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Nursing Care of a Patient with Active Crohn's Disease Complicated with Small Intestinal Obstruction

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Abstract: This study summarizes the nursing experience of a patient with active Crohn's disease in the acute stage, complicated by small bowel obstruction. Key aspects of nursing include psychological response guidance during the active phase of Crohn's disease, support before and after various gastroenteroscopy procedures and related reports, and self-monitoring guidance for symptoms such as intestinal obstruction combined with endoscopic mucosal ulcers. Using the 5A nursing model, nursing staff assessed the patient's needs, provided targeted nursing recommendations in stages, implemented health behavior strategies, and offered continuous nursing care, including positive support for sexual health beliefs. These interventions helped the patient overcome psychological challenges, such as resistance to indwelling gastric tubes, and adopt healthy behaviors. After six weeks of follow-up through phone and WeChat consultations, the patient demonstrated significant improvement, including a weight gain of 15 kg. Various test results indicated normalized nutritional and inflammatory indexes, and the Crohn's Disease Activity Index decreased by ≥ 70 points. In conclusion, establishing a nursing team and applying the 5A nursing model to formulate detailed nursing diagnoses and interventions can significantly improve outcomes for patients with active Crohn's disease complicated by small intestinal obstruction.

Keywords: Crohn's disease; Intestinal obstruction; 5A nursing model; Health belief; Enteral nutrition

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1. Introduction

Crohn's disease (CD) is a chronic, nonspecific inflammatory disease of the intestine with an unknown etiology, characterized by chronic inflammatory granulomatous lesions that can affect the entire digestive tract. Kaplan GG et al. conducted a study on the global epidemiological evolution of inflammatory bowel disease (IBD), reporting an increase in its prevalence from 0.5% in 2010 to 0.75% in 2020, with a projected rise to 1% of the population by 2030 [1]. Approximately 70% to 80% of CD patients may experience complications such as intestinal obstruction,

abdominal abscesses, intestinal perforation, fistulas, and severe bleeding [2]. The cumulative complication rate among CD patients is reported to range from 48% to 52% within five years of diagnosis and 69% to 70% within ten years, with about half of these patients experiencing stenosis.

Studies indicate that treatment options for Crohn's disease complicated by ileus include pharmacotherapy, enteral nutrition therapy, and endoscopic surgery [3]. Conservative treatment remains the cornerstone of managing CD with acute ileus. Since no effective drugs exist to reverse intestinal wall fibrosis, enteral nutrition (EN), particularly exclusive enteral nutrition (EEN), has gained increasing clinical attention [4].

In August 2024, a patient with severe active Crohn's disease (classified as A2L3B2P) complicated by small intestinal obstruction was admitted to our department. Following comprehensive treatment and nursing interventions, the patient achieved a satisfactory outcome. This report provides details of the case.

2. Clinical data

The patient, a 27-year-old male, experienced increased stool frequency for over two years. During this period, symptoms were managed with probiotics, spasmolytic, and analgesic medications, achieving partial control. Upon this visit, the main complaints included abdominal pain and mucous blood stool. The diagnosis was as follows: (1) Crohn's disease, (2) small intestinal obstruction, (3) complex anal fistula, (4) abdominal adhesion, and (5) malnutrition.

Auxiliary examination: MRI plain scans of the upper and lower abdomen revealed multiple segmental and skip lesions with thickened and enhanced bowel walls in the rectum, colon, and small intestine, with the thickest area measuring approximately 17 mm. Plain abdominal radiography indicated gas expansion in portions of the intestine, intestinal loop formation, and multiple gas-liquid levels, with the largest spanning approximately 75 mm.

Biochemical indices: Laboratory findings included hypersensitive C-reactive protein at 86.1 mg/L, erythrocyte sedimentation rate at 22 mm/h, hemoglobin at 95 g/L, and total albumin at 49.4 g/L. The patient's height, weight, and body mass index were recorded as 170 cm, 47 kg, and 16.26 kg/m^2, respectively.

From August to May, the patient reported worsening abdominal pain accompanied by cessation of flatus and defecation. Management included fasting, gastrointestinal decompression, parenteral nutrition, and infection prevention. On August 6, the symptoms showed improvement; however, the patient could not tolerate the gastric tube, necessitating its removal.

