

# Acute gastroenteritis: the need to remember alternative diagnoses

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**Summary:** Five hundred and ninety-four patients were consecutively admitted to an infectious disease unit over a 2-year period with a referral diagnosis of acute gastroenteritis or food poisoning. In 175 (29%) patients, gastrointestinal symptoms were associated with a condition other than gastrointestinal infection. Non-infective gastrointestinal disease was present in 90 patients, systemic infection in 50 and systemic disease in 35. Four illustrative case histories are presented to emphasize the need for a high index of suspicion if diseases such as malaria, septicaemia or appendicitis are not to be missed.

## Introduction

An acute onset of diarrhoea, abdominal pain and vomiting suggests infective or toxin-induced gastroenteritis. These typical gastrointestinal symptoms may have other causes and failure to reach the correct diagnosis can have serious implications for the patient. We present 4 illustrative patients who were referred to our unit in the last 6 months with a diagnosis of 'acute gastroenteritis'. Faecal microscopy and culture were negative and in each case an alternative treatable diagnosis was made.

## Case reports

### Case 1

A 21 year old woman was admitted with a 4-day history of headache, sore throat, abdominal pain, vomiting and postural dizziness. Treatment with oral amoxicillin at home had improved her sore throat, but she continued to vomit and developed increasing lower abdominal pain with diarrhoea. She had returned from a summer holiday in Corfu 6 weeks previously. She was ill, restless and drowsy, but not clinically dehydrated. Her skin was sun-tanned with increased pigmentation over the knuckles, knees and minor scars, and there was a small patch of buccal pigmentation. Her temperature was 37°C, pulse 132/minute, supine blood pressure 80/60 mmHg and erect blood pressure unrecordable. There was generalized abdominal tenderness particularly in both iliac fossae. Rectal examination was normal, but she was tender in the fornices on vaginal examination. Serum urea was

13.6 mmol/l, but full blood count, blood glucose, serum electrolyte and amylase concentrations were normal. A clinical diagnosis of Addison's disease associated with pelvic inflammatory disease or appendicitis was made. She was treated with intravenous saline, hydrocortisone, cefuroxime and metronidazole with dramatic improvement in her haemodynamic status and cessation of vomiting. She continued to have increasing lower abdominal pain and tenderness, and 2 days after admission an inflamed appendix was removed at laparotomy. Serum cortisol on admission was 123 nmol/l (normal range 130–650 nmol/l). Therapy was changed to dexamethasone and serum cortisol levels after intramuscular tetracosactrin 250 µg were: 27 nmol/l (0 minutes), 25 nmol/l (30 minutes), 23 nmol/l (60 minutes). Adrenal cortex autoantibodies were strongly positive confirming the diagnosis of autoimmune Addison's disease. She made a good post-operative recovery and was discharged home on appropriate cortisol replacement.

### Case 2

A 58 year old housewife with a 20-year history of chronic obstructive airways disease was referred with a 2-day history of fevers, rigors, profuse watery diarrhoea and vomiting. Her medication included oral prednisolone 5 mg a day, inhaled β<sub>2</sub> agonists and inhaled corticosteroids. She was ill and restless with a temperature of 38°C, pulse 90/minute and supine blood pressure 80/50 mmHg. There was tenderness in the epigastrium and left iliac fossa. Peripheral white cell count was  $36.1 \times 10^9/l$  (79% neutrophils) and serum urea was 14.4 mmol/l. Chest X-ray, haemoglobin, blood glucose and serum electrolyte concentrations were normal. A diagnosis of septicaemia and hypoadrenalism

was made and she was treated with intravenous saline, hydrocortisone and trimethoprim. Within 24 hours all 4 blood culture bottles yielded *Streptococcus pneumoniae* and her antibiotic was changed to benzylpenicillin. The diarrhoea resolved and she made a full recovery without developing any localizing clinical or radiological signs in the chest.

### Case 3

A 70 year old woman was admitted with a 2-day history of fever, shivering, watery diarrhoea and vomiting. Systematic enquiry revealed urinary frequency and lower abdominal discomfort during micturition. Her temperature was 38.4°C, pulse 104/minute and blood pressure 110/70 mmHg. There were late inspiratory crackles in the left posterior chest. Chest X-ray, full blood count and serum urea and electrolyte concentrations were normal. A clinical diagnosis of urinary tract infection with bacteraemia was made, and she was treated with intravenous trimethoprim. Blood cultures were sterile, but urine contained 100 white cells/mm<sup>3</sup>, 70 red cells/mm<sup>3</sup> and coliforms > 10<sup>5</sup>/ml sensitive to trimethoprim. Diarrhoea and fever settled after 48 hours of trimethoprim treatment.

