

1

Gastrointestinal case studies

Karen Baxter

Case study level 1 – Ulcerative colitis

Learning outcomes

Level 1 case study: You will be able to:

- describe the risk factors
- describe the disease
- describe the pharmacology of the drug
- outline the formulation, including drug molecule, excipients, etc. for the medicines
- summarise basic social pharmacy issues (e.g. opening containers, large labels).

Scenario

Mrs Q is a 37-year-old woman who comes to your pharmacy with a prescription for Predsol enemas, one daily for four weeks. She tells you that she has recently been diagnosed with ulcerative colitis and that this is her first prescription for an enema. She says she would really rather have tablets but the doctor suggested that an enema would be more appropriate for her.

Questions

- 1a** What is ulcerative colitis?
- 1b** What is the aetiology (cause) of ulcerative colitis?
- 2a** What sort of patient most commonly develops ulcerative colitis?
- 2b** In what way does Mrs Q fit with this pattern?
- 3a** What is the active ingredient of Predsol and what class of drugs does it come from?

2 Pharmacy Case Studies

- 3b** How do these drugs exert their action in conditions such as ulcerative colitis?
- 3c** What are the adverse effects of this type of drug?
- 3d** Why do you think Mrs Q has been prescribed an enema rather than tablets?
- 4a** What formulations of prednisolone are available which Mrs Q could self-administer?
- 4b** Describe the advantages and disadvantages of these formulations?
- 5a** What counselling points should you make to Mrs Q about how to use her enema?

General references

- Joint Formulary Committee (2008) *British National Formulary 55*. London: British Medical Association and Royal Pharmaceutical Society of Great Britain, March.
- Mpofu C and Ireland A (2006) Inflammatory bowel disease – the disease and its diagnosis. *Hospital Pharmacist* 13: 153–158.
- Purvis J (1988) Enemas in ulcerative colitis. *Pharmaceutical Journal* 13 August: 208.
- Predsol Retention Enema, Summary of Product Characteristics. Available at <http://emc.medicines.org.uk/> [Accessed 7 July 2008].
- Randall DM and Neil KE (2003) Inflammatory bowel disease. In: *Disease Management*. London: Pharmaceutical Press, pp. 135–138.

Case study level 2 – Constipation

Learning outcomes

Level 2 case study: You will be able to:

- interpret relevant lab and clinical data
- identify monitoring and referral criteria
- explain treatment choices
- describe goals of therapy, including monitoring and the role of the pharmacist/clinician
- describe issues – counselling points, adverse drug reactions, drug interactions, complementary/alternative therapies and lifestyle advice.

Scenario

Mr A is an 84-year-old man who is brought to your pharmacy by his wife to ask advice on his constipation. On discussion with him you establish that he has recently been experiencing back pain, which prevents him from getting about as much as he used to. The GP gave him some co-dydramol 10 days ago, and things are starting to improve. His wife says that she was given some little

brown tablets when she was constipated, but they gave her stomach pains. She tried to get him to take them, but he won't. He thinks he should perhaps have something gentle, like a herbal medicine.

Questions

- 1a** How is constipation defined?
- 1b** Is it common?
- 2a** Why do you think Mr A may have constipation?
- 2b** What symptoms would prompt you to suggest that Mr A should go to his GP?
- 3a** What sort of laxative do you think Mrs A has been taking? Explain your answer.
- 3b** Is this sort of laxative suitable for Mr A? Explain your answer.
- 4a** What lifestyle changes would you recommend Mr A should take? What counselling would you give him?
- 4b** How would you assess the success of this action?
- 5** What would you suggest if your first recommendation fails?

General references

- Anon (2004) The management of constipation. *MeReC Bulletin* 14: 21–24.
- Greene RJ and Harris ND (2008) Constipation. In: *Pathology and Therapeutics for Pharmacists*. London: Pharmaceutical Press, pp. 125–129.
- Joint Formulary Committee (2008) Laxatives. In: *British National Formulary 55*. London: British Medical Association and Royal Pharmaceutical Society of Great Britain, March, pp. 57–64.

Case study level 3 – Irritable bowel syndrome

Learning outcomes

Level 3 case study: You will be able to:

- interpret clinical signs and symptoms
- evaluate laboratory data
- evaluate treatment options
- state goals of therapy
- describe a pharmaceutical care plan to include advice to a clinician
- describe the prognosis and long-term complications
- describe the social pharmacy issues which could include supply (e.g. complex treatments at home, concordance and compliance) and lifestyle issues.

