

Role of a multidisciplinary team (MDT) in the diagnosis, treatment, and outcomes of inflammatory bowel disease: A single Chinese center's experience

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SUMMARY The incidence of inflammatory bowel disease (IBD) with a poor prognosis is increasing, and a single field is not capable of fully diagnosing and comprehensively treating IBD. The purpose of the current study was to explore the role of a multidisciplinary team (MDT) in the diagnosis and treatment of IBD. Subjects were 55 patients with IBD who underwent surgery at this hospital before the establishment of a MDT (before June 2016) and 276 patients who were discussed by a MDT; 72 of the latter patients underwent surgery. The preoperative rate of diagnosis, preoperative basic nutritional status, frequency of emergency surgery, and surgical complications in the two groups were compared to determine whether the MDT significantly affected the diagnosis and treatment of IBD and to explore trends in the types of patients with IBD and treatment decision-making since the establishment of MDT. Results revealed that the MDT significantly improved preoperative diagnostic accuracy for patients with IBD who underwent surgery ($p < 0.005$), and the frequency of elective surgery decreased significantly ($p < 0.005$). There were significant differences in the rate of clinical recurrence ($p < 0.005$) and the rate of additional surgery ($p < 0.01$) between the two groups, with higher rates in the control group. In terms of preoperative nutritional status, the proportion of decreased serum albumin and hemoglobin in the experimental group was significantly lower than that in the control group ($p < 0.05$). MDT plays a positive role in accurate preoperative diagnosis, improvement of preoperative preparations, and a reduction in postoperative adverse events for patients with IBD undergoing surgery.

Keywords Crohn's disease, ulcerative colitis, multidisciplinary team, diagnosis, prognosis

1. Introduction

Inflammatory bowel disease (IBD) is a group of chronic nonspecific inflammatory diseases, including Crohn's disease (CD) and ulcerative colitis (UC), whose etiology and pathogenesis have not been elucidated. Its onset may be related to dietary habits, environment, genes, infection, intestinal flora, and immune disorders. IBD is developing into a global epidemic. The highest annual incidence of UC is 24.3 cases per 100,000 population-years in Europe, with 6.3 cases per 100,000 population-years in Asia. The highest annual incidence of CD is 12.7 per 100,000 population-years in Europe, with 5.0 cases per 100,000 population years in Asia (1). As the incidence increases, so does the chance of complications and poor outcomes (2).

As the level of China's economic development, diet, and lifestyle have changed and the average life expectancy of the population has increased, the number of cases of IBD has increased yearly and is approaching numbers in Europe and North America (3). The incidence of IBD in China is increasing yearly, and an indeterminate or incomplete diagnosis is often common. Although the incidence of postoperative complications and in-hospital mortality of patients with IBD has significantly decreased in recent years, a retrospective analysis of the epidemiology and surgical management of IBD in China conducted in 2016 indicated that the frequency with which patients with CD were misdiagnosed with conditions such as appendicitis before surgery was as high as 50.8%. The rate of postoperative complications in both CD and UC

is higher than 20%. Moreover, there were significant differences in the rate of emergency surgery and in-hospital mortality among IBD centers of different grades and levels (4). This is due to a lack of diagnostic capacity, but a factor that cannot be ignored is that gastrointestinal surgeons at small medical facilities lack experience in surgically treating IBD. In addition to staff and team differences, diagnostic equipment is unevenly distributed among large and small medical facilities. Large facilities have great difficulty specifically diagnosing IBD, and the same is true for small medical facilities with much less staff collaboration and equipment. Given these circumstances, the ability to diagnose and treat IBD desperately needs to be improved at many national, provincial, municipal, and even county medical facilities in China. The aim of the current study was to explore the role of a multidisciplinary team (MDT) in the diagnosis and treatment of IBD over the past five years.

Core members of the MDT work as a group to diagnose and treat a given disease through conferences. This increases the accuracy of the diagnosis, helps to identify the best treatment plan, helps to determine the best form of management, and facilitates the coordination of personalized care and outpatient services. The key is how teams are set up and work in practice and how they affect patient care and prognosis (5). According to a large retrospective study in Denmark, there is an increased risk of death in the near and long term, and especially in the near term, following a diagnosis of IBD (6). IBD has a high incidence and involves many complications. Conventional drug therapy may have difficulty treating the multiple and serious complications of IBD (7). Surgery, Radiology, and Pathology are often involved when these complications develop (8).