### Case 4

A 27 year old British soldier presented with a 3-day history of fever, myalgia, diarrhoea and vomiting. He had returned 7 days previously from a short holiday in Kenya and was continuing to take chloroquine and proguanil for malaria prophylaxis. His temperature was 39.2°C and his abdomen was diffusely tender on palpation. Haemoglobin, white cell count and serum biochemistry were normal. The platelet count was 63 × 10<sup>9</sup>/l, and blood films revealed scanty asexual forms of *Plasmodium falciparum*. He was treated with quinine followed by mefloquine. By the third day he was afebrile and his diarrhoea had resolved.

### Discussion

Although gastrointestinal symptoms were the predominant presenting features in these 4 cases, there were clues in the history and examination of each patient to suggest a non-gastrointestinal aetiology. In the first patient adrenal insufficiency was suggested by the physical signs of Addison's disease and in the second by a history of prolonged glucocorticoid therapy; there was also clinical evidence of septicaemia in this patient. Direct questioning elicited the symptoms of urinary tract infection in the third patient. The fourth case is a reminder that any ill patient who has returned from a malaria endemic area has malaria until proved

otherwise, even if adhering fully to an appropriate antimalarial regimen.<sup>1</sup>

From October 1987 to December 1989, 594 adults were admitted to our unit with a referral diagnosis of acute gastroenteritis or food poisoning. The primary diagnoses of these patients at discharge are summarized in Table I. In almost 30% of patients gastrointestinal symptoms were associated with a condition other than gastrointestinal infection, and this figure is unchanged since the early 1980s.<sup>2</sup> One half of this group had non-infective gastrointestinal disease. Constipation with spurious diarrhoea was the most common problem and could usually be diagnosed by rectal examination. The diagnosis of other gastrointestinal disease was not always easy. Pelvic appendicitis caused diagnostic difficulty and inflammatory bowel disease (ulcerative colitis in 15 patients and Crohn's disease in 2) required sigmoidoscopy, biopsy and radiological examination.

**Table I** Primary discharge diagnosis of 594 adults admitted to Fazakerley Hospital Infectious Diseases Unit with a referral diagnosis of 'gastroenteritis'. Patients with known inflammatory bowel disease or human immunodeficiency virus infection have been excluded

	No.	(%)
<i>Gastrointestinal infection</i>	418	(71)
<i>Salmonella</i> spp.	129	
<i>Campylobacter</i> spp.	49	
Miscellaneous pathogens	23	
Food poisoning	37	
Clinical diagnosis (no pathogens isolated)	180	
<i>Gastrointestinal disease</i>	90	(15)
Constipation with spurious diarrhoea	23	
Inflammatory bowel disease	17	
Gastritis	13	
Irritable bowel syndrome	6	
Diverticulitis/abscess	6	
Intestinal neoplasms	5	
Laxative abuse	5	
Acute appendicitis	5	
Miscellaneous	10	
<i>Systemic infection</i>	50	(8)
Urinary tract infection	19	
Lower respiratory tract infection	8	
Septicaemia ( <i>S. pneumoniae</i> 2, Gram-negative bacilli 4)	6	
Pelvic inflammatory disease	5	
Malaria	2	
Miscellaneous	10	
<i>Systemic disease</i>	35	(6)
Drug induced (mainly antibiotics)	8	
Vestibular disease	6	
Endocrine/metabolic	6	
Anxiety/depression	6	
Alcohol induced	4	
Miscellaneous	5	

In patients with systemic infections the urinary tract was the most common site and the diagnosis was sometimes unexpected. Gastrointestinal symptoms may be a prominent manifestation of other infections. Watery diarrhoea affects 8% of patients with pneumococcal bacteraemia<sup>3</sup> and up to 20% of those with Gram-negative bacteraemia.<sup>4</sup> Diarrhoea occurs in about one quarter of patients with pneumococcal or atypical pneumonia,<sup>5</sup> and it is a common manifestation of falciparum malaria both in non-immune,<sup>6</sup> and semi-immune adults.<sup>7</sup> The pathophysiology of diarrhoea and vomiting in systemic infection is not clear. Endotoxin and cytokine production may play a role,<sup>8</sup> and in pneumococcal bacteraemia local involvement of the gastrointestinal tract may occur.<sup>9</sup>

Alcohol and drugs (antibiotics and digoxin) were prominent among the non-infectious causes of diarrhoea. Antibiotics were also implicated in 7 cases of diarrhoea caused by *Clostridium difficile*.

Uncontrolled diabetes mellitus and uraemia, known to be associated with gastrointestinal symptoms, accounted for most patients with endocrine/metabolic disease. In acute Addison's disease, vomiting is common, but diarrhoea also occurs in 10% of patients.<sup>10</sup>

Diarrhoea is a common symptom in most communities. The majority of episodes are mild and self-limiting, and are managed in the community. Patients with more severe or prolonged gastroenteritis should be admitted to hospital where supportive management with attention to rehydration will normally suffice. However, approximately one third of such hospitalized patients do not have infective gastroenteritis, and require a detailed history, clinical examination and simple laboratory investigations to reach the correct diagnosis. A high index of suspicion is needed if diseases such as malaria, septicaemia or appendicitis are not to be missed.

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