

## Case Report

# A case report of atypical crohn's disease diagnosed by endoscopic ultrasonography

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**Abstract:** Crohn's disease is a type of inflammatory bowel disease that is difficult to differentiate from lymphoma or intestinal tuberculosis in clinic. Endoscopic ultrasonography (EUS) has advantages in distinguish the gastrointestinal cavity wall layers structure and adjacent tissues, so EUS can be well applied to diagnose gastrointestinal diseases. Now we report a case. A 27 years old female was admitted to hospital for diarrhea, and fever and night sweating. The colonoscopy, positron emission tomography-computed tomography (PET-CT) and biopsy did not help us to make a definite diagnosis. However, based on the patient's history, physical characteristics, via EUS, Crohn's disease was diagnosed. This reminds that EUS can be widely applied in inflammatory bowel disease.

**Keywords:** Crohn's disease, EUS, atypical case

## Introduction

Crohn's disease (CD) is an inflammatory bowel disease that is characterized by a progressive transmural inflammation with skip lesions throughout the GI tract. Crohn's disease is difficult to differentiate from lymphoma or intestinal tuberculosis in clinic. There exists a multifaceted relationship between Crohn's disease (CD) and intestinal tuberculosis (ITB). They share common pathogenic and clinical characteristics and were thought to be one in the same disease. Although, certain clinical and histological features can be helpful in distinguishing these disease. Distinguishing between Crohn's disease (CD) and Intestinal tuberculosis (ITB) still a diagnostic challenge. Misdiagnosis followed by inadequate treatment may lead to unsatisfactory and sometimes, catastrophic outcomes, e.g., misapplied immunosuppressants in TB may lead to reactivation of TB or disseminated TB that deteriorates the patient's condition and prolongs the treatment course. Herein, we report a case of CD difficult to diagnose. Applied the colonoscopy, positron emission tomography-computed tomography (PET-CT) and biopsy did not help us to make a definite diagnosis. By EUS, Crohn's disease was

diagnosed. This reminds that EUS can be widely applied in inflammatory bowel disease.

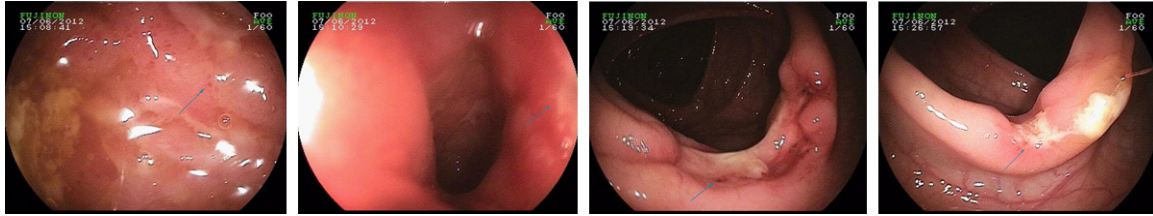
## Case presentation

The patient was a 27 years old female with a chief complaint of diarrhea for 3 months, and fever and night sweating for more than 2 months. This study was conducted in accordance with the declaration of Helsinki. This study was conducted with approval from the Ethics Committee of Xiamen University. Written informed consent was obtained from all participants. Three months ago, the patient began having yellow watery diarrhea at a frequency of 3-4 times a day, and mushy stool that occasionally contained mucus, accompanied with periumbilical and the right abdominal dull pain. The symptoms failed to respond to medical treatment. During about two months, she developed low-grade fever (37.4-38.0°C), usually in the afternoon, night sweating, fatigue, anorexia and weight loss. Colonoscopy showed no significant abnormality in the colon mucosa. Chest X-ray was not remarkable. Purified protein derivative tuberculin (PPD) test was strongly positive, and a diagnosis of intestinal tuberculosis was made. On April 11, 2012, the patient