Scenario

Mrs P, a 32-year-old woman, comes to the dispensary asking to talk to a pharmacist. She has recently received a prescription for Colpermin from her GP. She says that they gave her terrible indigestion and so she has been taking Alu-Cap capsules, which have not worked terribly well. She has also decreased the number of Colpermin capsules she was taking. She wants to know if you can sell her anything stronger for the indigestion. She feels her problems are just getting worse and worse: first she had constipation, stomach cramps and bloating. Now she has indigestion as well, and her original symptoms are worse than ever. She didn't used to take any medicines and already she is on two, and she is seeing the hospital doctor in clinic this afternoon and fears she will be taking even more before long.

Questions

- 1** Mrs P has irritable bowel syndrome (IBS). What from her history is consistent with this?
- 2a** How would this diagnosis have been reached?
- 2b** What symptoms would require further investigation?
- 2c** What is her prognosis likely to be?
- 3** What lifestyle advice should she have been given?
- 4** Is there anything you should take into consideration when talking to Mrs P?
- 5** What advice can you give her about her current medication?
- 6** What particular difficulty is there with assessing the success of treatment in this type of patient?
- 7a** What other treatments are possible in patients with irritable bowel syndrome?
- 7b** Which would you recommend for Mrs P?
- 7c** What adverse effects are possible?

General references

- Agrawal A and Whorwell PJ (2006) Irritable bowel syndrome: diagnosis and management. *British Medical Journal* 332: 280–283.
- Anon (2000) Dietary advice tips: Irritable bowel syndrome. *Pharmaceutical Journal* 11 March: 397.
- Colpermin, Summary of Product Characteristics. Available at <http://emc.medicines.org.uk/> [Accessed 7 July 2008].
- Joint Formulary Committee (2008) *British National Formulary* 55. London: British Medical Association and Royal Pharmaceutical Society of Great Britain, March.
- Jones J, Boorman J, Cann P *et al.* (2000) British Society of Gastroenterology guidelines for the management of the irritable bowel syndrome. *Gut* 47(suppl 2): ii1–ii19.

Thomas L (2005) Current management options for irritable bowel syndrome. *Prescriber* 19 December: 13–20.

Case study level Ma – Duodenal ulcer

Learning outcomes

Level M case study: You will be able to:

- interpret clinical signs and symptoms
- evaluate laboratory data
- critically appraise treatment options
- state goals of therapy
- describe a pharmaceutical care plan to include advice to a clinician
- describe the prognosis and long-term complications
- describe the social pharmacy issues which could include supply (e.g. complex treatments at home, concordance and compliance) and lifestyle issues
- describe the monitoring of therapy.

Scenario

Mr B is a 57-year-old man who was admitted yesterday after starting to pass black stools. He has a two-day history of severe stomach pains and has suffered on and off with indigestion for some months. He is a life-long smoker, with mild chronic cardiac failure (CCF) for which he has been taking enalapril 5 mg twice daily for 2 years. He also recently started taking naproxen 500 mg twice daily for arthritis. Yesterday his haemoglobin was reported as 10.3 g/dL (range 12–18 g/dL), platelets $162 \times 10^9/L$ (range $150\text{--}450 \times 10^9/L$), INR 1.1 (range 0.8–1.2) (ranges from Good Hope Hospital Biochemistry Department, available at <http://www.goodhope.org.uk/departments/pathweb/refranges.htm>) with U+Es and LFTs normal. He was mildly tachycardic (87 bpm) and had a slightly low blood pressure of 115/77 mmHg and was given 1.5 L of saline.

He has just returned from endoscopy this morning and has been newly diagnosed as having a bleeding duodenal ulcer. He has been written up for his usual medication for tomorrow if he is eating and drinking again.

Questions

- 1a** What risk factors does Mr B have for a bleeding peptic ulcer?
- 1b** Has his treatment so far been appropriate?
- 2** Should Mr B be given a proton pump inhibitor (PPI)? State your reasons. If yes, what would you recommend?
- 3** What is likely to be the next stage of treatment for Mr B?
- 4** What drugs should Mr B be discharged on?
- 5** What counselling would you give him?
- 6** What follow-up should Mr B have?

General references

- Anon (2005) *H. pylori* eradication in NSAID-associated ulcers. *Drugs and Therapeutics Bulletin* 43: 37–40.
- British Society of Gastroenterology Endoscopy Committee (2002) Non-variceal upper gastrointestinal haemorrhage: guidelines. *Gut* 51(Suppl IV): iv1–iv6. Available at http://www.bsg.org.uk/pdf_word_docs/nonvar3.pdf [Accessed 7 July 2008].
- Enaganti S (2006) Peptic ulcer disease – the disease and non-drug treatment. *Hospital Pharmacist* 13: 239–244.
- Greer D (2006) Peptic ulcer disease – pharmacological treatment. *Hospital Pharmacist* 13: 245–250.
- National Institute for Health and Clinical Excellence (NICE) (2004) Dyspepsia: managing dyspepsia in adults in primary care. Available at <http://www.nice.org.uk/page.aspx?o=CG017> [Accessed 7 July 2008].

