Arh. farm. 2025; 75: 167 – 180 *Review article/Pregledni rad*

The use of corticosteroids in the treatment of ulcerative colitis: a brief overview

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Received: 24 February 2025; Revised in revised forme: 7 June 2025; Accepted: 14 June 2025

Abstract

Ulcerative colitis (UC) is a chronic inflammatory bowel disease characterized by the relapsing inflammation of the colonic mucosa. Corticosteroids have long been a cornerstone in the management of moderate to severe UC, particularly during acute flares. This review aims to provide a focused overview of the rationale behind corticosteroid use, including their mechanisms of action, clinical efficacy, and challenges in everyday practice such as steroid dependency, adverse effects, and inappropriate long-term use. Despite their effectiveness in inducing remission, corticosteroids are not suitable for maintenance therapy and should be used judiciously in combination with other treatments. Current best-practice recommendations emphasize minimizing steroid exposure and encouraging the use of steroid-sparing agents. Close monitoring by specialists remains essential for optimizing outcomes and ensuring patient safety.

Key words: corticosteroids, inflammatory bowel disease, ulcerative colitis

https://doi.org/10.5937/arhfarm75-57020

Introduction

Ulcerative colitis (UC) is a chronic inflammatory illness that causes the lining of the large intestine to remain inflamed. It has a chronic, recurrent course and varies in severity in its effects on the colon, including the rectum, which is almost always affected in ulcerative colitis (1, 2, 3).

Epidemiology and Clinical Features of Ulcerative Colitis

The term inflammatory bowel disease (IBD) refers to both autoimmune diseases – Crohn's disease and ulcerative colitis. New data suggest that the incidence and prevalence of IBD are still increasing worldwide, and approximately 0.2% of the European population suffer from IBD at the present time. The incidence is still rising, and the majority of individuals are diagnosed during adolescence or early adulthood, which reflects the typical age of onset for IBD. Furthermore, IBD is becoming a worldwide illness with rising frequency on every continent after initially appearing in recently developed nations in Asia, South America, and the Middle East. Understanding the global epidemiological patterns of IBD can help us better manage the impact of the disease over time (4, 5).

Ulcerative colitis is similar to Crohn’s disease, but there are distinctive differences. Ulcerative colitis affects only the colon and cannot “migrate” into the small intestine. On the other hand, Crohn's disease can impact the entire digestive tract. For ulcerative colitis, a colectomy – the surgical removal of the colon – can be regarded as a “cure.” Ulcerative colitis typically affects the superficial layers of the colonic mucosa, causing inflammation in the colon, while other parts of the gut remain unaffected.

For patients with mild-to-moderate ulcerative colitis, first-line treatment includes oral 5-ASA, often combined with rectal 5-ASA for distal disease, while corticosteroids or colonic-release budesonide are options for those unresponsive to 5-ASA. Oral prednisolone is recommended for the induction of remission in non-hospitalized patients with moderately-to-severely active UC. When conventional treatment fails or, in cases of high disease activity, in advance, biologic therapies (anti-TNF agents, vedolizumab, ustekinumab) or tofacitinib are recommended for induction, with thiopurines reserved for maintenance in steroid-dependent or 5-ASA-intolerant patients (1, 2, 3).

This article is a narrative review aimed at summarizing current knowledge on the use of corticosteroids in ulcerative colitis. The literature search was conducted using databases such as PubMed and the Cochrane Library. Relevant articles published in English up to 2025 were selected based on their relevance to the topic. Search terms included “ulcerative colitis,” “inflammatory bowel disease,” “corticosteroids,” “treatment,” and “management.” Both clinical trials and guidelines were considered to ensure a comprehensive overview.

The article has been divided into four major sections. The first section provides an overview of ulcerative colitis (UC) and its epidemiology. The second section summarizes treatment options for UC that have been documented in the literature. The third part of the article provides an overview of the findings from a number of investigations into the application of corticosteroids to ulcerative colitis. The fourth and final section is

the conclusion, which summarizes the key points and provides closing remarks about the application of corticosteroids in ulcerative colitis.