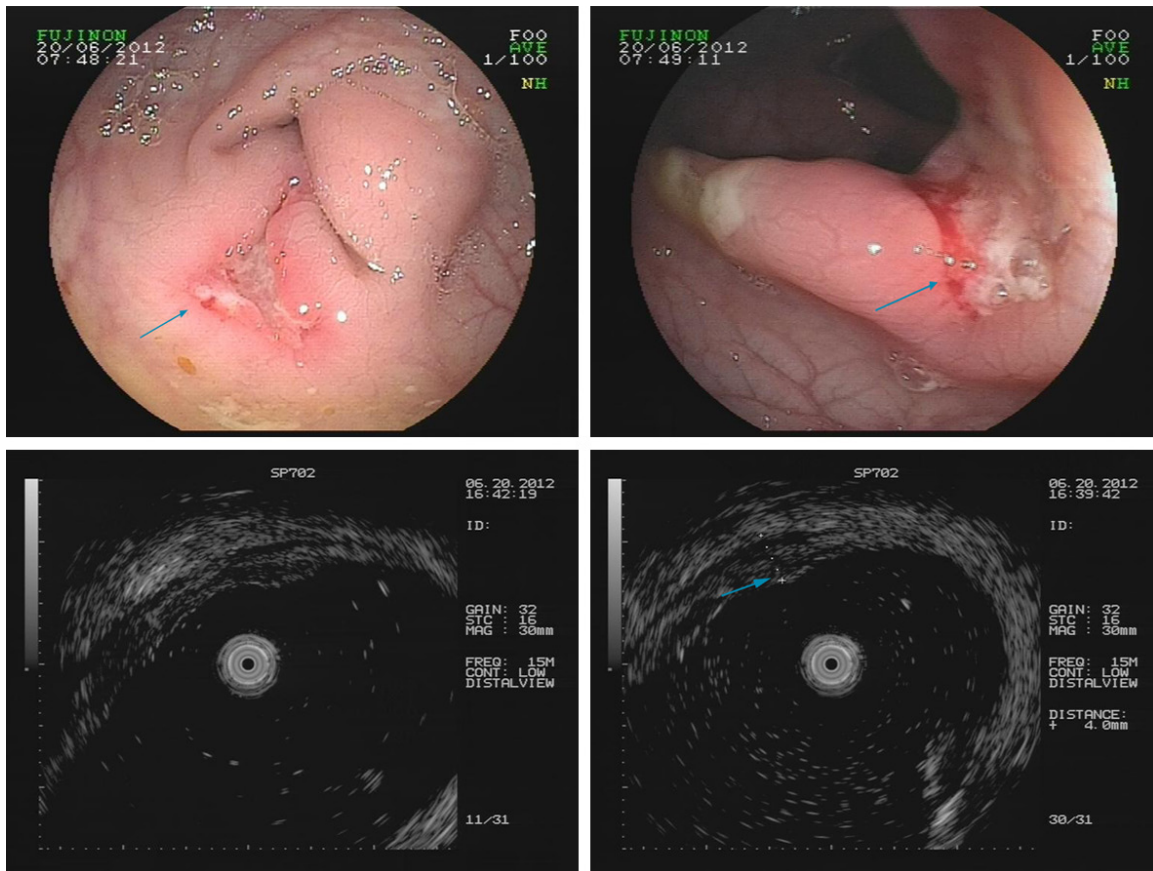
began receiving anti-TB treatment with isoniazid, rifampicin and ethambutol in another hospital. Two weeks later, ethambutol was withdrawn. However, the symptoms were not significantly relieved. She had a persistent fever (the highest temperature 39.5°C) and productive cough. She was sent to our clinic for further diagnosis and treatment, where laboratory tests showed that the autoantibody spectrum, anti-O and rheumatoid factor were within the normal range. TB antibody test in another hospital a month ago was weakly positive. The abdominal contrast-enhanced CT showed no abnormal signs, and the diagnosis of TB infection was questioned. Oral anti-TB treatment with isoniazid and rifampicin was continued, but high fever remained unrelieved, accompanied with multiple oral ulcers. Gastroscopy and lung CT scan in another hospital were not remarkable, and the diagnosis of Behcet's disease was suspected. No other special drug was administered. A diagnosis of Behcet's disease was made in the outpatient department of rheumatology of our hospital, and oral prednisone (15 mg daily) was prescribed. However, the patient still had intermittent fever (39.0°C), and she visited our hospital again for further treatment. Since the onset of the disease, she had lost about 10 kg body weight. She had been previously healthy and prone to develop mouth ulcers that were difficult to heal. Admission examination: T 36.4°C, P 102 bpm, R 18/min, BP 107/73 mmHg; conscious; mild anemia appearance; obvious body weight loss; superficial lymph nodes impalpable; heart and lungs not remarkable; abdomen soft, right side abdomen tender without rebound pain; liver and spleen not palpable below costal margin; no percussion pain over liver and kidney areas; bowel sound 5/min; no edema in the lower extremities; laboratory examinations: hemoglobin 109 g/L, platelet count  $577 \times 10^9/L$ , urine leukocytes 1+, stool occult blood positive; stool culture: not abnormal; blood biochemistry: globulin 37.00 g/L, total cholesterol 5.76 mmol/L; coagulation: activated partial thromboplastin time 50.70 sec, fibrinogen 7.30 g/L, ultra-sensitive C-reactive protein 84.4 mg/L, ESR 86-95 mm/h; TB antibody negative; PPD strongly positive; immune function monitoring: serum complement C3 1.87 g/L; rheumatology detection: ANA, ENA, ANCA normal; protein electrophoresis:  $\gamma$  globulins within normal range, immunoglobulin normal; infection related detection: to luidine Red agglutination test:

