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Case report

The Occurrence of Postoperative Complications in Patients Undergoing Surgery due to Complications from Crohn's Disease: A Case Report

Vladimir Joksimović[1], Nikola Jankulovski[1], Svetozar Antović[1], Marija Joksimović[2], Ljubinka Mančeva[3]

[1]*University Clinic for Digestive Surgery, Clinical Centre Mother Theresa, Skopje, FYR Macedonia*
[2]*University Clinic for Gynecology and Obstetrics Skopje, FYR Macedonia*
[3]*General Hospital Strumica, Strumica, FYR Macedonia*

SUMMARY

Crohn's disease (CD) is a chronic inflammatory condition of the gastrointestinal tract that can give rise to strictures, inflammatory masses, fistulas, abscesses, hemorrhage, and cancer. This disease commonly affects the small bowel, colon, rectum or anus. Less commonly, it affects the stomach, esophagus and mouth. Often, the disease affects multiple areas of the gastrointestinal tract. The cause of CD is not known and there is no curative treatment. The current medical and surgical treatment is effective in controlling the disease, but even with optimal treatment, recurrences and relapses are frequent.

Various risk factors specific for the patients with conditions related to the CD can influence the outcome of the surgical treatment in the postoperative period. Those risk factors can be preoperative laboratory inflammatory markers such as WBC and CRP values, phlegmona of the anterior abdominal wall and preoperative interintestinal abscess, positive resection margins.

Here we present a case of a patient who was surgically treated as an emergent case because of the complication due to Crohn's disease. At presentation, the patient had leukocytosis, elevated CRP, anemia, low levels of total proteins, and albumin.

Key words: **M. Crohn, risk factors, complications**

Corresponding author:
Vladimir Joksimović
Email: vladimirjoksimovic@hotmail.com

INTRODUCTION

Crohn's disease (CD) is a chronic granulomatous inflammatory disease of the gastrointestinal (GI) tract with characteristic presentation of abdominal pain and diarrhea, which may be complicated by intestinal fistulization or obstruction. This disease usually affects the small intestine, colon or anus. Rarely, it can appeare in other parts of the gastrointestinal tract - stomach, esophagus and mouth and may exist at several places simultaneously. Crohn disease is an idiopathic disease and is believed to be the result of an imbalance between pro-inflammatory and anti-inflammatory mediators. Unpredictable flares and remissions characterize the long-term course (1-3). Despite significant progress in the medical treatment of Crohn's disease, most patients eventually require surgery. The combined approach in the treatment of this disease, including the drug treatment and timely surgical intervention (4), is the optimal treatment of this disease, thereby improving the quality of patient's life and reducing the costs of treatment (5). The aim of the surgical treatment is to achieve "long - lasting symptomatic relief".

Nearly 70–90% of Crohn's disease patients will undergo at least one operation during the course of CD (6, 7). Intestinal resection and surgery for perianal fistulas are the most common procedures. Indications for surgical intervention include obstruction, intra-abdominal or perianal abscess, enterocutaneous fistulas, and complex perianal disease. As medical therapies continue to improve, it is important that surgical therapies are chosen carefully (8). The postoperative complication rate following intestinal resection for CD is higher than for other benign diseases, despite the fact that most patients with CD are young and without significant comorbidities. Postoperative septic complications, including anastomotic leakages, enterocutaneous fistulae, and intra-abdominal abscesses, are especially troublesome, with incidence rates ranging between 5% and 20% (9-11) and are often the underlying causes of postoperative death (12). However, the risk factors for intra-abdominal septic complications (IASCs) which involve an anastomotic leakage, intra-abdominal abscess, or enterocutaneous fistula, still remain controversial. Some risk factors related to higher rates of IASCs include the following: preoperative steroids use (13, 14), preoperative abscess (13, 14), poor nutritional status (14, 15), low albumin levels (16), advanced age (17, 18), immune-modulating medications (19), the method of anastomosis (20), operating time (20, 21), duration of symptoms leading to surgery (22, 23), and a colo-colonic anastomosis.

According to Yung et al. (24), there are certain risk factors that influence the postoperative outcome and the occurrence of complications in Crohn's disease such as anemia and hypoproteinaemia. According to Fasio et al. (25), positive resection margins in the postoperative histopathological analysis affect the occurrence of postoperative complications and so do the duration of preoperative symptoms, poor nutritional status, etc. Also, according to Y Pennington et al. (26) and Shental O et al. (27), there are certain intraoperative risk factors that have an impact on the occurrence of postoperative complications as following: indication for surgery, intraoperative diagnosis, type of surgery, and positive resection margins.

