Case report

Is surgery necessary for colonic fistulas and psoas abscesses in patients with Crohn's disease? A case report

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Abstract

Introduction and importance: Crohn's disease (CD) is a chronic gastrointestinal granulomatous disease. When CD is complicated by abscess formation, the most quality of life of patients were seriously affected, especially those with intestinal fistula, intestinal stenosis or severe disease activity.

Case presentation: We present a case of a 20-year-old male with CD associated with intestinal fistula and psoas muscle abscess formation, who was successfully managed by drugs and nutrition without surgery.

Clinical discussion: Surgery is undoubtedly the most effective treatment for CD with abscesses/fistulas. Whereas, for patients sensitive to drug therapy, abscess puncture and drainage could be considered as alternative to surgery, at this time enteral nutrition, antibiotics and immunosuppressants is particularly critical.

Conclusion: We suggest that CD patients complicated with abscess formation in clinical, if the infection can be controlled before operation, and the abscess site is convenient for puncture and drainage, who could consider to choose comprehensive treatment like enteral nutrition, antibiotics, continuous local irrigation of the abscess cavity via the catheter and immunosuppressive agents.

1. Introduction

Crohn's disease (CD) is a chronic inflammatory disease characterized by transmural inflammation of the small and/or large bowel. Although any part of the gastrointestinal tract can be involved, the most commonly affected areas include the terminal ileum and colon. Due to transmural inflammation, CD is associated with complications such as perforation, abscess formation and internal/external fistula in 30–50 % cases [1,2]. Approximately, 50 % of these fistulas are perianal, with entero-enteric and entero-cutaneous fistulas comprising the majority of the remaining cases [2]. These cases of entero-cutaneous fistula are difficult to treat and most often require surgical resection of the diseased bowel. We present a case of Crohn's colitis complicated by fistula and retroperitoneal abscess formation treated successfully via percutaneous catheter drainage, total elemental nutrition, antibiotics and immunosuppressive drugs.

This work has been reported in line with the SCARE criteria [3].

2. Case presentation

A 20-year-old male presented on September 5, 2021 with dull acheing, left lower abdominal pain for more than two years and associated with difficulty walking due to aggravation of pain for one month. Patient had recurring low-grade fever for nearly two months, predominantly in the afternoons coupled with night sweats. He had lost nearly 15 kg in one year. His stool frequency was 2–3 times per day without any mucus, pus or blood. The patient had an anal fistula two years prior, which healed with medical therapy. He had a history of smoking for two years. Computed tomography (CT) of the abdomen from a nearby hospital showed a thickened colon wall and portion of the small intestine combined with abscess formation in the left psoas muscle. A barium enema revealed leakage of the barium outside the descending colon suggesting fistula formation. The patient was initially treated with moxifloxacin and anti-tubercular drugs (isoniazid, rifampicin, ethambutol, pyrazinamide) for more than 20 days. With these medications, the abdominal pain was alleviated but the fever persisted.

Upon clinical examination, he had anemia and limited left knee...
extension. Patient's body mass index (BMI) was 13.8 (height 1.70 m, weight 40 kg). His abdominal examination detected left lower quadrant tenderness. Perianal examination revealed an old scar at 12 o'clock 3 cm from the anus. Blood investigations presented WBC 13.29 × 10^9/L, platelet 594 × 10^9/L, ESR 105 mm/h, CRP 45.26 mg/L, ALB 25.5 g/L. The fecal occult blood test was positive. Both PPD skin test and T-spot were negative. CT enterography (CTE) found stenosis of the descending colon with the adjoining abscess involving the left psoas and iliac muscles measuring 19.5 × 3.9 × 3.3 cm (Fig. 1A1-2). Therefore, ultrasound-guided aspiration of the abscess was performed. Bacterial culture of the pus revealed E. coli and Proteobacteria. Colonoscopy uncovered that the intestinal cavity of the descending colon was narrow, and multiple irregular-shaped penetrating ulcers and the orifice of the fistulous tract throughout the colon from the ileocecal valve up to the descending colon (Fig. 2A1-3). Biopsy of the colonic ulcers detailed predominant lymphocytic and plasma cell infiltration of the lamina propria and mucosa with focal neutrophilic infiltration. There were areas of non-caseous necrosis in the presence of multinucleated giant cells (Fig. 3). Tubercle bacilli were not identified. Immunohistochemical staining confirmed lymphocyte CD20 (+/+), CD3 (++, CD3α (region +), TIA (foci +), cyclin D1 (+), CD30 (--), ki67 (about 20 %), plasma cell CD38 (+). Based on the above findings, diagnosis of CD with internal fistula and abscess formation was made.

