CASE REPORT

Campylobacter jejuni and *Pseudomonas* coinfection in the setting of ulcerative colitis

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SUMMARY

A 66-year-old woman presented with 2 days of fever and severe diarrhoea. She has a history of ulcerative colitis (UC), well controlled with medication. She also has a history of Ehlers-Danlos syndrome, infective endocarditis following aortic valve replacement and pulmonary embolism. She had complained of passing stool with traces of blood about 30 times per day. Stool testing for *Clostridium difficile,* routine culture and microscopy was done. She was started on ceftriaxone. CT scan revealed thick-walled colon consistent with UC flare. Flexible sigmoidoscopy showed active continuous colitis extending from the rectum to the proximal descending colon. *Campylobacter jejuni* was isolated from the stool and blood cultures yielded *Pseudomonas aeruginosa.* The antibiotic was transitioned to intravenous piperacillin/tazobactam and azithromycin followed by 2 weeks of intravenous cefepime. Her diarrhoea was controlled, and she was discharged for follow-up in 2 months.

BACKGROUND

This case demonstrates several important learning points when working up a case of gastrointestinal (GI) infection in the context of underlying inflammatory bowel disease (IBD). First, it is necessary to test the stool for GI pathogens even if uncomplicated IBD flare is suspected. In this case, initial work-up pointed towards ulcerative colitis (UC) flare as the primary source of her symptoms, as the CT demonstrated inflamed colonic walls and *Clostridium difficile* testing was negative. However, on further testing the stool was found positive for *Campylobacter jejuni* infection. Another interesting finding in this case was the presence of *Pseudomonas aeruginosa* bacteraemia as a coinfection leading to the worsening clinical picture in our patient. It is rare to have different organisms infecting the colon and the bloodstream simultaneously. This work-up was crucial to the management as our patient was switched to appropriate antibiotic coverage before her symptoms started to improve.

CASE PRESENTATION

A 66-year-old woman presented with 2 days of fever and severe diarrhoea. She reported having around 30 foul-smelling bowel movements per day with minimal blood noted in the stool. She had no other symptoms including nausea, vomiting, focal weakness, chest pain or shortness of breath. The patient had a history of UC well controlled with balsalazide and had not had a UC flare for nearly 15 years;

however, she stated that this current episode did feel like her typical UC exacerbation. Other medical history included Ehlers-Danlos syndrome, infective endocarditis following aortic valve replacement and pulmonary embolism. She had no significant family history and did not use tobacco or alcohol. Physical examination was unremarkable except for mild tenderness in the lower quadrants of the abdomen.

INVESTIGATIONS

CT abdomen with contrast showed hyperenhancing thick-walled colon, consistent with UC flare (Figure 1). Flexible sigmoidoscopy showed congested, erythematous, granular and vascular pattern with decreased mucosa starting in the rectum and extending to the descending colon. *C. difficile* testing by PCR was negative. Stool cultures came back positive on the second day of admission for *C. jejuni* identified via Gram stain, catalase, oxidase and hippurate testing and blood cultures came back positive for *P. aeruginosa* the following day. Antibiotic sensitivity was also performed at this time.

DIFFERENTIAL DIAGNOSIS
1. UC flare.
2. *C. difficile* infection.
3. Infective colitis.
4. Other GI pathogen infection.

TREATMENT

The patient was empirically started on ceftriaxone while infectious work-up was being completed. Once the stool and blood culture results were available, she was transitioned to intravenous piperacillin/tazobactam and azithromycin to provide coverage for both *C. jejuni* and *P. aeruginosa.* Symptoms began to improve, and she was sent home on a 2-week course of intravenous cefepime.

OUTCOME AND FOLLOW-UP

Our patient's symptoms decreased significantly in the hospital. She was having less than five bowel movements per day and her abdominal pain was minimal. The patient was discharged home once her oral intake was adequate and her strength began to improve. She finished her course of antibiotics at home and will have a follow-up colonoscopy in 2 months as an outpatient.