AIMS

The aim of the paper was to present a case of a patient with CD, subjected to surgical treatment, and postoperative anastomosis-related intra-abdominal septic complication. In the further text, we shall discuss certain perioperative conditions and parameters as possible risk factors for IASCs in this case report.

CASE REPORT

We report a case of a 19-year - old male patient that presented as a medical emergency with severe pain in the stomach, absence of stool and winds in duration of four days prior to admission to our hospital. From his medical history, we found that six months previously he had been diagnosed with Crohn's disese following colonoscopy with ileoscopy and biopsy, after which CD was pathologically verified. Inital symptoms were pain in the right lower quadrant of the abdomen and diarrhea. The patient was treated with Salofalc (Mesalazine) 2 x 500mg for the previous six months and had a considerable amelioration of the symptoms until this episode.

On the day of admission, the patient was afebrile and looked severely ill. He underwent several diagnostic procedures: RTG of the abdomen, which revealed hidroaeric levels in formation; abdominal ultrasonography that indicated distended small bowel loops but

without fluid in the abdomen, and finally abdominal CT with intravenous contrast which confirmed obstruction in the region of the terminal ileum. Laboratory analysis showed the following (Table 1): mild leucocytosis (11.3 x 1000/ml), significant anaemia (Hgb 95 g/dl, Er 2.93, Hct 0.261), hypoalbuminemia (20g/l) including low total protein level (47 g/l), and elevated marker of inflammation (CRP 64 mg/dl).

Table 1. Preoperative laboratory values

CRP	Le	Er	Hct	TP	Albumin	Hgb
64.7	11.3	2.95	0.261	47	20	85

After appropriate preoperative preparation and appropriate fluid and electrolyte substitution, the patient was transferred to the operating room. Intraoperative finding was distended small bowel loops and the presence of a stenotic segment in the area of the terminal ileum, adhered to the mesocolon of colon ascendens. When we separated the mesocolon from the bowel loops we found a festering collection (Figure 1 and 2).

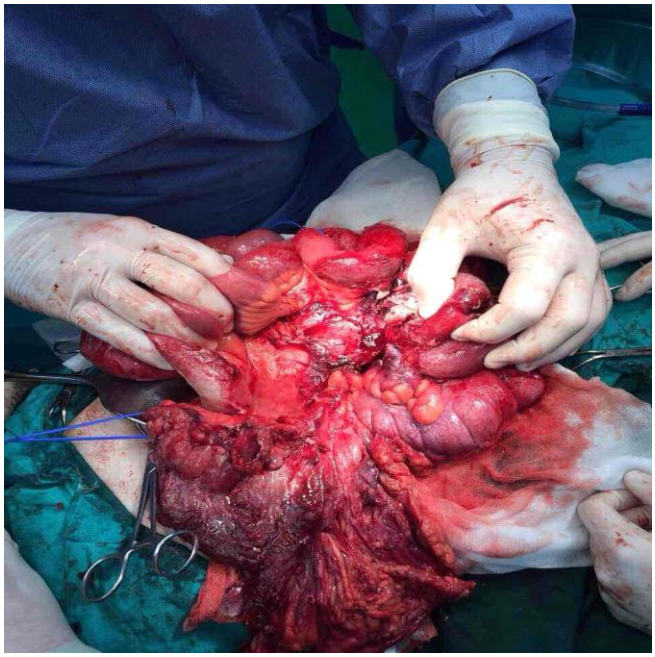

Figure 1. Intraoperative material

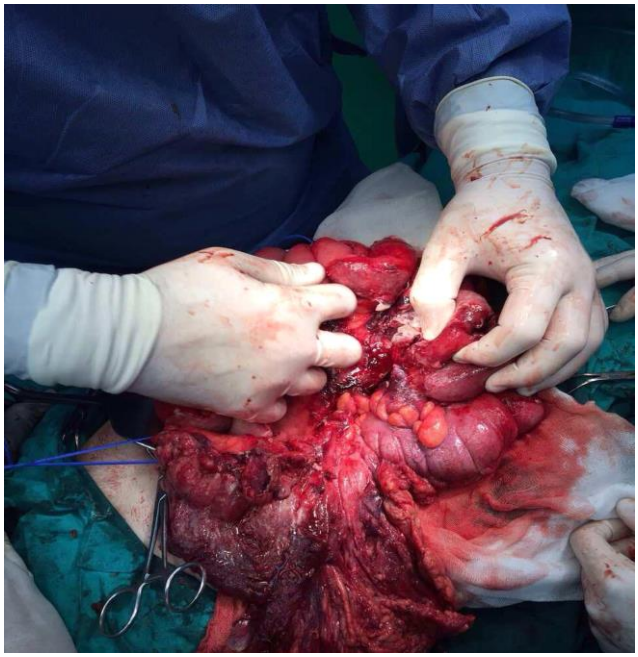

Figure 2. Intraoperative material

Copious lavage of the abdominal cavity and minimal bowel resection of the stenotic segment with creation of an ileo-colonic lateral-lateral manual anastomosis in two layers ensued. On the 8th postoperative day, intestinal content appeared out of the abdominal drain, accompanied by fever and deterioration of laboratory parameters in terms of increase of the inflamation markers. We set an indication for revision. Intraoperative finding was a dehiscence of the anastomosis with the development of diffuse peritonitis. We made a lavage and created unipolar ileostomy. Two weeks later, the patient was sent home in good overall health condition and proper functioning of the ileostomy.

