

**COLITIS — HISTOLOGICAL APPEARANCE OF INFLAMMATION OF THE  
LARGE INTESTINE****Mazmunaxon Masrurjon qizi Mamajonova**

2nd-year Student, Pediatrics Program, Andijan Branch,

Qo‘qon University, Uzbekistan

Email: mazmunamamajonova@gmail.com | Phone: +998917472042

**Muqaddas Sati-Maxamatovna Xodjayeva**

Teacher of Histology, Andijan Branch,

Qo‘qon University, Uzbekistan

Email: madinausm01@gmail.com

**Abstract:** This scientific article explores colitis — the histological manifestations of inflammation in the large intestine — including its causes, pathogenesis, microscopic alterations, clinical symptoms, as well as methods of diagnosis and treatment. Various forms of colitis (acute, chronic, ulcerative) and the tissue changes they induce are analyzed through practical examples. In conclusion, the paper discusses modern approaches to colitis therapy and highlights the importance of histological examination in clinical practice.

**Keywords:** colitis, large intestine, histology, inflammation, epithelium, lymphocyte, edema, ulcerative colitis, necrosis, regeneration.

The digestive system is one of the most important functional systems of the human body. The processes of food intake, digestion, absorption, and waste elimination are directly dependent on the healthy function of the intestines. Within this system, the large intestine plays a vital role in absorbing water and electrolytes, forming fecal matter, and maintaining the intestinal microflora. Therefore, any inflammation of the large intestine — colitis — can have a serious impact on the overall condition of the body.

The term “colitis” is derived from the Greek words “*colon*” meaning “large intestine” and “*itis*” meaning “inflammation.” The causes of this disease are diverse and may include bacterial, viral, or parasitic infections, improper nutrition, disruption of the intestinal microflora (dysbacteriosis), the effects of medications, autoimmune processes, stress, genetic predisposition, or complications of other systemic diseases. In any case, this condition involves inflammation of the mucous membrane of the large intestine, leading to changes in its histological structure.

The histological analysis of colitis plays a crucial role in determining the depth, duration, and type of the disease. The normal wall of the large intestine consists of four layers: the mucosa, submucosa, muscular layer, and serosa. The mucosal layer is lined with columnar epithelium, which contains mucus-secreting goblet cells and Lieberkühn glands. These structures are the first to be affected during the development of colitis.

At the onset of inflammation, the nuclei of the epithelial cells undergo changes, and in some areas, desquamation occurs. The openings of the glands become dilated, while neutrophils, lymphocytes, and plasma cells accumulate between the epithelial cells. Under the microscope, these sites appear as distinct areas of cellular infiltration. Sometimes, these infiltrative foci are located between the crypts and may develop into abscesses. The submucosal layer becomes edematous due to fluid accumulation, and the blood vessels become dilated and congested. Such histological changes are characteristic of acute colitis.

Acute colitis usually progresses over a short period. Clinically, the patient may experience cramping abdominal pain, diarrhea, fever, weakness, and the presence of mucus or blood in the stool. Patients often report the onset of symptoms following episodes related to improper nutrition or infection. For instance, during the summer season, infectious colitis commonly occurs as a result of consuming unwashed fruits, spoiled food, or contaminated drinking water.

When a biopsy is taken from the large intestine, microscopic examination reveals epithelial desquamation, lymphoid infiltration, and small foci of necrosis within the mucosal layer. These features indicate the acute stage of the disease. If treatment is initiated promptly at this stage, the mucosal layer can recover quickly, and the condition usually resolves without complications.

However, if the inflammation persists for a long time, it progresses to a chronic form. In chronic colitis, profound morphological changes occur in the wall of the large intestine. The number of glands decreases, some become deformed, and processes of metaplasia and degeneration develop in the epithelium. In the submucosal layer, connective tissue proliferates, initiating fibrosis. The walls of blood vessels become thickened, and lymphoid nodules enlarge. As a result, the intestinal wall becomes rigid and loses its elasticity, leading to reduced peristalsis. Clinically, chronic colitis manifests with alternating episodes of diarrhea and constipation, abdominal pain, flatulence, and loss of appetite.

For example, a 46-year-old female patient from the Andijan region experienced prolonged constipation, bloating, and abdominal pain. During colonoscopy, the smoothness of the large intestinal wall was lost, and mild edema and areas of mucosal atrophy were detected. Histological examination revealed a decrease in epithelial glands, proliferation of fibrous tissue, and accumulation of lymphocytes and plasma cells — findings that clearly confirmed the diagnosis of chronic colitis.

