

Campylobacter enterocolitis: the importance of macroscopic and microscopic examination of stool

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DESCRIPTION

A previously healthy, 29-year-old, male patient presented with a 3-day history of a 39–40°C fever and more than 10 daily episodes of diarrhoea. He denied abdominal pain, nausea, haematochezia and chills. He had no history of recent travel or contact with animals or sick individuals. On presentation, he was haemodynamically stable. His body temperature decreased to 37.0°C with loxoprofen use, and his other vital signs were normal. Abdominal examination revealed normal bowel sounds and no tenderness. The rest of the physical examination was unremarkable. Initial basic lab work, including a complete blood count and basic metabolic panel, was normal except for an elevated C reactive protein level of 18.29 (normal <0.14) mg/dL. Further questioning revealed that he had eaten food containing chicken every day prior to the presentation, which raised suspicion of *Campylobacter* enterocolitis, and a stool culture was ordered. Initially, he described his bowel movements as watery diarrhoea; however, the attending physician described the stools as having a mucoid appearance (figure 1). A subsequent, microscopic stool examination using a Gram stain revealed Gram-negative spiral rods strongly suggestive of *Campylobacter* sp (figure 2). *Campylobacter* enterocolitis was soon diagnosed, and oral azithromycin 500 mg per day was prescribed for 3 days, leading to a complete resolution of his symptoms. Three days after his first visit, the stool culture grew *Campylobacter jejuni*. The patient was informed of the risk of Guillain-Barré syndrome development.



Figure 1 Stool samples showing faeces with a mucoid or gelatinous appearance.

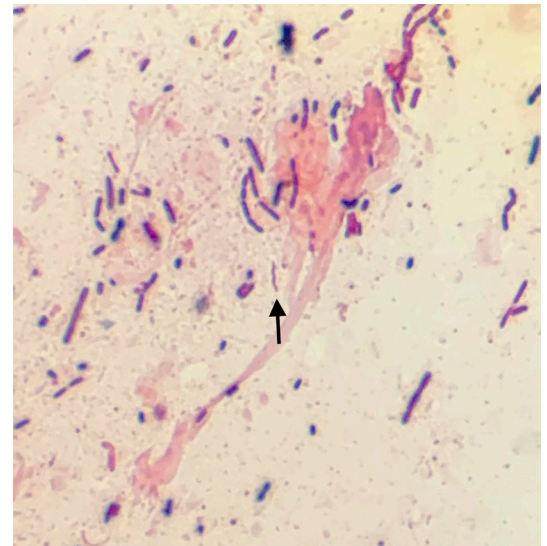


Figure 2 Gram stain of stool showing *Campylobacter jejuni* appearing as small, Gram-negative, curved rods (arrow).

The present case highlights two clinical lessons; first, the importance of physicians' examining patients' stool samples macroscopically; and, second, the usefulness of Gram staining stool samples for rapid microscopic examination when managing acute diarrhoea.

The characteristics of stool, such as whether it is watery, bloody, mucoid, purulent or bilious, are important for classifying the aetiology of acute diarrhoea as non-inflammatory (mostly due to a viral infection) or inflammatory (mostly due to an invasive or toxin-producing bacterial infection).¹ However, patients' description of their stool is often inaccurate and misleading as in the present case. While stool samples are often sent directly to a laboratory for testing, a visual inspection by the physician may reduce the risk of misdiagnosis and help clarify the indications for further tests, including a stool culture.

Gram staining of faecal samples is an inexpensive, rapid and highly accurate method of diagnosing *Campylobacter* enterocolitis. Its specificity for detecting *Campylobacter* sp infections is as high as 99.4%–99.7% while its sensitivity varies from 46% to 89% depending on the examiner's skill.^{2,3} Thanks to the high specificity of the Gram stain test, the finding of Gram-negative spiral rods by microscopy coupled with the absence of bloody stools on macroscopic inspection, render other diagnoses less probable and can help prevent the unnecessary



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Patient's perspective

I was very nervous about my high fever and diarrhoea because of the possibility of having COVID-19. The fever felt a bit different from the influenza, but I was relieved to get a quick diagnosis of *Campylobacter* enterocolitis in the emergent department.

Learning points

- ▶ Macroscopic features of stool are important in assessing the aetiology of acute diarrhoea.
- ▶ Practitioners should inspect stool samples because patients' descriptions are often inaccurate and misleading.
- ▶ Gram staining of faecal samples is an inexpensive, rapid and highly accurate method of diagnosing *Campylobacter* infections.

prescription of antimicrobial agents based on misdiagnosis. Nonetheless, the utility of Gram staining of stool samples depends on the regional epidemiology of enteritis. An

estimate of pretest probability, which is based on a combination of regional epidemiology and individual history taking, including food consumption and recent travel, is important.

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REFERENCES

- 1 Barr W, Smith A. Acute diarrhea. *Am Fam Physician* 2014;89:180–9.
- 2 Wang H, Murdoch DR. Detection of *Campylobacter* species in faecal samples by direct gram stain microscopy. *Pathology* 2004;36:343–4.
- 3 Ho DD, Ault MJ, Ault MA, *et al.* *Campylobacter* enteritis: early diagnosis with gram's stain. *Arch Intern Med* 1982;142:1858–60.

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