Unusual presentation of more common disease/injury

Passage of intestinal (small bowel) cast – an unusual complication of neutropenic sepsis

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Summary

A 52-year-old woman was admitted with neutropenic sepsis, 3 days following the final cycle of adjuvant chemotherapy for breast cancer. Her condition deteriorated with progressive abdominal distension, bilious vomiting and diarrhoea. Abdominal examination revealed a mild degree of peritonism. Five days later she passed a small bowel cast per rectum, showing gross fungal contamination on histology. She was managed conservatively with antibiotics and antifungal medications and nutritional support.

BACKGROUND

The spontaneous passage per rectum of a partial thickness 'small bowel cast' is an extremely rare occurrence. Cases of passage of colonic cast following chemotherapy or major abdominal surgery have been reported. We report a patient who spontaneously passed a long, partially thick, small bowel cast and use it to illustrate this rare side-effect. Also, we are reporting the case to advocate the consideration of conservative management.

CASE PRESENTATION

A 52-year-old woman was admitted as an emergency case, with fever and dizziness 3 days following her last cycle of chemotherapy consisting of cyclophosphamide, methotrexate and 5-fluorouracil. Her past medical history included asthma and ulcerative colitis which was in remission. The ulcerative colitis had been diagnosed in her 20s, and she took sulphasalazine and methylcellulose during treatment. She had been treated for a ductal carcinoma of the breast (T2 N1 M0) by mastectomy and axillary clearance. Postoperatively, during the adjuvant chemotherapy, she had presented on previous occasions with neutropenic sepsis requiring fluid rehydration, granulocyte-colony-stimulating factor (G-CSF, Neupogen) and antibiotics. The last episode happened after penultimate cycle of chemotherapy. Diarrhoea was a feature of the whole chemotherapy period, but it was managed with simple medication without any need to be considered for admission.

On examination, the patient was febrile, tachycardic, hypotensive and clinically dehydrated. Systemic examination was unremarkable. Blood picture showed haemoglobin of 11.4 g/dl, white cell count $0.3 \times 10^9/l$, neutrophil count $0.11 \times 10^9/l$, platelets $120 \times 10^9/l$ and normal renal functions. C-reactive protein (CRP) was 27. A working diagnosis of neutropenic sepsis following chemotherapy was made. Intravenous fluid support, antibiotics and G-CSF were administered as supportive treatment.

Two days later the patient developed cramping abdominal pains, bilious vomiting and diarrhoea. Abdominal examination showed a distended abdomen with minimal tenderness on deep palpation. Blood picture continued to show leucopenia with normal urea and electrolytes. The CRP had risen to 327. Plain abdominal x-ray showed multiple, small-bowel loops with features suggestive of 'ileus' (figure 1). The conservative management was continued with oral fluid restriction. A surgical opinion advised close monitoring of her condition.

Five days after admission, the patient passed a long cast of approximately 135 cm (figure 2). Physical examination showed it to be a complete luminal cord like structure resembling an intestinal cast (figure 3). A CT scan of abdomen showed diffuse small-bowel thickening with a normal-looking large bowel. Histology of the specimen showed it to be a small intestinal cast, having undergone extensive coagulative necrosis (figure 4). Microbiological examination of the cast revealed florid growth of fungal infection (figure 5).

OUTCOME AND FOLLOW-UP

The patient was observed closely for signs of clinical deterioration and was supported with total parenteral nutrition, including antibiotics and antifungal agents. She was discharged 2 weeks later. She is being followed up regularly and has now been asymptomatic for over 3 years with regard to her bowel and also remains disease free from breast cancer.

DISCUSSION

Neutropenic enterocolitis secondary to chemotherapy is not an unusual presentation. It is also known by terms such as caecitis or ileocaecal syndrome.¹ The condition should be suspected in patients presenting with fever, sore throat, abdominal pain and a neutrophil count of less than $1000 \mu l^{-3}$.² The presentation may vary from mild symptoms to

Figure 1 Plain abdominal film showing prominent small-bowel loops.

Figure 2 (A&B) Passage of intestinal cast, following chemotherapy.

Figure 3 (A) Intestinal cast laid open. (B) Transverse section of the intestinal cast.

Figure 4 (A&B) Section of the small-bowel cast showing extensive fibrinous exudate and coagulative necrosis. (A) Intense neutrophilic infiltration is seen (arrows). (B) Low power showing complete transverse section of the cast.

Figure 5 Intestinal cast section showing heavy infestation with fungal elements.

life-threatening conditions such as colonic ischemia or florid sepsis. To the best of our knowledge, spontaneous passage of a small-bowel cast as a complication from neutropenic sepsis secondary to chemotherapy has not been previously reported in the literature.

Chemotherapeutic drugs suppress the haematopoietic system, thus impairing host-protective mechanisms and predisposing them to infection. Neutrophils are the first line of defence against acute infection and are a key component of the innate immunity. Neutropenia results in a poor response to nascent infections allowing bacterial multiplication and invasion. These drugs target rapidly proliferating cells such as cells lining the alimentary tract, which in the extreme could lead to areas of ulceration and necrosis. Localised vasculitis further worsens the ischaemia, thus sloughing the lining of the bowel.³ The passage of partial- or full-thickness cast depends on the duration and severity of ischaemic insult, which, we assume, was severe in this case.

Spontaneous passage of colonic cast following Hartmann's procedure or repair of abdominal aortic aneurysm has been reported. Left-sided episodes are more common and have been attributed to ischaemic insult suffered by colon usually in the territory supplied by inferior mesenteric artery.^{4–10}

Neutropenic sepsis is a recognised complication associated with treatment of chemotherapy and patients are educated about it routinely. Patients presenting after chemotherapy with decreased white cell count must be carefully monitored for signs of infection or impending infection. Those with neutropenic sepsis are treated aggressively with hospitalisation, fluid resuscitation and antimicrobial agents. Radiological imaging such as ultrasound or CT scan is helpful in supporting the diagnosis and plan for surgical intervention if needed.^{2–11} Careful monitoring for clinical signs of deterioration should be observed. Early use of colony-stimulating factors for neutropenic sepsis reduces the risk of neutropenic syndrome. When enterocolitis is diagnosed as a part of syndrome, continued, aggressive, but conservative, management is recommended. Surgery should only be considered in case of clinical deterioration, given the higher rate of mortality associated with such an option.^{12–13} The mortality correlates with duration and severity of the condition, and death is usually as a result of intestinal perforation, disseminated intravascular coagulation,¹² or florid sepsis arising as a result of microbial invasion.

Learning points

- Early diagnosis of neutropenic enterocolitis, followed by prompt resuscitation with fluids, intravenous antimicrobial agents and colony-stimulating factor, may prevent further complications.
- Failure to settle with conservative management may necessitate a laparotomy.

Acknowledgement The authors would like to acknowledge Mr Mark Halliday, Consultant Surgeon for revising the manuscript; Dr C Burrows and Dr C Phelan, Consultant Histopathologists for reviewing the slides; and Dr I Siddiqui for editing the images.

Competing interests None.

Patient consent: Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Samee A, Kirby RM, Brunt AM. Passage of intestinal (small bowel) cast — an unusual complication of neutropenic sepsis. *BMJ Case Reports* 2010; 10.1136/bcr.04.2010.2924, date of publication

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