Case study level Mb – Ulcerative colitis

Learning outcomes

Level M case study: You will be able to:

- interpret clinical signs and symptoms
- evaluate laboratory data
- critically appraise treatment options
- state goals of therapy
- describe a pharmaceutical care plan to include advice to a clinician
- describe the prognosis and long-term complications
- describe the social pharmacy issues which could include supply (e.g. complex treatments at home, concordance and compliance) and lifestyle issues
- describe the monitoring of therapy.

Scenario

Mrs D has recently been admitted with an episode of acute severe ulcerative colitis. This is her third flare this year. This time she has a 5-day history of bloody diarrhoea with abdominal pain. On average she is opening her bowels seven times a day. She is currently taking mesalazine 800 mg three times daily and prednisolone 20 mg daily. Mrs D also has an elevated temperature of 38°C and a pulse rate of 92 bpm. She is due to have an abdominal X-ray and a stool culture.

Her biochemistry results are reported as:

Na ⁺	143 mmol/L	(range 133 to 145 mmol/L)
K ⁺	3.2 mmol/L	(range 3.3 to 5.1 mmol/L)
Creatinine	81 micromol/L	(range 44 to 80 micromol/L)
Urea	7.2 mmol/L	(range 1.7 to 8.3 mmol/L)
Albumin	28 g/L	(range 34 to 48 g/L)
Hb	10.4 g/dL	(range 11 to 16 g/L)
WCC	14 × 10 ⁹ /L	(range 3.5 to 11 × 10 ⁹ /L)
ESR	38 mm/h	(range 0 to 9 mm/h)
CRP	95 mg/L	(range less than 5 mg/L)

(Ranges from Good Hope Hospital Biochemistry Department, available at <http://www.goodhope.org.uk/departments/pathweb/refranges.htm>)

Questions

- 1a** Why is she taking mesalazine?
- 1b** What adverse effects should Mrs D be particularly aware of?
- 2a** What signs and symptoms indicate that she needs to be admitted?
- 2b** Why does she have a low potassium and a low albumin?
- 2c** Why is she having an abdominal X-ray and stool cultures done?
- 3** How should this flare be managed?

Several days later you see Mrs D, who is distressed as she is not responding to treatment and she desperately wants to avoid surgery. The consultant has suggested that ciclosporin may be an option, and she asks to talk to you about it.

- 4** Why is surgery likely?
- 5a** What is the evidence for the use of ciclosporin?
- 5b** What should you discuss with her about the use of ciclosporin?
- 6** What dose of ciclosporin should she receive and how should it be given?

Mrs D is now very much recovered and is due to go home.

- 7a** What drugs would you expect her to be discharged on?
- 7b** What monitoring would you do?
- 7c** What counselling should she be given?
- 7d** What future treatment is she likely to receive?
- 8** Do antibacterials have a role in ulcerative colitis?

General references

- Carter MJ, Lobo AJ, Travis SP *et al.* (2004) Guidelines for the management of inflammatory bowel disease in adults. *Gut* 53 (Suppl V): v1–v16. Available at: http://www.bsg.org.uk/pdf_word_docs/ibd.pdf [Accessed 7 July 2008].
- Guslandi M (2005) Antibiotics for inflammatory bowel disease: do they work? *European Journal of Gastroenterology and Hepatology* 17: 145–147.
- Mpofu C and Ireland A (2006) Inflammatory bowel disease – the disease and its diagnosis. *Hospital Pharmacist* 13: 153–158.
- Pham CQ, Efros Cb, Beradi RR (2006) Cyclosporine for severe ulcerative colitis. *Annals of Pharmacotherapy* 40: 96–101.
- Sandimmun concentrate for infusion 50mg/ml, Summary of Product Characteristics. Available at <http://emc.medicines.org.uk/> [Accessed 7 July 2008].
- St Clair Jones A (2006) Inflammatory bowel disease – drug treatment and its implications. *Hospital Pharmacist* 13: 161–166.
- Sweetman S (ed.) (2007) *Martindale: The Complete Drug Reference*, 35th edn. London: Pharmaceutical Press.

Answers

Case study level 1 – ulcerative colitis – see page 1

1a What is ulcerative colitis?