Treatment of Ulcerative Colitis

The degree, distribution, and pattern of ulcerative colitis all influence the course of treatment. This includes the occurrence of extraintestinal signs, the course of the disease, the response to prior treatments, the frequency of relapses, and the adverse effects of the medications. It is crucial to differentiate between patients with mild or moderately active ulcerative colitis who can get treatment as outpatients and those with severe ulcerative colitis who need to be hospitalized (2).

Doctors can now treat inflammatory bowel disorders with the following classes of medications:

1. Aminosalicylates: mesalazine (Salofalk, Pentasa) and sulfasalazine (Sulfasalazin, Salazopyrin)
2. Glucocorticoids: prednisolone (Decortin), methylprednisolone (Medrol, Solu-Medrol), and budesonide (Budosan, Cortiment)
3. Immunosuppressants: azathioprine (Imuran) and cyclosporine (Sandimmune, Neoral)
4. Biological drugs: infliximab (Remicade), adalimumab (Humira), golimumab (Simponi), vedolizumab (Entyvio), and ustekinumab (Stelara) (6)
5. Antibiotics: ciprofloxacin (Ciprinol, Ciprobay) and metronidazole (Medazol) are not routinely used in ulcerative colitis treatment, as the disease is autoimmune rather than infectious. However, they may be prescribed in specific situations such as secondary bacterial infections (e.g., *Clostridioides difficile*), perianal abscesses, or perioperative management (6).

Pharmacology and Clinical Use of Corticosteroids

In recent years, biologics and novel small molecules have significantly improved the therapeutic options for the treatment of inflammatory bowel diseases, including ulcerative colitis. These drugs, which are used to target specific molecules in the immune response, allow clinicians to modify treatment algorithms and improve patients' quality of life. For active ulcerative colitis, which can range from moderate proctitis to severe pancolitis, corticosteroids continue to be the cornerstone of treatment despite advancements in biologic therapy (2, 3).

Patients with mild-to-moderate ulcerative colitis (UC) are usually treated with 5-aminosalicylates (5-ASA). In cases where patients do not respond to 5-ASA treatment, or in patients with moderately to severely active UC, corticosteroids (CSs), such as oral prednisolone, are typically recommended to induce remission (2).

Topical steroids can be administered alone in individuals who are intolerant to topical 5-ASA formulations, or in combination with oral 5-ASA (e.g., mesalamine) in patients who

did not respond adequately to topical therapy, in order to induce remission in cases of active distal colitis (2, 7).

Two recent examples of second-generation CSs with a lower bioavailability because of their substantial first-pass hepatic metabolism and fewer systemic adverse effects are beclomethasone dipropionate (BDP) and budesonide. For individuals with mild-to-moderate ulcerative colitis that is resistant to mesalamine or those who are salicylate sensitive, Budesonide-MMX is a suggested induction therapy because of its low systemic absorption and controlled distribution throughout the colon (7). CORE I and II studies have evidenced the safety and effectiveness of budesonide MMX in achieving endoscopic and clinical remission (8, 9). Furthermore, budesonide MMX has demonstrated its effectiveness in the induction phase, namely in left-sided colitis, according to a recent systematic review (10). The effectiveness of BDP in moderate illness has been comparable to that of oral prednisone (11, 12). Active UC intravenous therapy, which has a 67% documented effectiveness, is advised in cases of severe disease (13).

Dosage-wise, a regimen of prednisolone commencing at 40 mg/day and reducing 5–10 mg weekly is advised for moderate disease; a shorter period of treatment is linked to early relapse (2). Oral prednisone is equally beneficial as a dose of 5 mg/day of beclomethasone dipropionate (DBP) for 4 weeks and 5 mg every other day for 4 weeks in patients with mild-to-moderate ulcerative colitis, according to a randomized controlled trial conducted in 2016 (14). The recommended dosage for budesonide MMX is 9 mg daily for eight weeks, with no tapering (9, 15). Since Truelove and Jewell's initial trial (16), intravenous medication has been the first-line treatment for severe acute UC. To date, a dose of 400 mg of hydrocortisone or 0.75–1 mg/kg of methylprednisolone has been used (17).

