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INFLAMMATORY BOWEL DISEASES: CLINICAL CHARACTERISTICS AND MODERN TREATMENT METHODS

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Abstract: Inflammatory bowel diseases (IBD), primarily ulcerative colitis and Crohn's disease, are chronic, relapsing inflammatory disorders of the gastrointestinal tract that can significantly affect patients' quality of life. The clinical manifestations of IBD vary depending on the localization, extent, and severity of inflammation and may include abdominal pain, diarrhea, rectal bleeding, weight loss, fatigue, fever, and extraintestinal manifestations. Early diagnosis and appropriate assessment of disease activity are essential for preventing complications and achieving sustained remission. Modern diagnosis is based on a combination of clinical assessment, laboratory investigations, fecal biomarkers, endoscopy with biopsy, and cross-sectional imaging. Treatment strategies have evolved substantially, with conventional anti-inflammatory drugs, corticosteroids, immunomodulators, biologic agents, and targeted small-molecule therapies being used according to disease severity and individual patient characteristics. The therapeutic goals have also shifted from symptomatic control toward sustained clinical and endoscopic remission, prevention of structural bowel damage, and improvement of long-term quality of life. This article reviews the main clinical characteristics, diagnostic approaches, and modern treatment methods for inflammatory bowel diseases.

Keywords: inflammatory bowel disease, ulcerative colitis, Crohn's disease, intestinal inflammation, colonoscopy, fecal calprotectin, biologic therapy, immunomodulators, targeted therapy, clinical remission.

Introduction. Inflammatory bowel diseases are chronic inflammatory disorders characterized by recurrent or persistent inflammation of the gastrointestinal tract. The two principal forms are ulcerative colitis (UC) and Crohn's disease (CD).

Although these diseases have different patterns of gastrointestinal involvement, both can result in recurrent symptoms, impaired nutritional status, reduced quality of life, and significant complications. IBD may occur at any age but frequently begins in adolescence or young adulthood. The pathogenesis of IBD is multifactorial and involves interactions between genetic susceptibility, intestinal microbiota, environmental factors, immune dysregulation, and intestinal barrier dysfunction. The increasing prevalence of IBD worldwide makes early recognition and effective long-term management an important issue in modern gastroenterology.

The aim of this article is to analyze the clinical characteristics of inflammatory bowel diseases and to describe modern approaches to their diagnosis, treatment, monitoring, and prevention of complications.

Materials and methods. This review is based on the analysis of contemporary scientific literature and international clinical guidelines concerning the diagnosis and management of

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inflammatory bowel diseases. Particular attention was given to clinical manifestations, laboratory and endoscopic diagnosis, disease activity assessment, conventional treatment, biologic therapy, targeted small-molecule therapies, and the principles of long-term disease monitoring.

Etiology and pathogenesis. The exact cause of IBD remains incompletely understood. Current evidence suggests that the disease develops as a result of an abnormal immune response in genetically susceptible individuals.

Important contributing factors include:

- genetic predisposition;
- dysregulation of the intestinal immune response;
- alterations of the intestinal microbiota;
- impairment of the intestinal epithelial barrier;
- environmental factors;
- smoking and other lifestyle-related factors;
- previous intestinal infections and other potential triggers.

The interaction between these factors may lead to chronic activation of the intestinal immune system and persistent mucosal inflammation.

Clinical characteristics. The clinical presentation of IBD varies considerably between patients. Symptoms depend on the type of disease, location and extent of inflammation, disease activity, and the presence of complications.

Ulcerative colitis. Ulcerative colitis primarily affects the colon and rectum. Inflammation usually begins in the rectum and extends proximally in a continuous pattern.

The most common clinical manifestations include:

- frequent loose stools;
- bloody diarrhea;
- rectal bleeding;
- abdominal discomfort or pain;
- urgency to defecate;
- tenesmus;
- fatigue;
- reduced appetite;
- weight loss in severe disease.

In more active cases, patients may develop fever, tachycardia, anemia, and systemic manifestations.

Crohn's disease can affect any part of the gastrointestinal tract, from the mouth to the anus. The inflammation is typically segmental and may involve all layers of the intestinal wall.

Common symptoms include:

- chronic diarrhea;
- abdominal pain;
- weight loss;
- fatigue;
- fever;
- reduced appetite;
- nutritional deficiencies.

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Depending on the location and severity of disease, Crohn's disease may lead to strictures, fistulas, abscesses, and intestinal obstruction.

Extraintestinal manifestations. IBD is not limited to the gastrointestinal tract. Extraintestinal manifestations may involve multiple organ systems.

Important manifestations include:

- peripheral arthritis;
- axial spondyloarthritis;
- erythema nodosum;
- pyoderma gangrenosum;
- uveitis and episcleritis;
- hepatobiliary disorders;
- anemia and nutritional deficiencies.

The presence of extraintestinal manifestations can significantly influence treatment selection and quality of life.

Diagnostic methods. Diagnosis of IBD requires a combination of clinical, laboratory, endoscopic, histological, and imaging findings.

Routine blood tests may demonstrate anemia, leukocytosis, thrombocytosis, elevated inflammatory markers, and other abnormalities.

C-reactive protein (CRP) and erythrocyte sedimentation rate may provide information about systemic inflammatory activity.

Serum albumin and nutritional parameters are also important in patients with moderate-to-severe disease.

Fecal calprotectin is a widely used noninvasive biomarker of intestinal inflammation. It can be particularly useful for distinguishing active intestinal inflammatory processes from some non-inflammatory gastrointestinal disorders.

It can also be used during follow-up to assess response to treatment and detect possible subclinical inflammation.

