



CROHN'S DISEASE: ETIOLOGY, DIAGNOSIS, AND TREATMENT

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Introduction

Crohn's disease is a chronic inflammatory bowel disease (IBD) that can affect any part of the gastrointestinal tract, from the mouth to the anus. The disease most commonly involves the terminal ileum and the colon. It is characterized by transmural inflammation, which can lead to various complications such as strictures, fistulas, and abscesses. Crohn's disease typically follows a relapsing and remitting course and significantly affects patients' quality of life.

Keywords: chronic inflammatory bowel, transmural inflammation, strictures, fistulas, and abscesses.

Etiology

The exact etiology of Crohn's disease remains unclear; however, it is considered a multifactorial condition resulting from the interaction of genetic, immunological, environmental, and microbial factors.

Genetic predisposition plays an important role, as Crohn's disease is more common in individuals with a family history of inflammatory bowel disease. Several susceptibility genes have been identified, including NOD2/CARD15, which is associated with impaired immune responses to intestinal bacteria.

Immune system dysfunction is a central mechanism in the pathogenesis of Crohn's disease. An abnormal immune response to normal gut microbiota leads to chronic intestinal inflammation. Both innate and adaptive immune systems are involved, with excessive production of pro-inflammatory cytokines such as tumor necrosis factor-alpha (TNF- α), interleukins, and interferons.

Environmental factors also contribute to disease development and progression. Smoking is a well-established risk factor that worsens disease severity and increases the likelihood of complications. Dietary habits, psychological stress, and the use of certain medications such as nonsteroidal anti-inflammatory drugs (NSAIDs) may also trigger or exacerbate symptoms. Additionally, alterations in the intestinal microbiota (dysbiosis) are believed to play a significant role in disease onset.

Diagnosis

The diagnosis of Crohn's disease is based on a combination of clinical presentation, laboratory findings, endoscopic evaluation, histopathology, and imaging studies.

Clinically, patients often present with chronic diarrhea, abdominal pain, weight loss, fatigue, and fever. Extraintestinal manifestations may include skin, joint, eye, and liver involvement.



Laboratory investigations commonly reveal anemia, elevated inflammatory markers such as C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR), hypoalbuminemia, and electrolyte disturbances. Stool tests are performed to exclude infectious causes and to measure fecal calprotectin, which serves as a noninvasive marker of intestinal inflammation.

Endoscopic examination, particularly colonoscopy with biopsy, is essential for diagnosis. Typical endoscopic findings include skip lesions, deep longitudinal ulcers, aphthous ulcers, and a cobblestone appearance of the mucosa. Histological examination may show transmural inflammation and granuloma formation.

Imaging modalities such as CT enterography and MRI enterography are valuable for assessing disease extent, activity, and complications such as strictures, fistulas, and abscesses.

Treatment

The primary goals of Crohn's disease treatment are to induce and maintain remission, control symptoms, prevent complications, and improve quality of life. Treatment strategies are individualized based on disease severity, location, and patient response.

Pharmacological therapy includes:

Aminosalicylates, mainly used in mild cases (limited effectiveness).

Corticosteroids, effective for short-term induction of remission during acute flares.

Immunomodulators, such as azathioprine and methotrexate, used for maintenance therapy.

Biologic agents, including anti-TNF drugs (infliximab, adalimumab), anti-integrins, and anti-interleukin therapies, which target specific inflammatory pathways.

Nutritional management is an important aspect of treatment, especially in patients with malnutrition. Exclusive enteral nutrition may be beneficial, particularly in pediatric patients.

Surgical intervention is indicated for complications such as bowel obstruction, perforation, fistulas, abscesses, or failure of medical therapy. However, surgery is not curative, and disease recurrence is common.

Conclusion

Crohn's disease is a chronic inflammatory disorder with a complex and multifactorial etiology. Accurate diagnosis requires an integrated clinical, laboratory, endoscopic, and imaging approach. Although there is no definitive cure, advances in medical and biologic therapies have significantly improved disease outcomes. Long-term follow-up and individualized management remain essential due to the relapsing nature of the disease.

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