Based on endoscopic findings of multi-segmental lesions in the small intestine and colon combined with anal fistula and associated symptoms, the patient was assessed as a high-risk case. The evaluation considered factors such as young age at onset, extensive intestinal involvement, stenotic disease type, and perianal lesions, as outlined in updated clinical guidelines [5]. An early initiation of active treatment and conservative management was recommended to mitigate the risk of complications.

From August 26 onward, an enteral nutrition support program was implemented, involving continuous tube feeding through a nasogastric tube. By September, the patient demonstrated improvement in symptoms and inflammatory indices, tolerated the nasogastric enteral nutrition regimen, and was discharged successfully with the tube in place.

3. Nursing

3.1. Formation of a nursing team

The patient presented with intestinal obstruction, leap-like and segmental intestinal ulceration, and moderate malnutrition. During conservative treatment, challenges included the patient's limited knowledge of the disease and insufficient support for enteral nutrition therapy, necessitating prolonged treatment, and complex nursing care.

A multidisciplinary nursing team was established, comprising head nurses, doctors, primary nurses, dietitians, and health managers, to address the identified difficulties and risks. The patient's clinical condition included symptoms of intestinal obstruction and abdominal pain, intolerance to the indwelling gastric tube, elevated inflammatory markers, and the absence of enteral nutrition nursing consultations. Inadequate management could have necessitated surgical intervention in the event of poor treatment outcomes.

Consequently, guiding the patient in enteral nutrition care and ensuring the continuation of short-term enteral nutrition support were prioritized as key aspects of the nursing approach.

3.2. Psychological response guidance during the active period

3.2.1. Pain management

The nursing team assessed the patient's symptoms of abdominal pain and distension by evaluating the pain's intensity, nature, location, duration, and accompanying symptoms. A personalized nursing plan was developed and implemented based on this assessment. The Numerical Rating Scale (NRS) was utilized by the responsible nurses to evaluate pain severity. This scale, known for its accuracy, clarity, and objectivity, includes 11 levels (0–10), ranging from "no pain" (0) to "severe pain" (7–10), and is suitable for patients aged 10 years and older with a certain level of education [6].

Through interviews and other methods, the patient's descriptions of pain and psychological state were evaluated, and appropriate interventions were initiated. Pain management followed a stepwise approach:

(1) Step one: Mild pain was managed using behavioral therapies such as mindful breathing, meditation, listening to music, or engaging in online mobile games to distract attention.

(2) Step two: For inadequate relief from behavioral therapy, symptom observation was conducted in collaboration with doctors, followed by the application of analgesic medications. The efficacy and side effects of the medications were monitored, and the patient's psychological needs were addressed through guidance.

(3) Step three: The nursing team and responsible nurse collaborated to assess the patient's nursing requirements for pain and jointly developed nursing measures. Pain management guidance was provided based on these assessments.

3.2.2. Psychological nursing

Patients with Crohn's disease often experience gastrointestinal discomfort, limited knowledge about their condition, and reduced self-confidence. Regular and dynamic assessments of the patient's current and evolving care needs were conducted throughout their hospitalization and treatment phases (e.g., changes in disease status or alternative treatments) [7].

Upon admission, nursing staff helped the patient adapt to the hospital environment and facilitated their participation in the department's IBD WeChat platform, where disease-related information was regularly shared. For diagnostic examinations, responsible nurses provided detailed instructions about preparation and post-

examination care, with reminders sent via the WeChat platform. After examinations, the patient's physical condition and specific needs were assessed, disease-related guidance was provided, and physicians analyzed the results.

The nursing team applied the Health Belief Model (HBM) to develop targeted measures:

(1) Knowledge cultivation: Face-to-face teaching and listening to the patient's concerns were utilized. Drawing from the "Expert Consensus on Nursing of Adult Active Inflammatory Bowel Disease" [8], nurses conducted assessments in six key areas: nursing evaluation, symptom management, medication, nutrition, psychological support, and extended care. Patients were encouraged to express their understanding of disease management through teach-back methods, such as responding to questions like, "How do you think we should manage this disease?" These interactions helped address gaps in understanding and facilitated mastery of disease-related knowledge.

(2) Confidence building: During periods of pain and recovery, psychological support was provided. Positive mindfulness techniques were encouraged, including affirmations such as:
   (a) "Tomorrow, I will be healthier and happier than today."
   (b) "I will spread positive energy."
   (c) "I will control my body rather than letting pain control me."
   (d) "I will find joy in simple things."
   (e) "Pain is inevitable, but attitude is optional."