Ulcerative colitis is an inflammatory disease of the lower gastrointestinal tract, which results in episodes of diarrhoea. There may also be extraintestinal symptoms, including anaemia, arthritis, dermatological problems and eye disorders.

1b What is the aetiology (cause) of ulcerative colitis?

The exact causes are unclear, although there are several theories, which include genetic, environmental and microbial factors, possibly associated with an inappropriate immune response.

2a What sort of patient most commonly develops ulcerative colitis?

Although anyone can develop ulcerative colitis it appears to be most common in developed countries, and the risk appears greater if a first-degree relative has the disease. Patients most commonly present at 20–40 years of age and some studies suggest that ulcerative colitis is slightly more common in women than men.

2b In what way does Mrs Q fit with this pattern?

She is a woman of between 20 and 40 years of age.

3a What is the active ingredient of Predsol and what class of drugs does it come from?

Predsol contains prednisolone, a corticosteroid.

3b How do these drugs exert their action in conditions such as ulcerative colitis?

Corticosteroids have anti-inflammatory and immunosuppressive effects, which reduce the causes of the diarrhoea and thereby settle the disease.

3c What are the adverse effects of this type of drug?

The most significant adverse effect is adrenal suppression, which is most common with long-term, high-dose treatment (see *BNF* for definitions). Corticosteroids can also cause increased appetite, weight gain, insomnia, depression, osteoporosis, peptic ulceration and glucose intolerance, leading to diabetes. Immunosuppression caused by this type of treatment can lead to an increased susceptibility to infection. Therefore patients taking corticosteroids (usually in high doses) should not be given live vaccines.

3d Why do you think Mrs Q has been prescribed an enema rather than tablets?

Although systemic absorption of the prednisolone from the enema probably does occur, especially when the colon is particularly inflamed, corticosteroids usually have less systemic effects when given this way. Furthermore, by giving an enema, the drug is being delivered directly to its site of action – remember that in ulcerative colitis the disease is confined to the lower gastrointestinal tract.

4a What formulations of prednisolone are available which Mrs Q could self-administer?

She could self-administer:

- tablets (either plain or enteric coated)
- suppositories
- foam enemas.

4b Describe the advantages and disadvantages of these formulations?

The tablets would be simple to use, but may have greater adverse effects. This is because they will enter the bloodstream in greater amounts by the oral route and have systemic effects. The higher the dose used the greater the potential for adverse effects. It is usually recommended that corticosteroids are used in the lowest possible dose for the shortest possible period of time.

The suppositories are also easier to use, but, because they only have a local action they are only suitable for localised disease (proctitis).

Foam enemas can be easier to retain than liquid enemas and do have a good spread into the colon, and so may be a possible alternative.

5a What counselling points should you make to Mrs Q about how to use her enema?

- She should use the enema before bed to enhance retention.
- The enema should not be too cold as this can cause abdominal cramping. She could slightly warm the enema (e.g. in a cup of warm water) before administration.
- She should lie on her left side to facilitate the spread of the enema, with either her right leg, or both legs drawn up.
- The tip of the enema should be lubricated, with either K-Y jelly or petroleum jelly.
- She should gently insert the enema to about half the length of the tip using a gently twisting action. Deep breaths will help with this.
- She should gently and slowly (over 1–2 minutes) roll up the bag so as not to give the enema too quickly. This will aid retention.
- She should then roll on to her front and remain there for 3–5 minutes.

Case study level 2 – Constipation – see page 2

1a How is constipation defined?

Constipation cannot solely be defined by bowel frequency, as this naturally varies in the population. Simply, constipation is defined as a decrease in the patient's normal pattern of defecation, although for research purposes other criteria are often considered (e.g. straining, hard stools).

1b Is it common?

The incidence of constipation is hard to define, with rates in women stated to be 8.2% in one study and 52% in another. Constipation tends to be more common in women, and in the elderly.

2a Why do you think Mr A may have constipation?

- Mr A is elderly. Although his age in itself does not cause constipation, factors such as decreased mobility and decreased dietary intake increase the prevalence of constipation in this group.
- Mr A has recently had back pain, which may have further decreased his mobility.
- Mr A has been taking dihydrocodeine (as part of co-dydramol), one of the adverse effects of which is constipation.

2b What symptoms would prompt you to suggest that Mr A should go to his GP?

Blood in the stools, severe abdominal pain, unintentional weight loss, co-existing diarrhoea, persistent symptoms, tenesmus or failure of previous

medication. These symptoms can point to more severe disorders such as impaction, or malignancy.

3a What sort of laxative do you think Mrs A has been taking? Explain your answer.

