CASE REPORT

Neutropenic enterocolitis affecting the transverse colon: an unusual complication of chemotherapy

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SUMMARY

A 66-year-old woman presented with a 1-day history of sudden onset of generalised abdominal pain associated with fever and vomiting. She was previously diagnosed with left breast cancer 2 months ago and completed a course of chemotherapy 1 week prior to presentation. She was clinically unwell with generalised tenderness in her abdomen. Blood investigations showed severe neutropenia. A CT scan was requested which reported a marked oedematous swelling of the transverse colon with features suggestive of a contained perforation. The decision was made to operate. Intraoperatively, the transverse colon was found to be thickened with omentum adherent focally around the distal third. A right hemicolectomy was performed with an end ileostomy and mucus fistula. The patient made a successful recovery and was discharged within 7 days of presenting. Pathology reported typical features of neutropenic enterocolitis affecting the transverse colon with a normal terminal ileum, caecum and ascending colon.

BACKGROUND

It has been reported in the literature that neutropenic enterocolitis (acute typhlitis) usually affects the terminal ileum, caecum and ascending colon, historically, in paediatric patients with haematological malignancies.^{1 2} However, this case highlights a rare case of neutropenic enterocolitis affecting the transverse colon in a patient on chemotherapy for breast cancer. Additionally, this is one of the few documented cases reporting pathology-confirmed neutropenic enterocolitis affecting the transverse colon. Diagnostic criteria have also been proposed by Gorschluter *et al*² for the diagnosis of neutropenic enterocolitis and can be incorporated when trying to confirm the diagnosis.

CASE PRESENTATION

A 66-year-old female patient presented to our A&E department with a sudden onset of generalised abdominal pain. This was associated with fever and rigors and several episodes of non-bilious vomiting. She had no diarrhoea or urinary symptoms. She reported of being unwell for the last couple of days with nausea and anorexia but the pain developed suddenly while at home resting. Her medical history includes being diagnosed with a screen-detected left breast cancer for which she had a wide local excision and radiotherapy. She was also started on chemotherapy (4 cycles of taxotere and cyclophosphamide) for which she completed the second cycle 1 week prior to presentation. She has no other medical comorbidities and surgical history

revealed removal of a fibroadenoma of her left breast 36 years ago. She is a non-smoker and never consumed alcohol. She lives with her son and daughter and is retired. On examination, the patient appeared quite unwell and complained of severe pain in her abdomen. She was very tachycardic but normotensive and her temperature was 38.5. Her abdomen was tender throughout with the epigastrium being the point of maximum tenderness. A PR examination did not reveal any melenic stool or fresh blood.

INVESTIGATIONS

Routine blood investigations were requested. This showed a white cell count (WCC) of $1.5 \times 10^9/L$, neutrophil count of $0.1 \times 10^9/L$ and a C reactive protein of 162 mg/L. All other blood parameters were within the normal indices. A CT scan of her chest abdomen and pelvis was requested. This reported focal marked oedematous swelling of the wall of the transverse colon, with features suggesting perforation in distal transverse colon with a large gas bubble out with the lumen and with spreading fluid along tissue plains adjacent to the affected colonic segment (figure 1). The right and left colon appeared normal.

DIFFERENTIAL DIAGNOSIS

The initial diagnosis prior to CT scanning was intra-abdominal sepsis secondary to perforation of a viscus, most likely peptic ulcer. However, a CT scan illustrated quite clearly that there was an unusual inflammatory process affecting the transverse colon suggesting a localised perforation. Owing to the thickening of the wall of the transverse colon, this suggested neutropenic enterocolitis as the diagnosis. This was a unique finding as neutropenic colitis (NE) typically affects the terminal ileum, caecum and ascending colon with typical findings of caecal wall thickening.

TREATMENT

The patient was adequately resuscitated with intravenous fluid, antibiotics (as indicated by the protocol for this institution) and given granulocyte colony stimulating factor (g-CSF). Given the findings of a localised perforation and high morbidity and mortality associated with neutropenic enterocolitis, a decision was made to take her to theatre. Intraoperatively, her transverse colon was markedly thickened with omentum adherent to it. The serosa appeared healthy and there was no faecal contamination within her abdomen. A right hemicolectomy was performed and an end ileostomy and

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Figure 1 Coronal section illustrating markedly oedematous transverse colon with contained perforation.

mucus fistula was fashioned in her right-lower and left-upper quadrant, respectively.