As technology to diagnose and treat IBD continues to advance, more medical treatments and various new types of bio-targeted agents have been developed, and temporary relief of inflammation and infection control can often be achieved with medical therapy. Nevertheless, bio-targeted treatments still involve many contraindications and complications (9), and multiple specialists are still needed for diagnosis and treatment of the disease. Gastroenterologists, pathologists, imaging specialists, and surgeons regularly monitor disease activity *via* fecal and serum biomarkers, imaging, endoscopy, and histology. This information is used to tailor medical therapy, identify surgical options, and determine the patient's diagnosis. As early as 1995, the Calman-Hine report identified significant deficiencies in the preparation, structure, and organization of cancer care in the UK, including inconsistencies in specialist care, disjointed referral systems, outcomes, and wide variations in the use of specific treatments. The key to solving these problems is more teamwork among those providing treatment and care, so multidisciplinary

management and consultation are needed to diagnose and treat complex refractory diseases (10). Multidisciplinary teamwork has been widely used to diagnose and treat cancer, and it has been proven to have a significant positive effect on outcomes for patients with cancer (11). The same drawbacks the Calman-Hine report identified in the treatment of tumors also exist in IBD, such as delayed diagnosis and surgery.

2. Methods

2.1. The multidisciplinary approach used in this study

Established in June 2016, the multidisciplinary center at the Second Xiangya Hospital, Central South University is one of the largest IBD centers in China that meets international standards. Approximately 300 patients with IBD were potential subjects of a multidisciplinary conference during the past 5 years. Experts in various specialties at the center are all skilled in the diagnosis and treatment of IBD.

A MDT conference on diagnosis and treatment of IBD includes gastroenterologists, gastrointestinal surgeons (geriatric surgeons), pathologists, radiologists, and non-core members, including nutritionists, psychiatrists, and nurses. A MDT conference on patients with IBD is held once a week. The conference is conducted as follows: By reviewing the patient's history, clinical phenotypes, imaging characteristics, and histological findings, the best diagnosis and the most appropriate treatment plan are defined. This includes determining the stage of the disease, the type of disease, and whether surgery is necessary.

The circumstances for convening a MDT conference for patients with IBD at this hospital include: 1) IBD should have been considered first during diagnosis, but other diseases could not be ruled out or direct evidence of IBD could not be found, leading to difficulties in diagnosis and influencing the physician's selection of appropriate treatment options; 2) The treatment the patient received in Gastroenterology is unable to alleviate symptoms, or an intestinal obstruction, intestinal fistula, severe malnutrition, severe anemia, or some other condition develops during the treatment process, necessitating the involvement of other specialties, and especially surgery, in treatment; and 3) The patient's condition is so serious that surgery is required. The basic steps for convening a MDT conference for the diagnosis and treatment of IBD at the Second Xiangya Hospital, Central South University are shown in Figure 1.

2.2. Study population and design

This study was conducted at the Second Xiangya Hospital, Central South University in the City of

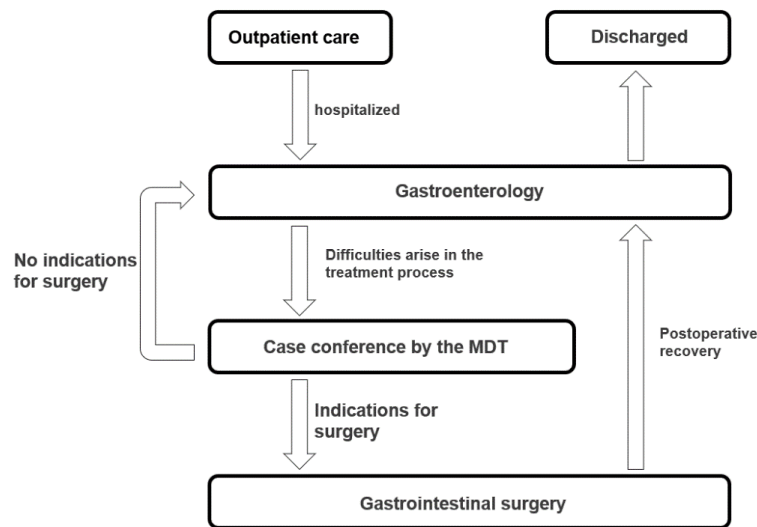


Figure 1. The basic steps for diagnosis and treatment of IBD by a MDT at the Second Xiangya Hospital, Central South University.