Use of Corticosteroids in the Treatment of Ulcerative Colitis

Historical Perspective and Real-World Application

More than 70 years after being used for the first time to treat rheumatoid arthritis, corticosteroids quickly rose to prominence as vital medications for the management of immune-mediated illnesses. After a number of clinical observations and the first randomized controlled trial in gastroenterology by the English pioneers in the field, corticosteroids became the preferred treatment for moderate to severe inflammation – initially in ulcerative colitis (UC), and subsequently in Crohn's disease (CD). Inflammatory bowel disease (IBD) was no exception. According to the results, 41.3% of UC patients receiving 25 mg of cortisone four times a day achieved clinical remission after six weeks, while the placebo group experienced this condition at a rate of 15.8% (18, 19). According to the National Crohn's Disease Cooperative Study, 60% of 250 patients with active UC who received prednisone at a dose of 0.5 to 0.75 mg/kg/day with a tapering regimen over 17 weeks, experienced clinical remission, compared to only 30% in the placebo group (20).

Following pivotal early clinical observations and the first randomized controlled trials, corticosteroids became a cornerstone in the treatment of moderate to severe UC.

Early studies reported clinical remission in up to 60% of patients receiving systemic corticosteroids, a rate significantly higher than that in the placebo groups (18–20).

However, almost 70 years after the publication of these studies, the use of corticosteroids in clinical practice in IBD is still far from optimal. A study of 2,385 patients reported that 14.8% met the definition of corticosteroid excess or dependence, with avoidable corticosteroid use in 50.7% of cases (annual incidence: 6.2%) (21).

A retrospective Spanish study, which included 392 patients with IBD in remission on immunosuppressive therapy, showed that 23% of patients received at least one course of corticosteroids during the follow-up period (22). However, this strategy was effective in the long term in only one third of the patients. Variables such as prescribing at the most appropriate time, correct dose, duration at appropriate intervals, and safety of these drugs should always be taken into account by the medical team when prescribing to patients with IBD (23). There is no doubt that the ongoing education of patients, general practitioners, and IBD subspecialists is essential to reduce excessive and prolonged use of corticosteroids (18).

Clinical Evidence and Observational Studies

Examining the use of steroids in remission induction therapy following an ulcerative colitis diagnosis was the goal of a 2019 study by Okayasu et al. From January 2008 to December 2014, the Japan Medical Data Center claims database was used in this retrospective observational study. The introduction of steroids following UC diagnosis was the intervention, and the primary outcome variables were the initiation time, the yearly rate of steroid usage, and the use of steroids during the first six months of remission induction therapy. During the trial period, 399 patients who had just received a UC diagnosis participated. The rate of steroid use at diagnosis was 58.4% after 2009, and it started to drop sharply every year after 2010. 52.2% of patients started taking steroids within 60 days after being diagnosed with UC. Six months after starting treatment, 23.7% of these patients were still using steroids, and 73.9% of them were on high-dose steroids. The authors of the study state that clinical practice guidelines for UC should encourage patients to use fewer steroids because many individuals continue to use them after being diagnosed with the condition (24).

In research conducted by Hyams et al., the clinical result after corticosteroid treatment for children with newly diagnosed ulcerative colitis was compared to UC treatment for those under sixteen. Pediatric Inflammatory Disease Collaborative Research Group registry database prospective data were collected for this study between January 2002 and March 2005. Every child with newly diagnosed inflammatory bowel disease under the age of sixteen was treated in accordance with the advice of their primary care physicians. At the time of diagnosis, thirty days later, and then every three months after that, demographic, clinical, and laboratory data were gathered. Results were assessed at three months and a year after patients were categorized as resistant, corticosteroid-sensitive, or corticosteroid-dependent. According to the results, 77 (79%) of the 97 individuals who were diagnosed with UC and followed up for at least a year, received corticosteroids (62 within 30 days of diagnosis and 15 between 31 days and 6 months). Of patients treated with corticosteroids (aged 11.3 years), 81% developed pancolitis and 81% had moderate/severe

illness at diagnosis. At three months, 60% of the patients who received early corticosteroid treatment had inactive illness, 27% had mild disease, and 11% had moderate/severe disease. Of the 62 patients who had received corticosteroid treatment in the past, 31 (50%) were deemed corticosteroid-responsive, and 28 (45%) were deemed corticosteroid-dependent at one year. In the first year, 4 patients (5%) who were on corticosteroids needed a colectomy. 61% of the corticosteroid-treated patients in this trial used immunomodulators. Even with regular treatment with immunomodulators, 45% of the patients still exhibit corticosteroid dependence, despite the fact that children with newly diagnosed UC have a great short-term therapeutic response to corticosteroids (25).