   These techniques aimed to strengthen the patient's self-confidence and psychological resilience.

(3) Behavioral changes: Nursing staff implemented a family-based enteral nutrition tracking system. The patient recorded daily progress, which was reviewed by the treatment team during ward rounds. Guidance was provided to address any concerns. Post-discharge, weekly records were submitted via the WeChat platform, and team members, including dietitians and health administrators, offered ongoing nursing guidance and supervision based on these records.

3.3. Nursing and guidance for nutrition management

3.3.1. Intravenous high nutritional support

The patient exhibited significant nutritional deficiencies due to intestinal absorption dysfunction, increased inflammatory activity, and reduced dietary intake. Using the Nutritional Risk Screening 2002 (NRS 2002) tool, which evaluates nutritional status, disease severity, and age, the total score was calculated at 5, indicating a high risk of malnutrition. As a result, intravenous hypernutrition support was initiated in consultation with the nutrition department during the acute phase of the disease.

The administration of intravenous hypernutrition adhered to the recommendations of the Expert Consensus on the Safety Management of Parenteral Nutrition. Key aspects of care included vigilant monitoring for complications such as phlebitis, catheter blockage, infection, and early signs of fatty milk allergy. The peripheral vein was selected as the infusion route, taking into consideration the patient's clinical needs and potential risks. However, given the smaller diameter, thinner walls, and slower blood flow in peripheral veins, the risk of phlebitis was heightened.

Daily observation of the infusion site by the responsible nurse was prioritized to detect signs of venous inflammation, such as pain, tenderness, erythema, swelling, abscess formation, or the presence of a palpable vein cord. In cases of redness or swelling, nursing interventions included the application of 50% magnesium sulfate wet

compresses and alternating treatments with raw potato slices.

This comprehensive approach to intravenous nutritional support ensured effective management of the patient's high nutritional risk while minimizing complications and promoting recovery.

3.3.2. Enteral nutrition support

In the initial stages of enteral nutrition support, the patient experienced discomfort following the insertion of the nasogastric tube. To address this, the nursing team analyzed and compared available gastric tubes in the department, considering factors such as outer diameter, inner diameter, and length. The Freka® Tube CH/FR 8, 120 cm in length, was selected.

(1) Pre-catheterization preparation: A QR code video explaining the nasogastric tube insertion process was provided to alleviate patient concerns. Nurses recommended videos available on the Bilibili platform, featuring individuals self-inserting gastric tubes and continuing normal activities while undergoing enteral nutrition treatment. This strategy reduced resistance to the procedure. Doctors emphasized the necessity of catheterization, explaining its benefits in maintaining the intestinal mucosal barrier, regulating gut flora to prevent infection, and supporting adequate caloric intake for disease treatment [9].

(2) Catheterization process: Catheterization was performed by team members with high competency scores, ensuring adherence to proper technique [10]. Ongoing clinical management training was conducted for nurses to enhance their knowledge of enteral nutrition and nasogastric tube insertion. Studies have demonstrated that such training improves patient cooperation, enhances their experience during the procedure, increases the success rate of first-time catheterization, and reduces adverse reactions [11].

(3) Continuous enteral nutrition nursing: During continuous enteral nutrition feeding, the team followed the adult enteral nutrition support model outlined by the Chinese Nursing Association, adhering to the "four degrees and three rinsing" method:

(a) Angle: The patient's head was elevated 30°–45° during and for half an hour after feeding to prevent reflux and aspiration pneumonia.

(b) Speed: The feeding rate began at 20–40 mL/h, adjusted according to patient tolerance, and gradually increased to 100–125 mL/h. For patients without access to an infusion pump at home, syringes were used for slow, manual feeding.

(c) Temperature: The nutrient infusion was maintained at 38–40°C to ensure comfort during administration.

(d) Cleanliness: Nutrient solutions were prepared fresh or stored at 4°C for no more than 24 hours. Containers for preparation and storage were kept sterile. Feeding began with low-concentration solutions, which were gradually increased.

(4) Pipe maintenance: The "three rinsing" approach involved flushing the tube with 20–30 mL of 38–40°C warm water before and after medication administration, before and after feeding, and every 4–6 hours during continuous feeding. This practice prevented blockages and ensured optimal tube function.