From the description of the adverse effects, a stimulating laxative seems most likely, as they commonly cause abdominal cramps. Senna is a stimulant laxative and is available as brown tablets, and so this seems the most likely laxative.

3b Is this sort of laxative suitable for Mr A? Explain your answer.

Yes. Although stimulant laxatives are often considered to be second line, it has been said that laxative choice is best based on symptoms, patients' preference, adverse effects and cost. In the case of Mr A the stimulant laxatives have the advantage of being fairly quick acting, and are often useful to counteract the effects of decreased bowel motility caused by opioid analgesics. They are also useful for occasional use.

Other types of laxative include the following:

- Bulk-forming laxatives (such as ispaghula husk), which work by increasing faecal mass, but they may take several days to become fully effective. They are of most use in those patients that pass small stools and have a diet lacking in fibre (but they should not replace dietary lifestyle measures)
- Faecal softeners (such as docusate, which is stimulating but which also has softening properties). These can be useful where passing stools may be uncomfortable e.g. with haemorrhoids
- Osmotic laxatives (such as lactulose) work by drawing fluid into the bowel and retaining the existing fluid. They may take several days to become fully effective and it is essential that fluid intake is maintained during their use.

4a What lifestyle changes would you recommend Mr A should take? What counselling would you give him?

- Ensure that Mr A has none of the adverse effects that would lead to him being referred to his GP.
- Lifestyle measures may include increased dietary fibre, ensuring an adequate fluid intake, keeping as mobile as possible, etc.
- A laxative would seem appropriate at this stage as Mr A is elderly and it is likely that his constipation is drug-induced.
- Discuss the adverse effects his wife has experienced and explain that senna is in fact a herbal medicine and that herbal remedies may not necessarily be gentle.
- Discuss the benefits of senna (as above). He could try starting with one tablet to minimise the adverse effects. If he accepts this suggestion counsel him to take the tablets before bed (as they take 8–10 hours to work). If he is reluctant to try senna explain to him that lactulose is often insufficient alone in treating opioid-induced constipation, and may take 48 hours to work.

Bulk laxatives are really a more long-term solution. Bisacodyl may be an alternative stimulant laxative, but is likely to have similar adverse effects.

- Also discuss his co-dydramol use – it may be short term, and encourage him to discuss the constipation with his GP (as an alternative analgesic may be appropriate).

4b How would you assess the success of this action?

Ask Mr A to come back if he feels the laxative he has chosen has not worked. Ensure that the laxative has been taken in an adequate dose for a sufficient amount of time.

5 What would you suggest if your first recommendation fails?

Ensure that Mr A has been taking a reasonable dose for a reasonable period of time (several days would be needed to assess the efficacy of lactulose). Assuming Mr A has been taking the medication as recommended it would be prudent to refer him to his GP at this stage.

Case study level 3 – Irritable bowel syndrome – see page 3

1 Mrs P has irritable bowel syndrome. What from her history is consistent with this?

Patients with IBS commonly present with abdominal pain and altered bowel habits: constipation or diarrhoea. Bloating is common, and women are more affected than men. Presentation is often before the age of 45 years. Mrs P is a young female, with the typical symptoms of someone with constipation-predominant IBS. She is also taking peppermint oil, which is often prescribed in an attempt to relieve cramping.

2a How would this diagnosis have been reached?

Mrs P is young, with a fairly typical presentation, and so a standard examination, associated with clinical suspicion is adequate for a diagnosis.

2b What symptoms would require further investigation?

If Mrs P was over 45 years old and had a rapid onset of symptoms then she would be referred for further investigation. Symptoms likely to require further investigations include rectal bleeding, anaemia, weight loss, a family history of cancer or inflammatory bowel disease, or signs of an infection.

2c What is her prognosis likely to be?

The prognosis can be very variable. IBS does not tend to develop into anything more sinister. However studies suggest that large numbers of patients will still

have abdominal symptoms 5 years after diagnosis. Psychological symptoms, a long history of illness and previous abdominal surgery are all associated with a worse prognosis. If the IBS is linked to a stressful event, e.g. ongoing work-related stress, which is unremitting, the patient is highly likely to be resistant to treatment.

3 What lifestyle advice should she have been given?

A common first step in managing patients with IBS is to discuss lifestyle factors. Dietary changes and dietary fibre are likely to have been discussed, especially in patients presenting with constipation and bloating. Exclusion diets may have been tried, but these need to be under the guidance of a dietician.

4 Is there anything you should take into consideration when talking to Mrs P?

Patients with this disease often fear being labelled as psychologically disturbed. They often fear that their symptoms are symptomatic of a much more serious condition. It is important that the patient is listened to and given plenty of reassurance.