Adverse Effects and Safety Monitoring

Weight gain, glycemic issues, loss of mineral bone, higher risk of infections, psychiatric disorders, and peptic ulcers are among the common adverse events (AEs) experienced by patients on systemic CSs. To address the high frequency of adverse effects, a second generation of CSs with limited systemic absorption, such as budesonide and beclomethasone, has been introduced. Although they are not completely absent, these low-bioavailability CSs exhibit a decreased likelihood of adverse effects (26). Given the significant risk of corticosteroid-associated complications, it is essential to implement prophylactic measures and regular safety monitoring. Patients should receive calcium and vitamin D supplementation to reduce osteoporosis risk, and proton pump inhibitors (PPIs) may be prescribed to prevent gastrointestinal ulcers. Screening protocols including bone mineral density tests, blood glucose monitoring, and mental health assessments (for depression and anxiety) are recommended to detect and manage adverse effects promptly. A mineral bone density test, an ophthalmologic evaluation, laboratory tests (such as complete blood count, blood glucose, and serum lipid profile), and regular blood pressure checks are examples of mid-term treatments (>3 months) (27).

Steroid-Sparing and Minimization Strategies

Despite their undeniable ability to induce UC remission and manage illness flares, CSs are not recommended for sustaining remission because of their adverse effects (AEs), particularly when used for an extended period of time, which include hip fractures and serious cardiovascular events (21, 28). Several steroid-sparing medications (such as thiopurines, biologics, and small molecules) have been introduced to the market in recent years, and limited bioavailability CSs, like budesonide MMX, have been created to get around these restrictions in mild-to-moderate active UC. That being said, there was no commensurate decrease in the prescription of steroids (29).

Primary care doctors and medical facilities that lack experience with biological medications and the treatment of complex IBD are also likely to blame for the overprescription of CSs. When prescribing CSs, a gastroenterologist should use the lowest effective dosage for the shortest amount of time to prevent inappropriate practices like rapid tapering, short courses (less than three weeks), and ineffective prednisolone levels (less than 15 mg/day) (2).

Recent guidelines recommend a steroid-sparing strategy, where corticosteroids are used strictly for the induction of remission, while maintenance is achieved with immunomodulators or biologics. Steroid-free remission – defined as sustained clinical and endoscopic remission without corticosteroid use – is now considered a central therapeutic target in UC management.

Key indicators of corticosteroid dependency include:

- Continued use beyond 3 months;
- Relapse within 3 months after tapering;
- Need for repeated courses within a short time interval (21, 25).

Minimizing corticosteroid overuse requires:

- Clear indication for initiation (e.g., failure of 5-ASA in moderate disease);
- Appropriate dosing (≥40 mg/day of prednisone for moderate-severe disease);
- Timely tapering (no longer than 8–12 weeks);
- Early escalation to immunomodulators or biologics in non-responders (2, 23).

To support clinical decision-making, a simplified corticosteroid treatment algorithm can be summarized as follows (Figure 1):

