think PEI
Optimising Management of Pancreatic Exocrine Insufficiency

thinkPEI.com
A Mylan Website

Pancreatic exocrine insufficiency (PEI): A primary care case study

David Millar-Jones, GPwSI in Diabetes, Cwmbran

Production of this case study has been funded by Mylan. Mylan have had no input into the content but have reviewed for factual accuracy only.

Mylan

PRESENTING CASE

A 45-year-old school teacher who has come to discuss his health

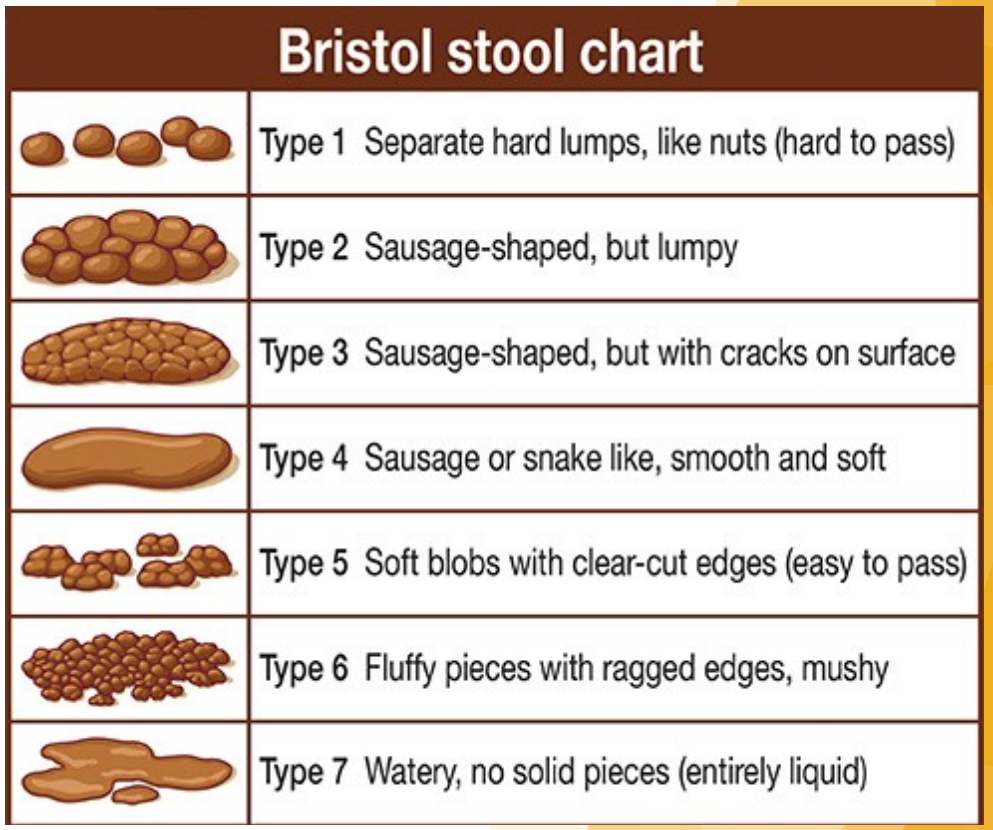
Generally well but with fatigue and abdominal symptoms for past 2 years

Possible weight loss of 2–3 kg over the last 6 months that he has put down to stress with work

- Reasonable diet
- Non-smoker
- Alcohol: 10 units/week (glass of wine most evenings)
- No time for regular exercise

SYMPTOM ENQUIRY

- Loose bowel movements
- Abnormal stools, often of a pale yellow colour
  - Type 6–7 on Bristol stool chart
- Abdominal discomfort
- Flatulence and bloating
- Fatigue



EXAMINATION AND INVESTIGATION

Examination

- Weight 68 kg
- BP 135/70 mmHg
- Abdominal examination – nothing of note

Investigation (blood)

- FBC – mild anaemia (Hb 12 g/dL)
- CRP – to exclude inflammatory causes
- LFT normal except GGT 62 mmol/L (slight elevation)
- U&E normal
- HbA_{1c} 42 mmol/mol
- TFT normal (to screen for thyrotoxicosis)
- Lipid profile normal
- TTG normal (to screen for possible coeliac disease)

INVESTIGATION (CONTINUED)

Investigation (stool)

- Faecal calprotectin – to investigate inflammatory bowel
- Stool culture and microscopy – to exclude infection
- Faecal elastase – for pancreatic insufficiency

Results

- **Faecal elastase = 150 µg/g**

EXAMINATION AND INVESTIGATION

- **Faecal elastase = 150 µg/g**
- In Geoffrey's case, his symptoms and the positive faecal elastase test are suggestive of PEI
- A faecal elastase measurement of less than 200 µg/g in the presence of symptoms is consistent with a diagnosis of PEI, and severe cases are associated with a level less than 100 µg/g
- The blood tests and examination are reassuring to imply no need for further evaluation with a specialist or further tests with an ultrasound or CT scan (to exclude pancreatic cancer or chronic pancreatitis)

MANAGEMENT

Discuss diagnosis

PEI – what it is and possible causes:

- Damage: fibrosis, shrinkage, fatty infiltration, evidence of chronic inflammation
- Causes: genetic aberrations, infection or auto-immune conditions can lead to damage to the exocrine and endocrine tissues of the pancreas
- Future considerations:
  - Malabsorption or malnourishment
  - Deficiencies and possible supplementation of enzymes and minerals (iron and calcium)
  - Diabetes risk associated with pancreatic disease

Further investigation if poor response to treatment

MANAGEMENT

Treatment

Pancreatic enzyme replacement therapy (PERT):

- A healthy pancreas typically produces around 720,000 lipase units in response to a 300–600 kcal meal
- The starting dose for PERT is 50,000 units with every meal (although a higher dose may be needed with very fatty meals, such as fried foods, take-aways, cheese and pastry)
- A total of 25000 units is recommended with every snack and milky drink
- A typical regimen would be 50,000 units of PERT with meals and 25,000 units of PERT with snacks
    - This resolves GI symptoms in the majority of cases but sometimes it may be necessary to double the dose of PERT or add in a proton pump inhibitor (reducing the gastric acid release that may be responsible for lessening the beneficial impact of PERT)

MANAGEMENT

Treatment

PERT:

- PERT is usually taken in capsule form and must be swallowed whole
- Treatment will only work if taken with food, so the meal should be completed within 30 minutes of consuming the PERT capsules, or if more than one capsule is taken, Geoffrey should space them out throughout the meal
- Hot drinks should be avoided at mealtimes as these may make PERT less effective
- If Geoffrey is unable to swallow capsules whole, the capsule can be opened and the contents mixed with soft acidic food (like apple puree, yoghurt or orange or pineapple juice)
- A cold drink should follow to wash the enzymes from the mouth to prevent residual enzymes from damaging the buccal mucosa and causing ulcers

MANAGEMENT

Treatment

Non-drug treatment:

- Dietary advice should be provided
- Food intake should be distributed between three main meals per day, and two or three snacks
- Food that is difficult to digest should be avoided, such as legumes (peas, beans, lentils) and high-fibre foods
- Alcohol should be avoided completely
- Reduced fat diets are not recommended

Ongoing review:

- Regular monitoring and review needs to be established to ensure compliance with regimen and lifestyle
- Annual screening for bloods and for diabetes