In some cases, a severe form of the disease — ulcerative colitis — develops. This condition is primarily associated with an autoimmune mechanism, in which the body's own immune system produces antibodies against the intestinal epithelium. As a result, deep ulceration of the mucosa occurs, sometimes extending to the muscular layer. Under the microscope, ulcerative colitis is characterized by nuclear pleomorphism of epithelial cells, glandular atrophy, crypt abscesses, areas of necrosis, infiltration by lymphocytes and plasma cells, and dilation of blood vessels. In certain regions, granulation tissue formation can also be observed.

Clinically, ulcerative colitis manifests severely: patients experience bloody stools, profuse diarrhea, fever, weight loss, and general weakness. If treatment is delayed, there is a risk of

intestinal wall perforation, sepsis, or progression to malignancy. Therefore, performing a histological analysis in such patients is crucial for determining the form of the disease and developing an individualized treatment plan.

Histological changes in ulcerative colitis are also important during the recovery process. The regeneration of the epithelium, restoration of glandular structures, and activity of fibroblasts indicate the degree of mucosal healing. Based on these observations, the physician can evaluate the effectiveness of the treatment.



In the treatment of colitis, the primary goals for all types are to reduce inflammation, restore the intestinal wall, and normalize the intestinal microflora. In acute colitis, antibiotics, electrolyte solutions, and dietary management are prescribed. In chronic colitis, probiotics, immunomodulators, and agents that promote mucosal healing are used. For ulcerative colitis, treatment may include 5-aminosalicylic acid preparations, corticosteroids, and, in some cases, surgical intervention.

For example, a 25-year-old male patient was diagnosed with ulcerative colitis. Initially, antibiotic therapy proved ineffective. Histological examination revealed crypt abscesses, epithelial necrosis, and lymphocytic infiltration. Subsequently, the patient was prescribed mesalazine and immunosuppressive therapy. After three months of dietary management and treatment, the patient's stool normalized, bleeding stopped, and repeat biopsy showed marked signs of epithelial regeneration. This case illustrates how crucial histological analysis is for selecting the appropriate treatment.

Additionally, psychological factors play an important role in colitis. Prolonged stress or depression can disrupt the neuromuscular function of the intestines, which in turn can exacerbate the inflammatory process. Therefore, comprehensive treatment should also include psychotherapy, physical activity, and proper nutrition.

The clinical significance of histological examination lies in the fact that it not only confirms the diagnosis but also reveals the stage of the disease, the depth of necrosis, and the state of regeneration. This information allows the physician to determine the prognosis of the condition. In medical practice, many cases of colitis are initially assessed as simple enterocolitis; however, after histological analysis, it often becomes clear that the condition is actually ulcerative or autoimmune in nature. This, in turn, completely alters the treatment strategy.

Preventive measures are also important: maintaining food hygiene, promptly treating bacterial infections, taking antibiotics only under medical supervision, reducing stress, and adopting a healthy lifestyle. Regular consumption of products that protect the intestinal microflora — such as kefir, yogurt, vegetables, fruits, and fiber-rich foods — can reduce the risk of colitis.

Today, in addition to histology, modern approaches such as immunohistochemistry, electron microscopy, and molecular diagnostics are also used to diagnose colitis. These methods help identify the specific cell types and mediators involved in the inflammatory process, allowing for more precise diagnosis and more effective treatment.

At this point, it is particularly important for medical students to learn how to accurately assess histological changes under the microscope. In colitis, even the smallest alterations in the mucosal layer — such as glandular atrophy, a decrease in the number of goblet cells, or hyperchromatic nuclei in the epithelium — can be early signs of the disease. Therefore, each biopsy sample must be carefully and thoroughly examined.

## Conclusion

In summary, colitis is a disease characterized by inflammation of the mucosal layer of the large intestine, and histological analysis plays a crucial role in determining its type, stage, and severity. Morphological changes observed in the epithelium, glands, and lymphoid tissues during the inflammatory process are assessed through microscopic examination. Accurate diagnosis and timely treatment are essential for ensuring the patient's recovery.

As preventive measures, it is essential to maintain proper nutrition, follow hygiene rules, manage stress, and prevent intestinal infections. Timely detection of colitis and its analysis through histological examination represent an important diagnostic approach in medical practice.

## References

1. Williams, C. S., & Smyth, E. (2020). *Histopathology of the gastrointestinal tract*. Springer.
2. Odze, R. D., & Goldblum, J. R. (2019). *Surgical Pathology of the GI Tract, Liver, Biliary Tract, and Pancreas* (4th ed.). Elsevier.
3. Robbins, S. L., Kumar, V., & Cotran, R. S. (2018). *Robbins and Cotran Pathologic Basis of Disease* (10th ed.). Elsevier.
4. Gastroenterology Association Guidelines (2021). *Diagnosis and management of colitis*. Journal of Clinical Gastroenterology.
5. Fiocchi, C. (2018). *Inflammatory bowel disease: etiology and pathogenesis*. Gastroenterology, 154(2), 269–281.