HIV, cytomegalovirus, EB virus, TORCH four, Weil-Felix reaction, Widal reactions are normal; procalcitonin 0.06 ng/ml, ferritin 183.3 ng/ml; eye examination: normal. Examinations in other hospitals: thyroid function, tumor markers, protein electrophoresis  $\gamma$  globulin, coagulation, Legionella antibodies, Mycoplasma pneumoniae antibodies, ANA, ANCA, parasite eggs (roundworm, hookworm, whipworm, pinworm) not remarkable; chlamydia antibody (+), liver function: globulin, abdominal ultrasonography: cholestasis, sediment ocean stones, uterine adnexa normal; thyroid ultrasound: no exception, colonoscopy, lungs, pelvic, intestinal CT normal; cerebrospinal fluid normal; bone marrow puncture: normal. Capsule endoscopy after admission showed multiple ulcers of the jejunum and ileum. Enteroscopy showed congestion, edema and easy bleeding of the terminal ileum, and multiple shallow ulcers measuring  $0.3 \times 0.4-0.8 \times 1.0$  cm, from which biopsy specimens were obtained. Multiple irregular ulcers of different sizes and shapes were seen from the anus 20 cm to the ileocecal valve; nodular change was seen in part of the ulcer edges; the lesions were in a jumping distribution; and the mucosa between the ulcers was normal (**Figure 1**). Shallow ulcers were seen in the local anal canal mucosa. Positron emission tomography-computed tomography (PET-CT) showed the following: 1) multiple small patches were seen in the colon and small intestine, where the punctate metabolism was increased; no obvious thickening and swelling were seen in the intestinal wall, based on which inflammatory infection or tuberculosis was suspected; 2) no significant high metabolic tumor lesion was seen in other organs of the body. Pathology study suspected the diagnosis of severe chronic inflammation in the terminal ileum, ascending colon and sigmoid colon mucosa; acute active (moderate) reactive lymphoid follicular hyperplasia and inflammatory necrosis. Further examinations were suggested to exclude Behcet's disease, Crohn's disease and intestinal tuberculosis. Immunohistochemistry excluded lymphoma and parasitic infection. Ultrasonic colonoscopy showed that the colonic mucosa was clear, intestinal wall with slightly thickened, submucosa showed High echo, muscularis propria was involved, the ultrasound presentation is consistent with the diagnosis of Crohn's disease, and did not supported lymphoma (**Figure 2**). Treatment with methylprednisolone (60 mg  $\times$  5 d) and quinolone antibiotics were initiated

## Atypical Crohn's disease diagnosed



**Figure 1.** Enteroscopy showed congestive necrosis in the small intestine and multiple deep ulcers in the colon.



**Figure 2.** Ultrasound colonoscopy showed the Ultrasonic echo is higher than other diseases in the submucosa.

on June 20, 2012, followed by oral prednisone (50 mg) for a month. After the hormone therapy, temperature of the patient returned to normal, diarrhea disappeared, and appetite was improved, with occasional abdominal discomfort. Ultra-sensitive C-reactive protein re-examination showed 36-26 mg/L and ESR 64 mm/h. Gradually hormone was replaced by immunosuppressive agents after one month.