As the patient's Crohn's Disease Activity Index (CDAI) score was 424, the multidisciplinary team of our hospital recommended surgical drainage of the lumbar abscess and the resection of the diseased bowel. However, the patient and his relatives refused surgery. Thereafter, the patient was treated with enteral nutrition (calories 1800 kcal/d, protein 63.6 g/d) and ultrasound-mediated catheter drainage of the lumbar abscess. The catheter drained 50 mL purulent, non-feculent fluid per day. Urokinase injection was used via the catheter to reduce the viscosity of pus and facilitate drainage. Initially, 300,000 units/d was used for 25 days followed by 200,000 units/d for 5 days, and finally 20,000 units/d for 35 days, administered once a day. After November 27, urokinase was used intermittently dosed at 20,000 units/day. Considering that the use of drugs in the purulent cavity is more conducive to the bactericidal effect of antibiotics, the catheter was also intermittently flushed with the injection of ornidazole. Injectable antibiotics were given, as per the culture and drug sensitivity results (moxifloxacin, piperacillin, piperacillin tazobactam).

After one month of the conservative treatment, the symptoms of abdominal pain and fever were controlled. The patient’s weight increased to 46 kg. The patient and his family members again denied surgery and wished to continue non-surgical treatment. During third month of treatment, CTE found that the size of the abscess cavity had been reduced to 3.0 × 1.6 cm. Therefore, an immunosuppressive agent, azathioprine 50 mg qd was added to reduce the inflammation. After six months of treatment, ultrasonography revealed the complete resolution of the lumbar abscess and the patient’s drainage tube was removed. The inflammatory markers, such as white blood cell count and C-reactive protein, significantly decreased while the nutritional parameters, such as Hb and ALB, continued to improve (Fig. 4). In addition, CTE of the small intestine (Fig. 1BCD) and colonoscopy (Fig. 2BCD) conducted three times over the course of treatment confirmed the resolution of the abscess and the intestinal mucosal inflammation, and the fistula was healed. The patient’s weight was maintained at 58 kg. Infliximab (IFX) (5 mg/kg) was added to the patient’s treatment regimen and has been administered three times. Currently, the patient is also taking azathioprine and is now symptom free.

3. Discussion

CD is a complex disease and development of intra-abdominal or perineal abscess is not uncommon. However, development of a retroperitoneal abscess is rare [4]. Treatment for these abscesses mainly includes nutritional therapy, anti-microbial therapy, ultrasound or CT-guided aspiration and/or drainage, surgical removal of the diseased bowel and other supportive measures. In the past, the preferred treatment for intestinal fistula was to remove the diseased intestinal tract. It has been reported recently from Japan that the administration of infliximab after draining the psoas muscle abscess may help in avoiding surgery [5]. Surgery is the most direct way for doctors to solve the problem of intestinal lesions, but patients consider the risks of surgery, as well as the short-term and/or long-term complications that might

![Fig. 1. Comparison of CT enterography (CTE) performed over the course of illness (A1–2) CTE taken on September 7, 2021 showing left lumbar abscess (approximately 19.5 × 3.9 × 3.3 cm) (blue arrow) with uneven thickening of the adjoining colonic wall and extensive peri-colonic fat stranding (yellow arrow). (B1–2) CTE taken on October 11, 2021 showing significant resolution of the left lumbar abscess (blue arrow) with the drainage tube in situ (red arrow). (C1–2) CTE taken on December 26, 2021 revealing the abscess cavity reduced to approximately 3.0 × 1.6 cm (blue arrow). (D1–2) CTE taken on March 7, 2022 indicating further reduction in the size of abscess cavity to approximately 1.9 × 1.0 cm (blue arrow) with the drainage tube in situ (red arrow). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)](image-url)
Fig. 2. Comparison of the colonoscopy (CS) findings performed during the course of treatment (A1–3) CS done on September 18, 2021 revealing multiple irregular-shaped ulcers from the ileocecal valve up to the descending colon with most being penetrating (white arrow) and the presence of normal mucosa between the lesions. (B1–3) CS done on October 17, 2021 demonstrating the presence of multiple penetrating lesions in the colon, no obvious ulceration and no leakage of methylene blue into the drainage bag after its injection at the site of fistula (green arrow). Scattered polypoid hyperplasia and mucosal bridge noted. (C1–3) CS done on November 21, 2021 revealing multiple white scars in the ascending colon and extensive mucosal polypoid hyperplasia and mucosal bridges. At 50 cm from the anus, there was a deep concave crater like structure (yellow arrow). (D1–3) CS done on March 7, 2022 showing several irregular ulcers about 0.4–0.5 cm in size in the ascending colon and transverse colon (red arrow). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Fig. 3. Histopathology findings of the colonic biopsy samples obtained from the ileocecal valve, ascending colon, transverse colon, descending colon, and rectum on September 18, 2021. (A) Visible mucosa recess branch and extension (red circle), extensive lymphocytic and plasma cell infiltration in the lamina propria and mucosal layer with focal neutrophil infiltration, lymphoid nodule formation, submucosal lymphoid tissue and small blood vessel hyperplasia (200×); (B) ulcer formation, granulation tissue formation, individual multinucleated giant cells (blue circle) and non-caseous necrosis (400×). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)
Hb(g/L) ALB(g/L) CRP(mg/L) ESR(mm/h)
1000 10 1 2
WBC(10^9/L)
105
25.5
7.38
3845.26