Changsha, Hunan Province. A total of 276 patients were discussed at a MDT conference at the Second Xiangya Hospital from June 2016 to February 2021. The basic information on all of the patients, including clinical symptoms and imaging and pathological findings, was obtained by the researchers from an electronic medical records system. MDT conferences on patients conducted from June 2016 (inception) to February 2021 were retrospectively examined. This study was approved and overseen by the ethics committee of Central South University, and conducted in accordance with the Declaration of Helsinki. All patients who underwent surgery signed a surgical consent form beforehand. An audit was commenced in June 2016. Although some patients were discussed more than once, only the initial MDT conference was assessed for each patient.

Demographic data obtained included age, sex, course of the disease, treatment options, whether to undergo surgery, and the IBD subtype. The groups that underwent surgery before and after the establishment of the MDT for IBD were compared. The experimental group ($n = 72$) consisted of patients who were discussed by a MDT and who underwent surgery between June 2016 and February 2021, and the surgical indications were confirmed by the MDT. All patients diagnosed with IBD upon discharge from the hospital after surgery between September 2006 and May 2016 served as the control group. Patients hospitalized for less than 1 day and patients with incomplete information were excluded. In total, 55 patients served as the control group for this study. The role of a MDT was examined by comparing the accuracy of preoperative diagnosis, the frequency of emergency surgery, preoperative nutritional status, and the treatment outcomes between the two groups. All MDT conferences conducted

between June 2016 and February 2021 were reviewed. Subjects were a total of 276 patients who were diagnosed with IBD. To reflect the involvement of the MDT in the diagnosis and treatment of IBD since 2016, the period from June 2016 to February 2021 was divided into three phases.

2.3. Standards and endpoints

When the 276 patients were discussed by a MDT, the histological findings from patients with CD were defined as characteristic when they were deep mucosal longitudinal ulcers covering necrotic tissue or noncaseating necrotic granulomas in the intestinal wall. The histological findings from patients with UC were defined as characteristic when they were extensive ulcers with atypical hyperplasia. Imaging findings of CD were defined as characteristic when one of the following features was evident: 1) significant intestinal wall thickening; 2) significant intestinal mucosal enhancement; 3) intestinal stenosis and deformation; 4) a vascular "comb sign;" 5) enlarged mesenteric lymph nodes; and 6) fibroadipose hyperplasia. A "full diagnosis" was defined as the patient's diagnosis at discharge that included the disease stage, type, disease activity, and complications, and a "partial diagnosis" was defined as the patient's diagnosis at discharge that consisted of only "CD" or "UC." Preoperative diagnosis often determines surgical options, accurate diagnosis is closely related to determination of the disease stage and subsequently guides treatment and prediction of prognosis, and diagnosis is based on a combination of symptoms and laboratory, imaging, endoscopy, and histopathology findings (12). Adequate preoperative preparations are known to be closely related to postoperative recovery; there is less time for

preoperative preparations in the event of emergency surgery, hampering full preoperative preparations. Moreover, postoperative recovery of surgical patients is closely related to their preoperative nutritional status, and relevant indicators include serum albumin and hemoglobin. In the current study, patients preoperatively diagnosed with intestinal tuberculosis, an intestinal tumor, appendicitis, or simply an intestinal obstruction or intestinal perforation were deemed to have been misdiagnosed. Postoperative complications in this study included a surgical site infection and postoperative intestinal fistulae; other adverse events included clinical recurrence and additional surgery. Clinical recurrence referred to the recurrence of symptoms after surgery, such as abdominal pain, blood in the stool, and vomiting, resulting in readmission to the hospital. Additional surgery refers to undergoing further surgery due to recurrence or serious complications and excludes elective stoma reduction. In patients who underwent an intestinal resection, an intestinal colostomy and abscess removal were defined as "surgery" while perianal surgery was excluded.