OUTCOME AND FOLLOW-UP

Postoperatively she was admitted to our high dependency unit, where she received invasive monitoring along with intravenous antibiotics. Her neutrophil and WCC began to rise and her stomas appeared pink and healthy. She clinically improved and was discharged on postoperative day 7. On follow-up she appeared well and had no symptoms. She is due to have a multi-disciplinary approach towards her care involving her oncologists and the general surgeons. We aim to reverse her stomas once she has completed the appropriate treatment for her breast cancer.

The pathology of her specimen reported marked congestion and oedema with haemorrhagic necrosis of mucosa but also necrosis of submucosal tissues including blood vessels and muscularis propria through the full thickness of the transverse colonic wall. There was total absence of any inflammatory reaction which is explained by the profound neutropenia.

DISCUSSION

The incidence of neutropenic enterocolitis in paediatric patients range for 6.7–11.6%.³ Its true incidence in the adult population is unknown but it is increasing due to the use of different chemotherapy agents in the treatment of solid organ tumours. An analysis of studies revealed its incidence of 5.6% among inpatients hospitalised with haematological malignancies on high-dose chemotherapy.² The aetiology of NE is thought to be due to mucosal injury or immunosuppression. In both cases, mucosal injury allows bacterial translocation with attendant

bacteraemia and sepsis. There is a clear predilection for the terminal ileum, caecum and ascending colon with various factors such as impaired blood supply and distensibility of the caecum accounting for these areas being commonly affected.^{4–6}

Various chemotherapy agents are known to more commonly cause NE. Those most commonly recognised are cytosine arabinoside, vinca alkaloids, doxorubicin and taxanes. Monoclonal antibodies have also been shown to be associated with NE.^{7–9}

CT scan is useful in diagnosing NE in patients presenting with abdominal pain and neutropenia. Findings such as caecal-wall thickening, pericolic fluid or air within the bowel wall can aid in the diagnosis. In this case, our patient had similar findings within her transverse colon and therefore findings of bowel-wall thickening or free fluid can also be diagnostic when found within any part of the large bowel. Additionally, ultrasound can be useful in assessing colonic wall thickening and prognosis in patients with suspected neutropenic enterocolitis.¹⁰ Cartoni *et al* reported that bowel-wall thickening and mural thickness more than 10 mm are associated with poor outcomes.

A systematic review of adults with neutropenic enterocolitis discussed management of these patients. Patients managed conservatively will need close monitoring with daily review, bowel rest, intravenous fluids, antibiotics and frequently parenteral nutrition with the majority of patients showing a response. Any clinical deterioration, such as perforation or necrosis, will be an indication for surgical intervention.² Our patient presented with NE affecting her transverse colon and was managed with an extended right hemicolectomy and due to her severe neutropenia it was decided that a primary anastomosis was not a feasible option. However, there are no recommendations or guidelines concerning the management of these patients and the decision is often based on clinical acumen.

Learning points

- ▶ The use of multiple chemotherapy drug regimens in the treatment of solid organ cancer will invariably lead to an increase in the incidence of neutropenic enterocolitis. Therefore, clinicians need to be aware of different presentations, investigations and treatments for this condition.
- ▶ Neutropenic enterocolitis (acute typhilitis) has classically been described as affecting the right colon; however, this case highlights the fact that potentially any part of the bowel can be affected, so the absence of the clinical findings of right iliac fossa pain/tenderness/mass does not exclude the diagnosis.
- ▶ Intraoperatively, the findings of a normal colonic wall or serosa or absence of perforation does not exclude NE as the pathology commonly starts at the mucosa/submucosal level.
- ▶ Neutropenic enterocolitis is associated with significant morbidity and mortality and therefore early diagnosis and treatment will improve clinical outcomes.

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Competing interests None.

Patient consent Obtained.

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