DISCUSSION

There is a vast scientific debate about preoperative risk factors which may affect postoperative IASC manifestation in Crohn's desease patients. In our case, we noted several of the presumed risk factores – low total protein as well as albumin, anemia, elevated CRP and intra-abdominal abscess.

During an acute phase response, such as active Crohn's disease, albumin levels can fall (28), and thus low albumin could be indicative of the disease state rather than nutritional status alone. There are studies that found albumin less than 3.0 mg/dL to be associated with an increased risk of IASC (29, 30). Other studies using the same cutoff value, albumin < 3.0 mg/dL, did not find a similar association (31-33). These results are further complicated by a study including preoperative nutritional supplementation in patients with albumin less than 3.0 mg/dL (31). Moreover, albumin level less than 3.5 mg/dL (34, 35) and less than 4.0 mg/dL (36) were reported to have no association with IASC. A recent meta-analysis using many of these described studies found a correlation with low albumin and increased risk of IASC (37), but the definition of low albumin is quite inconsistent in these studies making even the pooled results difficult to determine.

Studies that investigated the presence of intra-abdominal abscess at the time of surgery for Crohn's disease found these patients at an increased risk of IASC (29, 38-40). In contrast, abscess was not associated with abdominal complications in other studies (35, 36). Some studies included abscesses that were drained preoperatively and found no association with abscess and postoperative IASC (36, 41). A meta-analysis which included a large number of studies that discussed intra-abdominal abscess found an increased risk of IASC with intra-abdominal abscess. Thus, the risk of IASC is higher when an intra-abdominal abscess is present, but the risk is likely ameliorated if an abscess is drained preoperatively.

CONCLUSION

The accent should be on the preoperative detection of the risk factors for IASC and preoperative preparation of patients, particularly nutritional supplementation and abscess drainage. Furthermore, in patients with multiple risk factors that cannot be optimized preoperatively, a diverting stoma should be considered instead of anastomosis as presented in this case report.

References

1. Kornbluth A, Sachar DB, Salomon P, Feldman M, Scharschmidt BF, Sleisenger. Crohn's disease. Pathophysiology, Diagnosis, and Management. 6th ed. Philadelphia, Pa: WB Saunders Co; 1998, Vol 2: 1708-34.

2. Panes J, Gomollon F, Taxonera C, et al. Crohn's disease: a review of current treatment with a focus on biologics. Drugs 2007;67(17):2511-37. https://doi.org/10.2165/00003495-200767170-00005

3. Tierney LM. Crohn's disease. Tierney LM, McPhee SJ, Papadakis MA, eds. Current Medical Diagnosis and Treatment. 40th ed. New York, NY: McGraw-Hill Professional Publishing; 2001, 638-42.

4. Geltzeiler CB, Hart KD, Lu KC, Deveney KE, Herzig DO, Tsikitis VL. Trends in the Surgical Management of Crohn's Disease. J Gastrointest Surg 2015;19 (10): 1862-8. https://doi.org/10.1007/s11605-015-2911-3

5. Bounthavong M, Li M, Watanabe JH. An evaluation of health care expenditures in Crohn's disease using the United States Medical Expenditure Panel Survey from 2003 to 2013. Res Social Adm Pharm 2016; 20. pii: S1551-7411(16)30093-6. https://doi.org/10.1016/j.sapharm.2016.05.042

6. Gardiner KR, Dasari BV. Operative management of small bowel Crohn's disease. Surg Clin North Am 2007; 87:587–610. https://doi.org/10.1016/j.suc.2007.03.011

7. Bernell O, Lapidus A, Hellers G. Risk factors for surgery and recurrence in 907 patients with primary ileocaecal Crohn's disease. Br J Surg 2000; 87:1697–701 https://doi.org/10.1046/j.1365-2168.2000.01589.x

8. Huang W, Tang Y, Nong L, Sun Y. Risk factors for postoperative intra-abdominal septic complications after surgery in Crohn's disease: A meta-analysis of observational studies. J Crohn's and Colitis 2015;9(3): 293–301 https://doi.org/10.1093/ecco-jcc/jju028