2.4. Statistical analysis

Statistical analysis was performed using the IBM SPSS Statistics 25 package. $P < 0.05$ was considered statistically significant, and categorical variables were expressed as a percentage. The rate of preoperative diagnosis, the rate of postoperative complications, and preoperative nutritional status were compared between the experimental group and the control group using the chi-square (χ^2) test.

3. Results

3.1. Clinical characteristics of patients discussed by a MDT

From June 2016 to February 2021, 276 patients with IBD were discussed by a MDT at the Second Xiangya

Hospital, Central South University, including 256 patients (92.8%) with CD and 20 (7.2%) with UC. Of the 256 patients with CD, 50 (19.5%) were female, with a mean age of 34 years, and the youngest patient was 14 years old. Of the 20 patients with UC discussed by a MDT, 10 were female (50%), with an average age of 45 years.

In order to explore demographic trends in IBD and the status of the MDT conference, the period from June 2016 to February 2021 was divided into three phases: June 1, 2016 to December 31, 2018 (Phase 1), the whole of 2019 (Phase 2), and January 1, 2020 to February 28, 2021 (Phase 3). A total of 42 patients were discussed by a MDT in Phase 1, 78 were discussed by a MDT in Phase 2, and 156 were discussed by a MDT in Phase 3. Unlike neoplastic disease, IBD is characterized by a low age of onset, and the age of onset is closely related to disease behavior and symptoms (13). IBD has significant disease heterogeneity depending on the age of onset.

Of the 42 patients in Phase 1, only 4 (9.3%) were female, with an average age of 34.2 years. Of the 78 patients in Phase 2, 22 (28.2%) were female, with an average age of 36.1 years. Of the 156 patients in Phase 3, 34 (21.8%) were female, with an average age of 34.1 years (Figure 2A).

Since the duration of the disease can reflect the impact of the disease on the quality of life to some extent, the course of the disease was divided into three phases: less than 1 year, 1-5 years, and longer than 5 years (from initial onset to the first MDT conference). Of the total patients, 23.8% in Phase 1 had IBD for less than 1 year, 20.5% in Phase 2 had it for less than 1 year, and 26.9% in Phase 3 had it for less than 1 year. Of the total patients, 28.6% in Phase 1 had IBD for 1 to 5 years, 48.7% in Phase 2 had it for 1 to 5 years, and 44.9% in Phase 3 had it for 1 to 5 years. Of the total patients, 47.6% in Phase 1 had IBD for longer than 5 years, 30.8% in Phase 2 had it for longer than 5 years, and 28.2% in Phase 3 had it for longer than 5 years (Figure 2B). Demographic data on patients who

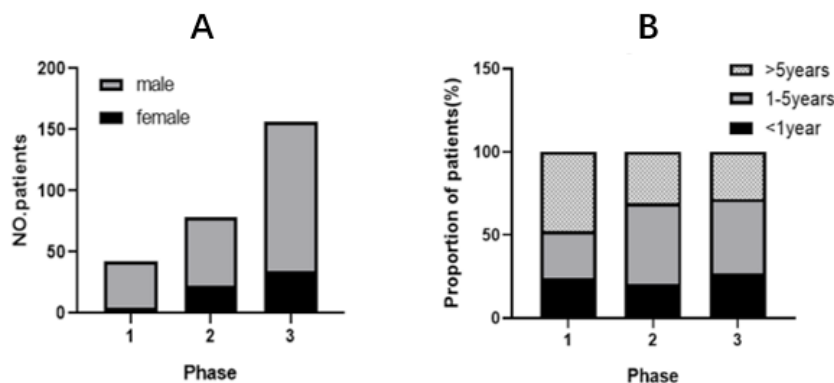


Figure 2. (A) The course of disease was divided into three phases (less than 1 year, 1 to 5 years, and longer than 5 years), and the sex distribution of patients with disease in a given phase is shown in the figure. (B) Percentage of patients in each phase.