DISCUSSION

Intestinal super-infections may occur in the setting of IBD, complicating the clinical picture and
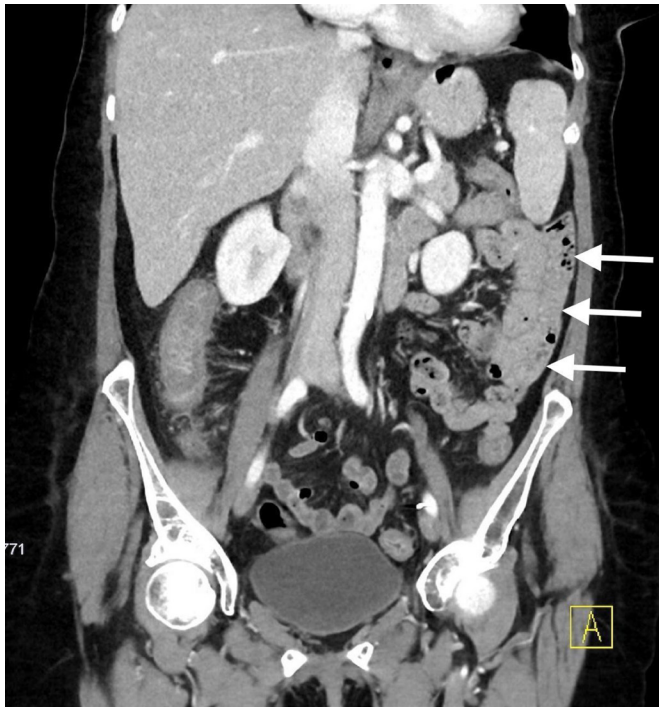
Figure 1 Coronal CT abdomen with contrast demonstrating thickened colonic wall (white arrows) suggestive of ulcerative colitis.

triggering flares of disease. The IBDs, Crohn's disease and UC, are T-cell-mediated diseases that are characterised by chronic, relapsing inflammation of the intestinal tract. The pathogenesis of IBD involves the complex interaction between the intestinal micro-flora, host genetic and immune factors, and environmental stimuli. Epidemiological analyses have implicated acute bacterial enteritis as one of the factors that may incite or exacerbate IBD in susceptible individuals.[1]

Quondamcarlo et al reported a case of C. jejuni enterocolitis in a 19-year-old woman and their difficulty in distinguishing IBD from atypical infectious colitis. It highlighted the importance of ruling out GI pathogen infection when assessing IBDs at onset and during flare-ups, especially if corticosteroids or immunosuppressive therapies are required. After an unsuccessful course of corticosteroids, ceftazidime and metronidazole, the patient was successfully treated with erythromycin.[2] Seigal et al reported a case of C. jejuni pan-colitis mimicking idiopathic UC in a 91-year-old woman. The patient was eventually treated with a 7-day course of moxifloxacin.[3] Topic et al described a case of polymicrobial Actinomyces naeslundii and P. aeruginosa sepsis in a patient with a previously silent abdominal actinomycosis, developed 2 months after colonoscopy when the diagnosis of a left-sided UC was established. The patient was successfully treated with a course of high-dose ceftriaxone.[4]

A few cases have described C. jejuni and other GI pathogens in association with underlying UC.[5] It is well documented that IBD is a significant risk factor for a variety of GI infections, and this is likely what happened to our patient.[6 7] Numerous cases report IBD flares creating an opportunistic environment for infection.

The unique aspect of this case is the coexisting P. aeruginosa bacteraemia, which has only been reported in association with UC a few times.[8 9] In addition, in the setting of IBD there has not been a reported case of differing organisms in the stool and in the bloodstream. This demonstrates the importance of testing blood cultures even after identifying the GI pathogen. The identification of two different pathogens helped us choose appropriate antibiotic therapy, which resulted in clinical improvement of the patient.

Learning points

► Consider underlying infection in the setting of ulcerative colitis flare, especially when patient's inflammatory bowel disease (IBD) has previously been well controlled.
► Consider multiorganism coinfection when working up gastrointestinal infection in the setting of underling IBD.
► Identify specific organisms in order to treat with appropriate antibiotic coverage.

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