### Discussion

Intestinal tuberculosis and Crohn's disease are among important intestinal inflammatory dis-

eases, the incidence of which is on the rise in recent years. The clinical, iconographic and pathologic presentations of the two conditions are very similar. The misdiagnosis rate of Crohn's disease for tuberculosis is about 3.9% [1-3]. Clinical diagnosis mainly depends on history, symptoms, intestinal complications, laboratory findings and imaging evaluation. EUS can distinguish the gastrointestinal cavity wall layers structure, can shows the relationship between the lesion and the chamber wall, also clearly shows the structure of its adjacent tissues, with advantages for the diagnosis of gastrointestinal diseases. EUS has an excel-

lent accuracy in the assessment of Crohn's perianal fistula and abscess. The EUS finding of transmural disease may allow for the differentiation of CD and UC or CD and lymphoma.

The diagnosis of Crohn's disease mainly depends on the following evidence: 1) discontinuous or segmental lesions; 2) cobblestoning and longitudinal ulcers; 3) inflammatory lesions of the entire intestinal wall; 4) non-caseous granuloma; 5) the presence of fistula; and 6) anal lesions (excluding intestinal tuberculosis, amoebic dysentery, Yersinia infection, chronic intestinal infection, eliminate intestinal lymphoma, diverticulitis, ischemic colitis and Behcet's disease). 1, 2, 3 are suspected, plus 4, 5, 6 any one can be diagnosed. 4 plus 1, 2, 3 any two can be diagnosed [4, 5]. The diagnosis of tuberculosis mainly depends on the presence of the caseous necrotizing granulomatous bowel wall or mesenteric lymph nodes, histological biopsy, positive culture. The typical tuberculosis change based on the clinical signs, symptoms, X-ray and six weeks of anti-TB treatment, the symptoms were relieved [6]. The case analysis the patient should be considered the following diseases: Crohn's disease, support: pathological granulomas, small intestine and colon ulcers were skip lesions. nonsupport: the ulcer is not multiple aphthous-like ulcerations and/or linear ulcerations, especially Ultrasonic echo is higher in the submucosa and muscularis propria than any other diseases such as lymphoma, TB and Behcet's disease in the EUS pictures. Behcet's disease, support: recurrent oral ulcers, polyangitis and intestinal ulcers, globulin increases. nonsupport: no genital ulcers, no eye lesions and showed no skin lesions, the gamma globulin is normal. Lymphoma: lymphoma no evidence (no lymph nodes, LDH, bone marrow aspiration, blood tests and PET-CT are normal). Intestinal tuberculosis: support: PPD strong positive, fever, suppressed menstruation and tuberculosis symptoms. nonsupport: anti-TB therapy is invalid, intestinal change is not typical. Special infection: no support basis (etiology, blood and procalcitonin are normal). Endoscopic ultrasound: the colonic mucosa was clear, intestinal wall with slightly thickened, submucosa showed High echo, muscularis propria was involved [7-11]. 2 times immunohistochemical examination are negative in lymphoma which confirms our judgment. In a short, the case show that After appropriate treatment in patient, the symptoms of patient's are not

improvement. In the short term, it is necessary to review colonoscopy, endoscopic ultrasound is an important means to identify the Crohn's disease. When the treatment is invalid of the patient, the diagnosis and the relevant checks need to reconsider. Hormone use must be in sufficient quantities, otherwise the diagnosis and treatment were in dilemma.

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### Disclosure of conflict of interest

None.

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