Table 1. Demographic data on 276 patients discussed by MDT conferences during each phase of the study

Patient characteristics and no.	Phase 1, 42 (%)	Phase 2, 78 (%)	Phase 3, 156 (%)
Sex			
Female	4 (9.5)	22 (28.2)	34 (21.8)
Male	38 (90.5)	56 (71.8)	122 (78.2)
Course of the disease			
< 1 year	10 (23.8)	16 (20.5)	42 (26.9)
1-5 years	12 (28.6)	38 (47.7)	70 (44.9)
> 5 years	20 (47.6)	24 (30.8)	44 (28.2)
Diagnosis			
Partial	14 (33.3)	10 (12.8)	20 (12.8)
Full	28 (66.7)	68 (87.2)	136 (87.2)
Decisions by the MDT			
Surgery	22 (52.4)	26 (33.3)	24 (15.4)
Targeted therapy	6 (14.3)	28 (35.9)	46 (29.5)
Supplementary examinations/studies			
Pathology (+)	10 (23.8)	24 (30.1)	56 (35.9)
Imaging (+)	26 (61.9)	62 (79.5)	134 (85.9)

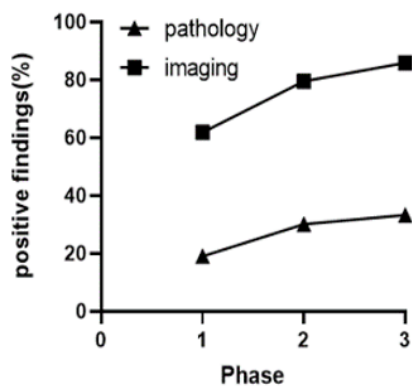


Figure 3. From June 2016 to February 2021, the proportion of pathological examinations yielding characteristic findings increased from 23.8% to 30.1% to 35.9%, and the proportion of imaging-positive findings continued to increase from 61.9% to 79.5% to 85.9%.

were discussed by a MDT are shown in Table 1. Of 276 patients with IBD, 14 (33.3%) were only partially diagnosed in Phase 1, 10 (12.8%) were only partially diagnosed in Phase 2, and 20 (12.8%) were only partially diagnosed in Phase 3 (Table 1).

The role of Pathology in the diagnosis of IBD gradually increased from Phase 1 to Phase 3. A characteristic pathological diagnosis was made in 10 patients (23.8%) in Phase 1; this number increased to 24 (30.1%) in Phase 2 and 56 (35.9%) in Phase 3.

The characteristic imaging findings of CD include intestinal wall thickening, enhanced mucosal enhancement during active disease, increased mesenteric lymph nodes, and complications such as intestinal fistulae and abscesses (14). An intestinal CTE examination is crucial to determining diagnosis, staging, and complications. Imaging findings indicated CD in 26 patients (61.9%) during Phase 1, but this number increased to 62 (79.5%) in Phase 2 and 134 (85.9%)

in Phase 3 (Figure 3). Of the 276 patients who were discussed by a MDT, 14.3% received targeted therapy in Phase 1, 35.9% received that therapy in Phase 2, and 29.5% received that therapy in Phase 3 (Table 1).

3.2. Preoperative diagnosis and nutritional status

There were no significant differences in sex between the experimental group and the control group ($p > 0.05$). In the experimental group consisting of 72 patients with IBD, 3 (4.2%) were misdiagnosed preoperatively. Of the 55 patients in the control group, up to 45 (81.8%) were misdiagnosed preoperatively. Most of those misdiagnoses were lymphoma, intestinal tuberculosis, or a tumor. The rate of misdiagnosis was significantly higher than that in the 3 misdiagnosed patients in the experimental group ($p < 0.005$) (Table 2).

In the experimental group, 12 patients (16.7%) had preoperative serum albumin levels below 30g/L, and the rate of a preoperative decrease in albumin was significantly lower than that in 20 patients (36.3%) in the control group. The same was also true when the preoperative hemoglobin level was compared. A total of 28 patients (38.9%) in the experimental group had a hemoglobin level below 100 g/L, which was significantly lower than that in 41 patients (74.5%) in the control group ($p < 0.001$) (Table 2).