5 What advice can you give her about her current medication?

Peppermint oil commonly causes indigestion. It is likely that the aluminium hydroxide antacid taken by the patient is exacerbating the condition by breaking down the enteric coating of the capsules. It is recommended that patients suffering indigestion with peppermint oil stop taking the medication, and in Mrs P's case, as the capsules do not appear to be working very well, this seems a reasonable course of action. She would be best advised to discuss this at the clinic this afternoon, so that they are aware that the treatment was not successful. If she stops the peppermint oil she should not need to continue with the antacid, or any other indigestion remedy, which should reduce the amount of medication she needs to take.

6 What particular difficulty is there with assessing the success of treatment in this type of patient?

The placebo response to treatment is often very high – up to 47%, and so many treatments appear successful in the short term.

7a What other treatments are possible in patients with irritable bowel syndrome?

Medical treatments of IBS are limited. Laxatives (particularly dietary fibre and bulking laxatives such as ispaghula) and antidiarrhoeals (loperamide and sometimes codeine) are prescribed to manage the symptoms of altered bowel habit. Colestyramine is of use in those with diarrhoea caused by bile salt

malabsorption. Antispasmodics, particularly those with antimuscarinic actions (dicycloverine and hyoscine butylbromide) are useful in managing cramping. Low-dose tricyclic antidepressants have been shown to be of benefit, although use may be limited in some patients as they can cause constipation. They are of particular use when depression is a factor. Mebeverine, alverine and peppermint oil are also used.

Psychological treatments, such as relaxation and hypnotherapy are also of use, but due to limited NHS resources are saved for particularly resistant cases.

7b Which would you recommend for Mrs P?

As Mrs P has been referred to a hospital clinic, it is likely that dietary measures have been tried. Therefore a bulking laxative such as ispaghula may be of benefit. As she suffers from cramping an antimuscarinic antispasmodic such as dicycloverine may be of benefit, although some caution is needed, as it may exacerbate her constipation.

7c What adverse effects are possible?

Although dicycloverine has less marked antimuscarinic effects than other similar antispasmodics it still may lead to adverse effects such as dry mouth, dizziness, blurred vision and constipation. Fatigue, anorexia, nausea and vomiting, headache and dysuria (difficulty in urinating) are also possible.

Case study level Ma – Duodenal ulcer – see page 5

1a What risk factors does Mr B have for a bleeding peptic ulcer?

The prevalence of peptic ulcers increases with age, as *Helicobacter pylori* infection rates increase with increasing age – Mr B is 57 years of age. Peptic ulcers are more common in smokers. Mr B is also taking an NSAID (non-steroidal anti-inflammatory drug), which is associated with ulceration.

1b Has his treatment so far been appropriate?

The management of a bleeding ulcer is dictated by the severity of the bleed. Mr B is not particularly old, he is not shocked (pulse rate less than 100 bpm, systolic blood pressure over 100 mmHg), and active bleeding has not been reported. He had the appropriate fluid replacement (saline, a crystalloid). Blood was not needed as he did not have particular signs of hypovolaemic shock and his haemoglobin is above 10 g/dL. He had no risk factors to suggest that antibacterial prophylaxis was necessary before endoscopy. His enalapril and furosemide were temporarily stopped, and if his blood pressure, hydration state

and renal function are normal it is reasonable to restart them tomorrow as planned. If not, his CCF should be reviewed. However, the naproxen should not be restarted.

- 2** Should Mr B be given a proton pump inhibitor (PPI)? State your reasons. If yes, what would you recommend?

The use of a PPI in this situation is not fully established. A Cochrane Review has suggested that the use of a PPI does not affect mortality in patients with a bleeding peptic ulcer. Mr B has clearly had a recent bleed, and in this situation the British Society of Gastroenterology guidelines suggest that he should be given an infusion of omeprazole, which may help prevent re-bleeding by stabilising the clotting process. However, this may also be achieved by giving oral omeprazole. Therefore it would have been advisable to start omeprazole 40 mg twice daily, by the oral route. High-dose omeprazole is usually given for 72 hours.

- 3** What is likely to be the next stage of treatment for Mr B?

Mr B needs a full-dose PPI (see below) for 4–8 weeks to heal his ulcer. Following this he should be tested for *H. pylori*, and if this test is positive he should have eradication treatment. Note that in patients already taking a PPI a two-week washout period is needed before a breath test or a stool antigen test is used.

- 4** What drugs should Mr B be discharged on?

He should be discharged with:

- enalapril 5 mg twice daily
- furosemide 40 mg daily
- omeprazole 20 mg twice daily (or other full-dose PPI).