Fig. 4. Trends of inflammation and nutritional markers during the course of the disease.

4. Conclusion

In conclusion, patients of CD with intestinal fistula and paracolic abscess who are able to tolerate enteral nutritional therapy could be considered for a conservative treatment plan with catheter drainage substituted for surgery. Immunosuppressive agents and biological therapy can be added to induce and maintain CD in the remission after treatment. Effective antibiotics and immunosuppressive agents, the inflammation could be successfully controlled, which led to improvement in the clinical symptoms and the quality of life of our patient.

Through this case, we summarize the following experiences: Undoubtedly, surgery is still the main treatment for Crohn's disease complicated with fistula. There is insufficient data to recommend the use of immunomodulators alone or anti TNF agents in CD patients [14–16]. However, for patients sensitive to drug therapy, local puncture and drainage combined with drug therapy can be considered to replace surgical treatment. Exclusive enteral nutrition (EEN) is extremely critical as an adjuvant treatment. A retrospective study showed that EEN reduced the incidence of intraperitoneal septic complications. Therefore, EEN should be considered for patients with malnutrition or extensive intestinal inflammation [17]. At the same time, it is necessary to cooperate with continuous pus cavity flushing and drainage. Infliximab can be used early under the premise of infection control, and it is best to maintain long-term treatment, but it is not recommended to use it together with steroids. According to a meta-analysis of 15 observational studies [18], the risk of serious infection increased with the combination of anti TNF and corticosteroids (in four cohorts; RR, 1.64; 95 % CI, 1.33–2.03).

According to the literature [12], the combination of infliximab and enteral nutrition can promote mucosal healing in CD patients with intestinal fistula compared to the nutritional support alone. From an ACCENT-II post hoc analysis conducted Papamichael, higher post-induction infliximab concentrations were associated with early and long-term favorable therapeutic outcomes in patients with fistulizing CD [13]. In his statement, he pointed out that fistula healing and mucositis relief at 14 and 54 weeks were independently related to infliximab. In the present case, with the implementation of continuous enteral nutrition, effective antibiotics and immunosuppressive agents, the inflammation could be successfully controlled, which led to improvement in the clinical symptoms and the quality of life of our patient.

In our case, we particularly emphasized the importance of elemental enteral nutrition. Rajendran et al. [8] believed that elemental nutrition can reduce the exposure of food antigens to the intestinal mucosa and help in restoring the normal microbial ecology of the intestine, thereby reducing the local inflammation. A healthy nutritional status enhances the intestinal mucosal healing [9]. In addition, enteral nutrition has been proven to improve intestinal permeability, which is significantly increased in patients suffering from inflammatory bowel disease. Relative to the normal diet, decrease in peristalsis and secretion during enteral nutrition administration may also be one of the effective mechanisms of enteral nutrition. Finally, enteral nutrition can also reduce the number of intestinal bacteria, thereby reducing the risk of bacterial translocation and subsequent infection [10]. The patient was given a complete enteral nutrition regimen during hospitalization, and at the onset of therapy, some of the enteral nutrient solution leaked out into the abdominal drainage bag through the fistula. Over the treatment time course, the leakage gradually reduced means the intestinal mucosa and the fistula healed. Triantafyllidis [11] reviewed and summarized the emerging drugs for the treatment of inflammatory bowel disease. In his review, he mentioned that after receiving ornidazole treatment, the CDAI score of patients decreased significantly; However, in consideration of the local encapsulation of the abscess and the inability of intravenous and oral antibiotics to reach sufficient concentration, we tried to inject ornidazole directly into the purulent cavity for the first time. No similar practice has been reported in the literature before.

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Ethical approval

No approval is required for this case report.

Consent

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Author contribution

All authors contributed in writing the paper. Zheyu Wang and Yao Yao designed the research, extracted data, and wrote the paper. Fen Wang made a critical revision of the manuscript for important intellectual content and study supervision.

Research registration

Not applicable.

Guarantor

Fen Wang.

Declaration of competing interest

The authors have no conflict of interests related to this publication.

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