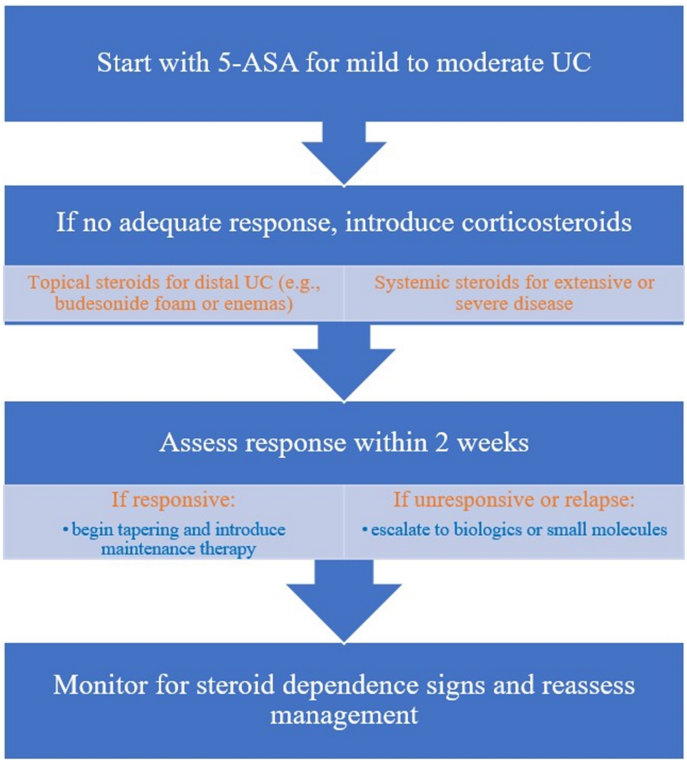

Figure 1. Simplified flowchart of corticosteroid use and monitoring in ulcerative colitis

Slika 1. Pojednostavljeni dijagram toka za primenu i praćenje kortikosteroidne terapije kod ulceroznog kolitisa

An additional factor contributing to corticosteroid overuse is the lack of timely transition to maintenance therapy. The delay in initiating thiopurines or biologics can prolong corticosteroid exposure, increasing the risk of adverse outcomes. Therefore, the implementation of structured treatment pathways and multidisciplinary collaboration is necessary to ensure the optimal timing of therapeutic escalation.

Corticosteroid Formulations and Dosing

Several corticosteroid formulations are currently used in the treatment of ulcerative colitis, each with specific dosing regimens and pharmacokinetic profiles. Table I provides a concise comparison of the most commonly prescribed corticosteroids, their formulations, typical doses, and relevant clinical notes.

Table I Corticosteroid formulations and dosing

Tabela I Formulacije i doziranje kortikosteroida

Corticosteroid	Formulation	Typical Dose	Notes
Prednisolone	Oral, Intravenous	40–60 mg/day orally	Most commonly used systemic corticosteroid
Methylprednisolone	Intravenous	40–60 mg/day intravenously	Used in severe cases
Budesonide	Oral (MMX), Enema	9 mg/day orally (MMX formulation)	Low systemic absorption, fewer side effects
Beclomethasone	Oral, Topical	Dose varies by formulation	Local effect, reduced systemic side effects

Comparative Therapeutics: Corticosteroids vs. Biologics and Small Molecules

Patients with UC can be treated with several effective treatments. The choice of the right drug depends on disease extent and severity, accurate balance between benefits and risks, and also the cost-effectiveness and availability of therapeutic agents. After conventional treatments have failed, monoclonal antibody and small molecule therapies seem to be the best choice, although limited data and no direct comparison between agents are available (except for vedolizumab and adalimumab) (30).

While corticosteroids remain highly effective for inducing remission in moderate to severe ulcerative colitis (UC), their long-term use is limited by significant adverse effects and lack of efficacy in maintaining remission. Biologics, such as anti-TNF agents (infliximab, adalimumab), anti-integrins (vedolizumab), and newer small molecules (e.g., Janus kinase inhibitors like tofacitinib), have transformed UC management by offering sustained remission and mucosal healing with more favorable safety profiles for long-term use.

Recent studies highlight these differences: Danese et al. demonstrated superior long-term remission rates and steroid-sparing effects with biologics compared to corticosteroids alone, while Sands et al. emphasized improved safety and quality-of-life outcomes achieved with the early introduction of biologic therapies (30, 31).

However, in a trial conducted by Sands et al., which involved patients with moderately to severely active ulcerative colitis, vedolizumab was superior to adalimumab in achieving clinical remission and making endoscopic improvement, but not in achieving corticosteroid-free clinical remission (31).

Biologics also carry risks, including immunosuppression-related infections and high treatment costs, which must be balanced against their benefits. Ultimately, treatment selection should be individualized, considering disease severity, patient comorbidities, and response to prior treatments. The integration of biologics and small molecules represents a paradigm shift towards steroid-free remission as a therapeutic goal, minimizing corticosteroid exposure and related complications. Large prospective head-to-head comparisons between drugs remain the only way to clearly understand the right positioning of treatments in patients with UC (30).

Limitations of Corticosteroids and the Importance of Steroid-Sparing Approaches

Despite their effectiveness in inducing remission, corticosteroids are associated with significant limitations, including a high risk of dependency and numerous adverse effects. Long-term corticosteroid use increases the risk of infections, metabolic complications, osteoporosis, and psychological disorders. Steroid dependency – defined as inability to taper corticosteroids without disease relapse – remains a major challenge in UC management.