If possible, his NSAID should be permanently stopped and therefore consideration will need to be given to managing his pain relief. A first option would be to try paracetamol with an opioid such as codeine. However, as he has rheumatoid arthritis it is unlikely that this will be adequate to control his symptoms. A selective COX-2 inhibitor (e.g. celecoxib) is unlikely to be suitable for Mr B as he has CCF. Therefore, after trying paracetamol/opioids it is likely that Mr B will need an NSAID. NSAIDs can be given during ulcer-healing, but they are best avoided if possible. If an NSAID proves to be necessary, the lowest dose of the safest NSAID (i.e. ibuprofen) should be given. When his treatment for ulcer healing is completed he should take a PPI (e.g. omeprazole 20 mg daily) for gastroprotection.

- 5** What counselling would you give him?

- Simple lifestyle advice – avoiding fatty foods, reducing weight where possible and giving up smoking.

- Discuss the use of NSAIDs. Ibuprofen is available without a prescription, and you should discuss the risks of using an NSAID without gastroprotection and the possibility of the inadvertent use of two NSAIDs if he is prescribed another NSAID in the future.
- Discuss his analgesia (as above).

6 What follow-up should Mr B have?

If Mr B is symptomatic following *H. pylori* eradication he should be re-tested for *H. pylori*, and if this test is positive he should be given a further course of eradication treatment, using a different antibacterial combination to the one given previously (regimens detailed in the *BNF*). He should also be reviewed annually and given advice on lifestyle and the management of any dyspeptic symptoms.

Case study level Mb – Ulcerative colitis – see page 6

1a Why is she taking mesalazine?

Mesalazine is useful in maintaining remission in patients with ulcerative colitis.

1b What adverse effects should Mrs D be particularly aware of?

Although significant adverse effects (such as Stevens Johnson syndrome, pancreatitis and agranulocytosis) are rare, all patients should be advised to report any unexplained symptoms such as bleeding, bruising, purpura (small areas of haemorrhage), sore throat, fever or malaise. These may be indicative of agranulocytosis and warrant urgent investigation.

2a What signs and symptoms indicate that she needs to be admitted?

Her symptoms (more than six motions a day) suggest severe disease. The fact that she has an increased pulse rate and has a raised temperature suggest systemic disease, which requires urgent attention. The raised ESR and CRP are also markers of severe inflammation.

2b Why does she have a low potassium and a low albumin?

Her low potassium is probably a result of the diarrhoea, although note that corticosteroids can also cause hypokalaemia. Her low albumin suggests that she has had longer term malabsorption; it is likely to take several weeks or longer to correct.

2c Why is she having an abdominal X-ray and stool cultures done?

Stool cultures are to rule out an infective cause of the disease. The abdominal

X-ray is to exclude toxic dilation of the colon or bowel perforation, which would require urgent surgical attention.

3 How should this flare be managed?

- It is unlikely that she will be able to absorb any drugs by the oral route, so treatment will need to be given parenterally.
- Mesalazine has only been shown to be of benefit in mild to moderate flares of ulcerative colitis and so it can be stopped. It is unlikely to be absorbed.
- Her prednisolone should be replaced with full dose corticosteroid – most commonly intravenous hydrocortisone 100 mg four times daily to control the inflammation. Predsol enemas are often also given.
- She will also need deep vein thrombosis prophylaxis as she is at an increased risk of a thromboembolic event, and intravenous fluids, with potassium, to replace what she is losing with the diarrhoea.

4 Why is surgery likely?

Surgery is undertaken in patients not responding to medical treatments (or for the reasons mentioned previously). Surgery may also be used when patients have poorly controlled frequently relapsing disease. In ulcerative colitis surgery (a colectomy) offers the hope of a cure, by removing the diseased portion of the gastrointestinal tract. This contrasts with Crohn's disease, where surgery is undertaken for symptomatic relief. However, as Crohn's disease can affect the whole of the gastrointestinal tract it is not curative, and the disease often recurs in a different area following surgery.

5a What is the evidence for the use of ciclosporin?

Several studies have been conducted, including some small randomised studies, to assess the use of ciclosporin in Crohn's disease. The evidence suggests that intravenous ciclosporin can induce disease remission in severe flares of ulcerative colitis that are unresponsive to corticosteroids. Oral ciclosporin has only been shown to be useful as a bridging treatment between intravenous ciclosporin and more long-term maintenance strategies.

5b What should you discuss with her about the use of ciclosporin?