3.3. Emergency surgery rate and postoperative adverse events

Of the 72 patients in the experimental group who underwent surgery, only 2 (2.8%) underwent emergency surgery while 70 (97.2%) underwent elective surgery. In contrast, 15 patients (27.2%) in the control group underwent emergency surgery while 40 (72.8%) underwent elective surgery. A significantly lower proportion of patients in the experimental group

Table 2. Statistical analysis of the preoperative diagnosis, preoperative nutritional status, emergency surgery rate, and postoperative adverse events in the experimental group and the control group

Surgical characteristics of patients	Exp group, 72 (%)	Con group, 55 (%)	P value
Sex			
Female	20	23	> 0.05
Male	52	32	
Preop diagnosis			
Accurate	69 (95.8)	10 (18.2)	< 0.005
Misdiagnosis	3 (4.2)	45 (81.8)	
Necessity for surgery			
Elective surgery	70 (97.2)	40 (72.8)	< 0.005
Emergency surgery	2 (2.8)	15 (27.2)	
Postop complications			
Surgical site infection	10 (13.9)	14 (25.5)	> 0.05
Clinical recurrence	5 (6.9)	20 (36.3)	< 0.005
Additional surgery	0	5 (9.1)	< 0.01
Intestinal fistula	4 (5.6)	4 (7.3)	> 0.05
Total number of patients	17 (23.6)	38 (69.1)	< 0.005
Preop nutritional status (g/L)			
Albumin < 30	12 (16.7)	20 (36.3)	< 0.05
Hemoglobin < 100	28 (38.9)	41 (74.5)	< 0.001

underwent emergency surgery compared to the control group ($p < 0.005$) (Table 2).

Postoperative adverse events included a surgical site infection, intestinal fistulae, additional surgery, and clinical recurrence. In the experimental group, a total of 17 patients (23.6%) experienced postoperative adverse events, including 10 (13.9%) who developed a surgical site infection, 5 (6.9%) who experienced clinical recurrence, and 4 (5.6%) who developed an intestinal fistula; none of the patients in the experimental group underwent additional surgery. In the control group, a total of 38 patients (69.1%) experienced postoperative adverse events, including 14 (25.5%) who developed a surgical site infection, 20 (36.3%) who experienced clinical recurrence, 5 (9.1%) who underwent additional surgery, and 4 (7.3%) who developed an intestinal fistula. The proportion of patients who experienced adverse events differed significantly between the two groups. Significantly fewer patients in the experimental group experienced adverse events ($p < 0.005$), and the rate of clinical recurrence ($p < 0.005$) and the rate of additional surgery ($p < 0.01$) in the experimental group were significantly lower than rates in the control group. However, there were no significant differences between the two groups in terms of the development of intestinal fistula and surgical site infections ($p > 0.05$) (Table 2).

4. Discussion

As the incidence of IBD has increased in China and elsewhere around the world and the course of the disease has been prolonged in recent years, the number of patients who need surgery has also increased yearly (15). Improving the diagnostic accuracy, treatment, and outcomes of IBD relies not only on the ability of gastroenterologists but also requires multidisciplinary cooperation, and particularly cooperation by pathologists,

imaging specialists, and surgeons (16). Therefore, the current study investigated whether MDT could improve the diagnostic accuracy, treatment, and outcomes of IBD. The above considerations emphasize the need for an IBD center to have an IBD team in the form of a MDT including gastroenterologists, pathologists, imaging specialists, and surgeons.

Today, China's economy is developing rapidly, and the incidence and prevalence of IBD are rising sharply. According to some researchers, that rise is associated with urbanization and industrialization. The burden of IBD is heavier in economically developed areas, but the purported association is unlikely considering population migration. Nowadays, population migration in China mainly involves the middle-aged and younger people who migrate from underdeveloped areas to developed areas, and this group happens to have a high incidence of IBD. Therefore, one can reasonably assume that the burden of IBD in underdeveloped areas or rural areas of China is much more serious than expected (17). IBD has a long course, is extremely difficult to cure, and is accompanied by many complications that affect one's quality of life, so the disease presumably poses a great burden to the families of the patients with IBD and society as a whole. Often one person gets sick, and the quality of life and economic status of family members also decline. Therefore, improving the ability to diagnose IBD early and to provide standardized treatment is crucial to each patient's family and society as a whole, and that was also a goal of this study. IBD is a non-specific chronic bowel disease with no gold standard for its diagnosis, unlike an ordinary intestinal disorder such as a perforation, obstruction, or tumor. The existing diagnosis of IBD is exclusive, so it needs to be differentiated from intestinal tuberculosis, intestinal lymphoma, and other diseases when making a diagnosis. Therefore, the accurate and early diagnosis

of IBD should be based on a comprehensive evaluation of radiology, endoscopy, and histopathology findings (18).

