic ulcer, gastritis and other upper gastrointestinal causes.
- A CLO test for *Helicobacter pylori* should be done if inflammation is present.

Abdominal ultrasound

To look for gallstones causing cholecystitis or pancreatic inflammation

What are your management options whilst you await test results?

- Stop the NSAID and replace with paracetamol for the knee pain.
- Give an antacid medication for symptomatic reflux and dyspepsia. She has already tried ranitidine with no success. A trial of omeprazole 20–40mg daily, with Gaviscon as needed. This should be started after the endoscopy (or discontinued for 1 week prior to endoscopy to get a representative *H. pylori* test).

Table 5.1 Characteristics of different antiemetics.

Type of antiemetic	Examples	Action	Use
Acetylcholine (ACh) receptor antagonists	Hyosine	Target the vomiting centre and vestibulocochlear nuclei	Motion sickness and vestibulocochlear dysfunction
Histamine (H ₁) receptor antagonists	Cyclizine 50 mg tds	Target the vestibulocochlear nuclei	Labyrinthine disorder, e.g. motion sickness, vertigo, migraine
Dopamine (D ₂) receptor antagonists	Metoclopramide 10 mg tds, prochlorperazine 5 mg tds, domperidone 10 mg tds	Act centrally – antiemetic Act peripherally- prokinetic effects	Metabolic, opioid induced, postoperative or vestibular sickness
Serotonin (5HT ₃) receptor antagonists	Ondansetron 4 mg tds	Block stimuli from the chemoreceptor trigger zone	Drug-induced nausea

- Supportive measures to replace fluid and electrolyte losses, preferably oral rehydration sachets.
- Antiemetics can be given for symptomatic nausea, even when the causative agent remains (Table 5.1).

What are the consequences of recurrent vomiting?

The consequences of vomiting include:

- Haematemesis from a superficial tear in the oesophageal mucosa (Mallory–Weiss tear).
- Fluid and electrolyte disturbance (hypokalaemia, hyponatraemia, metabolic alkalosis or acidosis).
- Renal impairment.
- Risk of aspiration (if reduced consciousness or inebriated) and pneumonia.
- Acid damage to teeth and gums over a chronic period of time.
- Psychological distress and impaired quality of life.

Emily is called back to see you to discuss the results of investigations. She continues to be symptomatic with nausea and vomiting despite stopping the NSAID and using the oral rehydration sachets. She has taken a 4-week course of high dose omeprazole. Her reflux symptoms have been controlled.

She had a negative pregnancy test and normal urinalysis. Blood tests showed elevated corrected calcium of 3.18 (albumin 37), with normal electrolytes and renal function. Abdominal ultrasound was normal. Upper endoscopy showed some mild gastritis, likely secondary to NSAID use and no ulceration or obstruction. She was CLO negative. Biopsies of the duodenum were normal.

What do you do now?

Her nausea and vomiting, abdominal discomfort and constipated stool are likely due to hypercalcaemia, as these symptoms continued despite stopping the NSAID and starting antacid medication for gastritis. The calcium level should be repeated to confirm elevation (alongside albumin to calculate corrected calcium). If it remains elevated a parathyroid level should be sent.

She should be referred to an endocrinologist for ongoing management.

Her calcium level remained elevated on repeat sampling and her parathyroid hormone was elevated. She was discussed with the endocrinologists who arranged a parathyroid scan to investigate hyperparathyroidism. A parathyroid adenoma was seen and later excised. Her symptoms resolved after surgery.

CASE REVIEW

There are many causes of nausea and vomiting. In a woman of child-bearing age, pregnancy must be excluded at an early stage. Gastrointestinal causes are the most common and include peptic ulceration and obstructive pathology. Endocrine and metabolic causes are often forgotten. A detailed history and supportive examination should narrow the differential diagnosis and guide subsequent investigation.

Patients with hypercalcaemia due to hyperparathyroidism should be referred to the appropriate specialist for advice about subsequent investigations and management. In this case surgery to remove a parathyroid adenoma gave symptomatic relief.

KEY POINTS

- Vomiting is the forceful expulsion of luminal contents out of the mouth, coordinated by signals from the intestine, body and brain. It is a protective mechanism designed to expel noxious material from the gastrointestinal tract.
- There is a wide differential to consider when assessing any patient with nausea and vomiting. This includes gastrointestinal, endocrine, metabolic, neurological, cardiac, psychiatric and drug-induced causes. Pregnancy must not be forgotten in women of child-bearing age.
- Investigations should be tailored to the individual patient and guided by associated symptoms and signs.
- Management includes fluid and electrolyte replacement, antiemetics and treatment of the underlying cause.
- In those with intractable nausea and vomiting, the history should be re-taken and diagnosis reviewed. Combination therapy may help when a single drug fails.
- In chronic unexplained nausea and vomiting consider psychological causes and cyclical vomiting syndrome, which responds to antimigraine therapy.