- Reason for using ciclosporin: Ciclosporin is used to suppress the immune system and therefore the disease activity, and has a rapid onset of action. Discuss its other uses and explain that this is an unlicensed but not uncommon treatment for patients in her situation (relapsing unresponsive disease). Although it may avoid the need for surgery in some patients it doesn't always work and surgery may still be needed.
- How the ciclosporin will be given: Initially the ciclosporin will be given through a drip. If it is successful in controlling the disease she will be given oral treatment, which you can come back to discuss.

- Possible adverse effects: Ciclosporin has many adverse effects. It would be prudent to discuss the most significant effects and offer to return when she has had the opportunity to read through a patient information leaflet.
- Discuss altered electrolyte levels (e.g. potassium, which is important for the heart). This will be monitored with blood tests.
- Increases in blood pressure are quite common, and these may be treated with blood pressure tablets, or by stopping the medicine.
- Other common adverse effects include tingling, most often in the hands and feet, cramps and muscle pains. Women may find that their periods alter.
- Kidney problems are a severe adverse effect. Problems tend to be more common with high doses, and blood levels of the drug will be monitored to ensure that they are within an acceptable range. Blood tests will also monitor kidney function.

6 What dose of ciclosporin should she receive and how should it be given?

The usual dose is 2–4 mg/kg/day (British Society of Gastroenterology guidelines recommend the lower dose). It is given as an infusion over 2–6 hours diluted in glucose 5% or sodium chloride 0.9%. Note that ciclosporin diluted in sodium chloride 0.9% is only stable for 8 hours. Some PVC giving sets are incompatible with ciclosporin and so a special giving set may need to be used with the infusion.

7a What drugs would you expect her to be discharged on?

- Ciclosporin 6–8 mg/kg per day (target blood level 100–200 ng/mL).
- Prednisolone 40–60 mg daily, with a reducing course over several weeks (regimens vary, but reductions should not be more than 10 mg and will need to be smaller and slower towards the tail end of treatment. As Mrs D was previously taking prednisolone 10 mg daily, dosage reductions from this point down will need to be very gradual. Many patients end up taking long-term steroids.
- Co-trimoxazole 960 mg three times weekly as pneumocystis pneumonia prophylaxis. Local policy and dosing regimens vary and not all patients will necessarily receive this drug or dose.
- Mesalazine 800 mg three times daily.

7b What monitoring would you do?

- Ciclosporin levels – although a therapeutic range has not been defined it is usual to aim for levels of between 100 and 200 ng/mL.
- U+Es – ciclosporin can cause hyperkalaemia and renal impairment.
- Full blood count.
- Blood pressure.

The British Society of Gastroenterology recommends that measurements are taken at baseline, after one and two weeks, and then monthly.

7c What counselling should she be given?

Mrs D should be given the following advice:

- As ciclosporin is a powerful immunosuppressant you will be more susceptible to infection. You will be given an antibiotic three times a week to prevent some serious infections.
- If you are to have vaccines it is important you say that you are on ciclosporin as some should not be given to patients taking ciclosporin as they can result in infections.
- There is very little experience of using ciclosporin in pregnancy. Discuss any plans for pregnancy with your doctor.
- Let doctors, dentists, nurses and pharmacists know that you are taking this medicine. It may affect their choice of treatment. Note that ibuprofen is a general sale list medicine and so can be freely purchased. This can interact with ciclosporin and so should generally be avoided without further medical advice.
- Monitoring: Regular blood tests will be needed to guard against adverse effects. It is important to keep to the recommended schedule. Ciclosporin levels need to be taken before your first dose of the day (trough level). Therefore on some days (usually once a month) you will be asked not to take your ciclosporin until the blood has been taken. Once the blood has been taken the dose is taken as normal.

7d What future treatment is she likely to receive?

Ciclosporin will be tailed off as azathioprine (1.5–2.5 mg/kg per day) is slowly started. The ciclosporin will be continued for 3–6 months to allow the azathioprine time to start working – a full effect may take three months. Co-trimoxazole will probably be stopped when ciclosporin is stopped. She is likely to continue aminosalicylates, and patients often remain on corticosteroids.

8 Do antibacterials have a role in ulcerative colitis?

Potentially, although controlled evidence for their use is sparse and more study is needed. Patients with pouchitis (which may occur following some surgical procedures for ulcerative colitis) may have significant clinical improvement following the use of metronidazole. Ciprofloxacin is also useful for pouchitis, and concurrent use with metronidazole appears to be superior to either antibacterial alone. Ciprofloxacin alone may also be of potential use for disease control in ulcerative colitis, but data in the absence of other standard treatments are lacking. Antibacterials tend to be of more use in Crohn's disease.