(5) Tolerance monitoring: The patient's enteral nutrition tolerance was assessed using a scoring scale:

(a) 0–2 points: Continue enteral nutrition, maintaining or increasing the feeding rate with symptomatic treatment.

(b) 3–4 points: Continue enteral nutrition at a reduced rate, reassessing after two hours.

(c) ≥ 5 points: Discontinue enteral nutrition and provide appropriate interventions.

(6) Progression of enteral nutrition: On the first day, the infusion rate was set at 20 mL/h. Gastrointestinal symptoms included mild nausea and diarrhea (total stool volume ≤ 500 mL), with a tolerance score of 2. Enteral nutrition was continued, and the rate was increased by 20 mL/h daily. By the fourth day, the patient tolerated a rate of 100 mL/h without discomfort. During this period, the nursing team provided assistance in connecting the nutrition tube and using the nutrition pump.

4. Continuity of care

Crohn's disease is a chronic condition, and studies indicate that the incidence of malnutrition in patients with CD is as high as 85% [12]. Long-term, effective nutritional management and support significantly impact disease progression and quality of life, promoting improved self-care capabilities and social functioning [13]. In this case, the patient was prone to recurrent symptoms and lacked confidence in managing home enteral nutrition (HEN) and symptom control post-discharge. While HEN is relatively safe, complications may arise due to insufficient experience in managing associated issues [14].

To address these challenges, an individualized follow-up plan was developed collaboratively by the attending physician, the primary nurse, and a dietitian. On the day of discharge, an enteral nutrition follow-up manual was provided to guide the patient in maintaining continuity of care. The nursing team also established a WeChat group to provide ongoing support, sharing disease-related knowledge, instructional videos on self-care procedures, and meal preparation guidance. Regular reminders for follow-up hospital visits were also communicated through the group.

Post-discharge follow-up:

(1) Day 1: Medical staff conducted a telephone follow-up to evaluate the patient's implementation of hospital-provided health guidance and education at home. The patient's emotional state, adherence to enteral nutrition practices, and family support for nutrition care were assessed. Additional health education was provided to enhance the patient's compliance with HEN.

(2) Week 1: The patient attended an outpatient clinic, where the attending physician adjusted the enteral nutrition regimen based on symptoms and assessed further nutritional requirements. Guidance on caloric intake and dietary management was also provided.

(3) Weeks 2, 4, and 6: Telephone follow-ups were conducted to evaluate the patient's self-care needs and monitor potential complications associated with long-term nasogastric tube (NG) use, such as nasal mucosal injury, gastroesophageal reflux, aspiration, or catheter obstruction.

Patients were trained to self-monitor for signs of malnutrition and instructed to report any concerns promptly, facilitating timely interventions for identified risk factors [15]. Voice guidance over the telephone supplemented these follow-ups. Feedback obtained during these interactions helped medical staff identify knowledge gaps, enabling targeted health education through literature and video materials shared in the WeChat group.

5. Discussion

Crohn's disease is a lifelong condition requiring chronic follow-up and long-term treatment. Research indicates that 85.2% of patients with Crohn's disease experience disability [4], attributed to irreversible changes in intestinal structure, functional impairments, and frequent disease recurrence. Currently, no effective medication exists

to reverse intestinal wall fibrosis. However, EN therapy in the management of Crohn's disease complicated by intestinal obstruction has garnered increasing clinical attention [16]. EN demonstrates therapeutic efficacy in managing CD with intestinal obstruction, inducing disease remission, and reducing recurrence rates.

Through multidisciplinary collaboration and guided health education provided by nursing staff, this patient achieved symptom relief and reduced disease burden. During medical care, the patient gained a deeper understanding of the condition and successfully adapted to the challenges posed by enteral nutrition tube placement. In addition to medical treatment and basic nursing care, fostering health beliefs and concepts significantly influenced the disease outcome. These observations align with the findings of Zhang *et al.* [14]. Similarly, research by Ma *et al.* highlighted the pivotal role of health beliefs and behaviors in determining overall patient outcomes [17].

Post-discharge, the implementation of continuous nursing methods, including telephone follow-ups and the use of digital platforms such as WeChat, has been shown to enhance patients' disease-related professional knowledge [18]. These approaches provide ongoing guidance and support for enteral nutrition management, reduce barriers between healthcare providers and patients, and foster stronger relationships between nurses and patients.

Disclosure statement

The authors declare no conflict of interest.

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