All patients discussed by a MDT between June 2016 and February 2021 were retrospectively examined, and demographic data included sex and age distribution, duration of disease, the rate of correct diagnosis, and treatment plans were comprehensively analyzed. Unlike a peptic ulcer, tumor, or other common gastrointestinal diseases, IBD has complex clinical manifestations, hidden symptoms, a high degree of variation, and involves many complications, such as an intestinal obstruction, perforation, dilation, tumor, abdominal abscess, or malnutrition. Misdiagnosis of CD and UC is common. Therefore, the accuracy with which these diseases are diagnosed needs to be improved *via* a MDT conference. Although the medical treatment of IBD has improved greatly, Gastroenterology, Gastrointestinal Surgery, Pathology, and Radiology are crucial to the accurate diagnosis and treatment of IBD.

A MDT for IBD was established at this hospital in June 2016. Gastroenterology is still the core of the team and is mainly responsible for outpatient consultations regarding IBD, hospital admission, preliminary diagnosis, and follow-up after discharge. Colonoscopies and enteroscopies performed by Gastroenterology play a vital role in the diagnosis of IBD, determination of disease activity, identification of complications, and as a guide for follow-up treatment. Endoscopy is also an important way for Pathology to obtain biopsy specimens from non-surgical patients. Routine antibiotics, steroids, immunomodulatory drugs, biologically targeted therapy drugs, and nutritional support in Gastroenterology can roughly meet the routine treatment needs of patients with IBD. Gastroenterology is responsible for the initial diagnosis of patients with IBD. If Digestive Internal Medicine encounters difficulties in the diagnosis and treatment process or it notes poor efficacy, it will request a MDT conference to discuss a patient with other team members in order to reach the most accurate diagnosis and to determine if a further examination is required or which subsequent treatment is best.

In addition to Internal Medicine, Surgery is also indispensable to alleviate the complications of IBD since surgery will directly affect the survival rate of and long-term prognosis for patients (19). Gastrointestinal Surgery has been involved in the treatment of IBD for decades, and there is a marked difference in surgical management between CD and UC. Although CD is still a type of incurable intestinal disease, and it is mainly treated medically, Gastrointestinal Surgery has a proven role in the management of the complications of IBD. Surgical indications for CD include intestinal stenosis or an obstruction, abdominal abscesses, intestinal fistulae or external fistulae, an intestinal perforation, uncontrollable intestinal bleeding, cancer, and inefficacious medical treatment. Surgical indications for

UC include toxic megacolon, a perforation, bleeding, poorly tolerated parenteral nutrition, and malignant transformation. During a MDT conference, the team will refer a patient with surgical indications for IBD to Gastrointestinal Surgery for surgery as appropriate. Patients who undergo elective surgery should be adequately prepared preoperatively in Gastrointestinal Surgery, and the appropriate procedure should be selected in conjunction with the opinions of pathologists and imaging specialists. After surgery and once the patient recovers sufficiently, the patient will be returned to Gastroenterology for postoperative rehabilitation.

The core members of the MDT also include Pathology and Radiology, which play a key role in providing more diagnostic methods and criteria, improving diagnostic accuracy, identifying complications, determining disease activity and lesion sites, and guiding treatment. The histological findings of CD are mucosal erosions and deep ulcers covered with necrotic tissue, noncaseating necrotic granulomas in the intestinal wall, lymphocyte, plasma cell, and macrophage aggregation in the submucosa, and lymphatic follicular proliferation. The typical histological appearance of UC is extensive ulceration with infiltration of neutrophils, lymphocytes, plasma cells, and eosinophils in the lamina propria, and dysplasia. Pathological changes are even more suggestive than endoscopic changes when predicting the prognosis for some patients (20) (Figure 4). Imaging also plays an important role in the supplementary diagnosis of CD. Computed tomography (CT) and magnetic resonance (MR) intestinal imaging can indicate inflammatory changes in the intestinal wall, lesion location and extent, the presence of stenosis, and various complications such as fistula formation and abdominal abscess. These modalities can be used as a routine examination for CD in the small intestine (21). Imaging plays a unique role in assessing the condition of patients with IBD before surgery, as well as in determining the procedure and perioperative drug therapy. The typical computed tomography enterography (CTE) findings of active CD have been described in detail in the Methods (Figure 5). When three of the six criteria above are met, imaging is crucial to the diagnosis of CD.