Selinger et al. (32) reported that approximately 15% of patients with IBD meet criteria for corticosteroid excess or dependency, with half of these cases deemed avoidable. Similarly, Chhaya et al. (29) observed increasing trends in steroid dependency over a 20-year period, highlighting the need for early intervention with steroid-sparing agents. Lewis et al. demonstrated higher mortality rates associated with prolonged corticosteroid use compared to anti-TNF treatments, further emphasizing the need to limit corticosteroid exposure (28).

To reduce dependency and long-term harm, guidelines now stress the importance of steroid-sparing strategies, including early escalation to immunomodulators (e.g., azathioprine) or biologics (e.g., anti-TNF agents, vedolizumab), and defining steroid-free remission as a key therapeutic target. Regular assessment of steroid response and timely transition to maintenance therapy are essential components of modern UC management (33).

Recent advancements in ulcerative colitis treatment, particularly the introduction of Janus kinase (JAK) inhibitors such as tofacitinib, filgotinib, and upadacitinib, have expanded the therapeutic options beyond traditional corticosteroids. These novel agents offer rapid symptom control and effective induction and maintenance of remission,

especially for patients refractory to conventional treatments. Consequently, the role of corticosteroids is increasingly confined to short-term use, as modern treatments enable more personalized, steroid-sparing treatment strategies (34, 35).

Conclusion

The management of ulcerative colitis requires an individualized, stepwise approach based on disease severity and patient response. Corticosteroids remain the key option for the short-term induction of remission in moderate to severe cases; however, they should not be used for maintenance therapy due to the risk of serious adverse effects.

In line with the 2022 ECCO consensus guidelines (7), current recommendations emphasize that corticosteroids should be used only for the short-term induction of remission in moderately to severely active ulcerative colitis. They are not appropriate for maintenance therapy. A typical corticosteroid tapering regimen should last approximately 8–12 weeks. Patients who do not achieve clinical response within this period or who relapse during tapering should be promptly evaluated for escalation to steroid-sparing treatments, including thiopurines, biologics, or small molecules. The early identification of corticosteroid dependency (defined as continued need for steroids beyond 3 months or rapid relapse after withdrawal) is essential to minimize long-term harm and optimize patient outcomes (36, 37). Clinicians should actively monitor treatment response, adverse effects, and signs of steroid overuse. Regular follow-up with a gastroenterologist and timely therapeutic escalation are critical to achieving sustained, steroid-free remission and minimizing disease burden.

Acknowledgements

Aleksandar Radlović would like to extend his sincere gratitude to the best university professor and undisputed mentor, Dr. Teodora Safiye, for her selfless support, dedication, and expert advice.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Author contributions

AR: conceptualization, writing – original draft, visualization; TS: conceptualization, visualization, writing – review & editing, supervision; EM: conceptualization, visualization, writing – review & editing.

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Primena kortikosteroida u lečenju ulceroznog kolitisa: kratak pregled

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Kratak sadržaj

Ulcerozni kolitis (UK) je hronična inflamatorna bolest creva koju karakteriše recidivirajuća upala sluzokože debelog creva. Kortikosteroidi su dugo bili kamen temeljac u lečenju umerenog do teškog UK, posebno tokom akutnih pogoršanja bolesti. Ovaj pregled ima za cilj da pruži fokusiran prikaz obrazloženja upotrebe kortikosteroida, uključujući njihov mehanizam dejstva, kliničku efikasnost i izazove u svakodnevnoj praksi kao što su zavisnost od steroida, neželjeni efekti i neadekvatna dugotrajna primena. Uprkos svojoj efikasnosti u indukovanju remisije, kortikosteroidi nisu pogodni za terapiju održavanja i treba ih koristiti pažljivo, u kombinaciji sa drugim terapijama. Savremene preporuke zasnovane na najboljoj kliničkoj praksi naglašavaju potrebu za smanjenjem izloženosti steroidima i primenom lekova koji štede steroide. Pažljivo praćenje od strane lekara specijalista ostaje ključno za postizanje optimalnih ishoda i očuvanje bezbednosti pacijenata.

Ključne reči: kortikosteroidi, inflamatorne bolesti creva, ulcerozni kolitis