However, fecal calprotectin is not specific for IBD and may be elevated in other gastrointestinal inflammatory conditions.

Endoscopy is a central component of IBD diagnosis.

Colonoscopy with ileal intubation and systematic biopsy sampling can help establish the diagnosis, determine the extent of disease, assess inflammatory activity, and identify dysplasia.

In ulcerative colitis, endoscopy typically demonstrates continuous mucosal inflammation beginning in the rectum.

In Crohn's disease, characteristic findings may include:

- aphthous ulcers;
- longitudinal ulcers;
- cobblestone appearance;
- skip lesions;
- strictures;
- fistulous openings.

Histological examination of biopsy specimens provides additional information and is important for establishing and confirming the diagnosis.

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Cross-sectional imaging is particularly important in Crohn's disease because inflammation may involve deeper layers of the bowel wall and surrounding tissues.

Magnetic resonance enterography and computed tomography enterography can help identify:

- bowel wall thickening;
- strictures;
- fistulas;
- abscesses;
- penetrating disease;
- small bowel involvement.

Magnetic resonance imaging is particularly useful when repeated imaging is expected because it avoids ionizing radiation.

Treatment principles. The treatment of IBD has changed significantly in recent decades. The main objectives are no longer limited to symptom relief. Modern treatment aims to achieve sustained clinical remission, biochemical improvement, endoscopic healing, prevention of complications, and preservation of quality of life.

Treatment should be individualized according to:

- disease type;
- disease location;
- severity and activity;
- previous treatment response;
- prognostic factors;
- presence of complications;
- comorbidities;
- patient preferences.

5-aminosalicylic acid preparations are commonly used in the treatment of mild-to-moderate ulcerative colitis. They may be administered orally, rectally, or through a combination of routes depending on disease extent.

Biologic therapy. The introduction of biologic therapies has significantly improved the management of moderate-to-severe IBD.

Important biologic treatment classes include:

- anti-tumor necrosis factor (anti-TNF) agents;
- anti-integrin therapy;
- interleukin-targeted therapies.

Anti-TNF agents such as infliximab and adalimumab have been used extensively in both Crohn's disease and ulcerative colitis.

Vedolizumab, an anti-integrin agent, acts primarily on lymphocyte trafficking to the gastrointestinal tract.

Interleukin-targeted therapies, including agents directed against IL-12/23 or IL-23 pathways, have expanded the therapeutic options available for patients with moderate-to-severe IBD.

Targeted small-molecule therapies. In recent years, targeted oral small-molecule therapies have become increasingly important.

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Janus kinase (JAK) inhibitors can suppress intracellular signaling pathways involved in inflammatory responses and have demonstrated efficacy in selected patients with ulcerative colitis and, depending on the agent and regulatory approval, other IBD settings.

Sphingosine-1-phosphate receptor modulators represent another targeted treatment approach used in selected patients with ulcerative colitis.

These therapies provide additional options for patients who do not respond adequately to conventional or biologic treatments.

Treat-to-target strategy. A modern approach to IBD management is the treat-to-target strategy.

The objective is not simply to make the patient feel better but to achieve measurable control of the underlying inflammatory process.

Important therapeutic targets include:

1. Clinical remission.
2. Normalization or significant improvement of inflammatory biomarkers.
3. Endoscopic improvement or healing.
4. Prevention of disease progression and structural complications.
5. Reduction of hospitalization and surgery.
6. Improvement of quality of life.

Regular monitoring is therefore an essential component of modern IBD management.

Nutritional management. Nutritional assessment is important because chronic intestinal inflammation may result in malnutrition, anemia, vitamin deficiencies, and weight loss.

Patients should be evaluated for:

- iron deficiency;
- vitamin B12 deficiency;
- folate deficiency;
- vitamin D deficiency;
- protein-energy malnutrition.

Nutritional interventions should be individualized according to disease activity and the patient's nutritional status.

Surgical treatment. Surgery remains an important component of IBD management in selected cases. In ulcerative colitis, surgery may be considered in patients with medically refractory disease, severe complications, dysplasia, or colorectal cancer.

In Crohn's disease, surgical intervention may be required for complications such as strictures, obstruction, fistulas, abscesses, or medically refractory localized disease. However, surgery does not necessarily eliminate the underlying inflammatory tendency in Crohn's disease, and postoperative monitoring remains important.

Research results and discussion. Inflammatory bowel diseases are complex chronic conditions requiring long-term multidisciplinary management. Advances in diagnostic technologies and therapeutic agents have significantly improved the ability to control disease activity and prevent complications.

Endoscopic assessment remains central to diagnosis and monitoring because clinical symptoms alone do not always accurately reflect the degree of mucosal inflammation. Fecal calprotectin and CRP provide useful noninvasive information and may assist in determining the need for further evaluation.

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The emergence of biologic and targeted small-molecule therapies has expanded treatment options for patients with moderate-to-severe disease. Nevertheless, treatment selection should be individualized and based on disease severity, prognostic factors, previous treatment exposure, safety considerations, and patient preferences. An important contemporary concept is the transition from symptom-based management toward objective disease control. Achieving sustained remission and mucosal healing may reduce the risk of complications and improve long-term outcomes.

Conclusion. Inflammatory bowel diseases, particularly ulcerative colitis and Crohn's disease, are chronic disorders characterized by recurrent gastrointestinal inflammation and a wide spectrum of clinical manifestations. Early diagnosis based on clinical evaluation, laboratory testing, fecal biomarkers, endoscopy with biopsy, and appropriate imaging is essential.

Modern treatment includes 5-aminosalicylates, corticosteroids, immunomodulators, biologic agents, and targeted small-molecule therapies. Treatment should be individualized and guided by objective assessment of disease activity.

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