This retrospective study has compared an experimental group and a control group, and results revealed that the ability to diagnose and treat IBD increased significantly at the Second Xiangya Hospital, Central South University after the establishment of a MDT. Preoperative diagnostic accuracy has improved for patients undergoing surgery, preoperative preparations are more extensive, tolerance of surgery has significantly improved, and the risk of postoperative adverse events has decreased significantly.

A MDT has numerous advantages over the conventional general medical and surgical consultation approach for the following reasons. First, there are

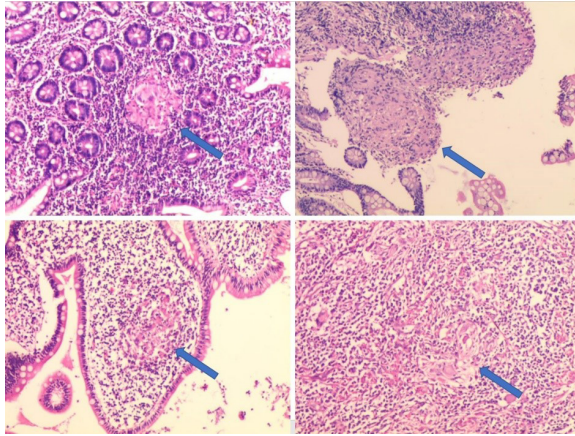


Figure 4. The three upper images depict the typical histological finding in CD, a noncaseating granuloma (arrows).

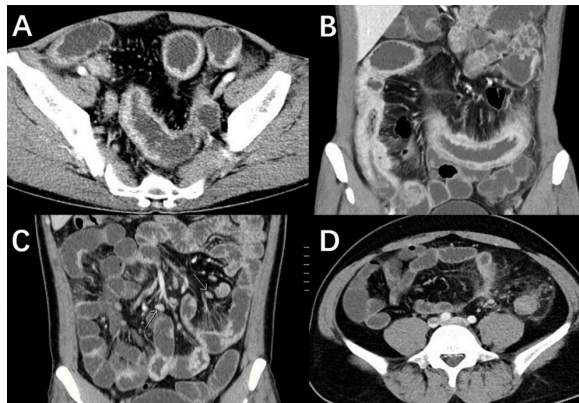


Figure 5. The typical radiographic appearance of CD: (A) thickening and enhancement of the intestinal wall, (B) the "comb sign" of CD, (C) enlarged lymph nodes around the bowel, (D) fibroadipose hyperplasia.

multidisciplinary conferences such as hospital-wide conferences in the conventional medical approach, but the personnel and time are not fixed, and team members lack sufficient understanding and experience cooperating, so the efficiency of such a multidisciplinary conference is often limited. In contrast, a multidisciplinary approach to IBD seems to be effective in assisting the complex decision-making involved in diagnosing and treating IBD (22). Second, in the conventional approach to consultation, physicians lack experience surgically treating a disease, so they often consider seeking a consultation once the disease has progressed to a point where the patient's infection status, nutritional status, and ability to tolerate surgery have significantly worsened and may be accompanied by economic concerns due to excessive reliance on medication. Third, there were differences between the experimental group and the control group in terms of the diagnostic and treatment modalities as well as in terms of the patient visits, so the development of drug therapies, procedures, and supplementary examinations or studies

for patients of different ages may also have a positive effect on diagnosis and treatment.

The current study revealed that a MDT conference can improve the rate of correct diagnosis and outcomes, and the ability of this multidisciplinary center to diagnose IBD has improved between June 2016 and February 2021. This has contributed to a greater understanding of IBD and it has improved ability of physicians, surgeons, pathologists, and radiologists to manage the disease. In addition, results revealed that MDT conferences on patients with IBD had a significant effect and are necessary not only at national and provincial centers but also at municipal and county hospitals.

5. Conclusion

IBD is a chronic disease that is difficult to cure. Diagnosis and treatment of IBD relies not only on the ability of gastroenterologists but it also requires a MDT throughout the course of the disease. A MDT conference plays an important role in the diagnosis and treatment of IBD. In addition, a MDT can enhance the overall level of clinical treatment and the level of teamwork.

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