CASE REPORT

ACUTE ABDOMEN IN POST-CHEMOTHERAPY ACUTE MONOBLASTIC LEUKEMIA

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SUMMARY

A neutropenic patient with an acute abdomen could confuse the medical doctor in the decision making of whether or not a surgical intervention is essential to resolve the medical problem. Here, we report a 62-year-old female with acute monoblastic leukemia that was complicated by neutropenic fever and abdominal pain on the 13th day after receiving the first chemotherapy consisting of 1-beta-D-arabinofuranosylcytosine and idarubicin. Abdominal computed tomography revealed colitis involving the entire ascending colon. Neutropenic enterocolitis with Enterobacter cloacae septicemia was the final diagnosis. She received conservative management with close observation and recovered eventually. We discuss the etiologies of acute abdomen in patients receiving chemotherapy and their differential diagnosis. [International Journal of Gerontology 2007; 1(4): 164–167]

Key Words: abdominal pain, chemotherapy, gerontology, neutropenic enterocolitis, typhlitis

Introduction

Neutropenic enterocolitis (NE), first described by Wagner in 1970, is a well recognized clinicopathologic and life-threatening gastrointestinal complication of chemotherapy for hematologic and solid malignancies. Early recognition and treatment are essential for survival. Even with the currently recommended therapy, there is still a high mortality rate, with approximately 45% of NE often occurring 10–14 days after initiation of cytotoxic chemotherapy. In most patients, the symptoms resolve after correction of the neutropenia. There is general agreement that early management should be conservative, consisting of bowel rest, intravenous fluid administration, total parenteral nutrition, broad-spectrum antibiotics, and normalization of neutrophil counts. Surgical intervention is only warranted in the setting of intestinal perforation, obstruction, clinical deterioration during conservative management suggestive of uncontrolled sepsis, and persistent gastrointestinal bleeding despite correction of cytopenias and coagulopathy.

Case Report

A 62-year-old female with a 2-year history of essential hypertension presented with gum swelling, dizziness, weight loss, and multiple non-tenderness neck lymphadenopathy of 1-month duration. Bone marrow examination (Figure 1), peripheral blood smear, and flow cytometry confirmed the diagnosis of acute monoblastic leukemia M5a. Induction chemotherapy with intravenous 1-beta-D-arabinofuranosylcytosine (ara-C) plus idarubicin was administered, with complete remission attained 14 days later.

Sudden onset of right lower quadrant abdominal pain associated with fever, nausea, abdominal fullness, poor appetite, and rebound tenderness occurred on the 13th day of initiation of chemotherapy, which was the
first cycle of consolidation chemotherapy with ara-C (100 mg/m²) and idarubicin (12 mg/m²). She did not have melena or bloody stool at that time.

Her white blood cell count was 200/µL but with no detectable neutrophils, the hemoglobin level was 9.1 g/dL, platelet 46,000/µL, and serum C-reactive protein 7.1 mg/dL. Abdominal X-ray (Figure 2) showed small bowel loop distension with mucosal thickening and fluid collection between bowel loops. Abdominal computed tomography (Figure 3) revealed small intestine dilation and marked wall thickening with target sign involving the entire ascending colon. The blood culture revealed Enterobacter cloacae, whereas the stool specimen revealed no significant findings, except positive occult blood. These findings supported the diagnosis of NE with Enterobacter cloacae septicemia.

She started to recover on the ninth day after conservative management comprising intensive supportive care with isolation, bowel rest, nasogastric suction, intravenous fluid administration, granulocyte-colony stimulating factor, meropenem, and metronidazole, and she was finally discharged from hospital.

Discussion

NE or typhlitis is an uncommon but highly mortal complication, the incidence rate of which is about 0.1–26%1–3 after receiving chemotherapy4 and mortality rate 50% or higher5–8. It can occur in a variety of diseases, including acute leukemia following chemotherapy, chronic leukemia9, lymphoma10, multiple myeloma11, solid tumors12, aplastic anemia13, thalassemia minor14, cyclic neutropenia7, agranulocytosis15, systemic lupus erythematosus5, and HIV infection1. However, the symptoms often occur 10–14 days after initiation of cytotoxic chemotherapy16. Therefore, we should be alert to the possibility of this disease in leukemia, with acute abdominal pain 10–14 days after chemotherapy as it was in our case.

The diagnostic criteria are heterogeneous and were not documented until 2005 when a review on the systematic analysis of evidence quality of NE suggested...
that the definitive criteria should include fever, abdominal pain, and bowel wall thickening of more than 4 mm demonstrated by computed tomography or ultrasound in a neutropenic patient. Although the criterion of the radiologic definition may need more investigation to warrant its accuracy, it is essential to restrict the diagnosis of NE to severe invasive infections, because the course and prognosis are totally different between superficial infections without penetration of basal membranes and infections with involvement of deeper layers of the bowel wall. The abdominal computed tomography in our case revealed mucosal edema involving both small and large intestines, which was convincing evidence that infection involved deep mucosa.

Because NE could be one of the non-surgical conditions in acute abdomen, it is important to avoid unnecessary invasive intervention, especially in neutropenic patients. Since NE frequently involves the cecum because of its relatively lower blood flow and greater distensibility resulting in increased stasis of luminal contents, abdominal pain on the right lower quadrant is the most prevalent presentation. The differential diagnosis of right lower quadrant abdominal pain in neutropenic patient should include NE, appendicitis, ischemic bowel disease, bowel perforation/obstruction, tumor bleeding, incarcerated hernia, pelvic abscess, pseudomembranous colitis, and intussusception, some of which are surgical conditions, thus making the intervention decision difficult. The differential diagnosis is important, because surgical intervention should be performed in appendicitis or ischemic bowel disease with perforation. However, NE should be treated by non-surgical management. The differential diagnosis should depend on detailed history taking, physical examination, and imaging study, of which ultrasound or computed tomography scans are the best radiographic studies to confirm the diagnosis; but barium enema and colonoscopy can be hazardous and may be contraindicated as they can precipitate perforation.

The conservative management of NE includes bowel rest, nasogastric suction, total parenteral nutrition, and broad-spectrum antibiotic therapy. The antibiotic should cover *Clostridium difficile* before pseudomembranous colitis is excluded. Furthermore, cytopenias and coagulopathy should be corrected. Recombinant granulocyte colony-stimulating factor has been used to hasten recovery. In most patients, the symptoms resolve after correction of the neutropenia.

Surgical intervention for NE is suggested for persistent gastrointestinal bleeding despite correction of cytopenias and coagulopathy, intra-abdominal perforation and clinical deterioration despite aggressive supportive therapy, difficulty in differentiation from other acute abdominal diseases, and signs of localized peritonitis persisting regardless of the resolution of neutropenia.

References