9. Post S, Betzler M, von Ditfurth B, Schurmann G, Kuppers P, Herfarth C. Risks of intestinal anastomoses in Crohn's disease. Ann Surg 1991;213:37–42. https://doi.org/10.1097/00000658-199101000-00007

10. Yamamoto T, Allan RN, Keighley MR. Risk factors for intra-abdominal sepsis after surgery in Crohn's disease. Dis Colon Rectum 2000;43:1141–5. https://doi.org/10.1007/BF02236563

11. Tartter PI, Driefuss RM, Malon AM, Heimann TM, Aufses AH. Relationship of postoperative septic complications and blood transfusions in patients with Crohn's disease. Am J Surg 1988;155:43–8. https://doi.org/10.1016/S0002-9610(88)80256-3

12. Yamamoto T, Allan RN, Keighley MR. Risk factors for intra-abdominal sepsis after surgery in Crohn's disease. Dis Colon Rectum 2000; 43:1141– 5. https://doi.org/10.1007/BF02236563

13. Tzivanakis A, Singh JC, Guy RJ, Travis SP, Mortensen NJ, George BD. Influence of risk factors on the safety of ileocolic anastomosis in Crohn's disease surgery. Dis Colon Rectum 2012; 55:558–62. https://doi.org/10.1097/DCR.0b013e318247c433

14. Alves A, Panis Y, Bouhnik Y, Pocard M, Vicaut E, Valleur P. Risk factors for intra-abdominal septic complications after a first ileocecal resection for Crohn's disease: a multivariate analysis in 161 consecutive patients. Dis Colon Rectum 2007; 50:331–6. https://doi.org/10.1007/s10350-006-0782-0

15. Iesalnieks I, Kilger A, Glass H, et al. Intraabdominal septic complications following bowel resection for Crohn's disease: detrimental influence on long-term outcome. Int J Colorectal Dis 2008; 23:1167–74. https://doi.org/10.1007/s00384-008-0534-9

16. Yamamoto T, Keighley MR. Factors affecting the incidence of postoperative septic complications and recurrence after strictureplasty for jejunoileal Crohn's disease. Am J Surg 1999; 178:240–5. https://doi.org/10.1016/S0002-9610(99)00165-8

17. Dietz DW, Laureti S, Strong SAet al. Safety and longterm efficacy of strictureplasty in 314 patients

with obstructing small bowel Crohn's disease. J Am Coll Surg 2001; 192:330–7. https://doi.org/10.1016/S1072-7515(01)00775-X

18. Nasir BS, Dozois EJ, Cima RR, et al. Perioperative anti-tumor necrosis factor therapy does not increase the rate of early postoperative complications in Crohn's disease. J Gastrointest Surg 2010; 14:1859–65. https://doi.org/10.1007/s11605-010-1341-5

19. Myrelid P, Olaison G, Sjodahl R, Nystrom PO, Almer S, Andersson P. Thiopurine therapy is associated with postoperative intra-abdominal septic complications in abdominal surgery for Crohn's disease. Dis Colon Rectum 2009; 52:1387–94. https://doi.org/10.1007/DCR.0b013e3181a7ba96

20. Kanazawa A, Yamana T, Okamoto K, Sahara R. Risk factors for postoperative intra-abdominal septic complications after bowel resection in patients with Crohn's disease. Dis Colon Rectum 2012; 55:957–62. https://doi.org/10.1097/DCR.0b013e3182617716

21. El-Hussuna A, Andersen J, Bisgaard Tet al. Biologic treatment or immunomodulation is not associated with postoperative anastomotic complications in abdominal surgery for Crohn's disease. Scand J Gastroenterol 2012; 47:662–8. https://doi.org/10.3109/00365521.2012.660540

22. Iesalnieks I, Kilger A, Glass H, et al. Intraabdominal septic complications following bowel resection for Crohn's disease: detrimental influence on long-term outcome. Int J Colorectal Dis 2008; 23:1167–74. https://doi.org/10.1007/s00384-008-0534-9

23. Shental O, Tulchinsky H, Greenberg R, Klausner JM, Avital S. Positive histological inflammatory margins are associated with increased risk for intra-abdominal septic complications in patients undergoing ileocolic resection for Crohn's disease. Dis Colon Rectum 2012; 55:1125–30. https://doi.org/10.1097/DCR.0b013e318267c74c

24. Yang SS, Yu CS, Yoon Y Setal. Risk factors for complications after bowel surgery in Korean patients with Crohn's disease. J Korean Surg Soc 2012; 83:141-8. http://dx.doi.org/10.4174/jkss.2012.83.3.1415

25. Fazio VW, Marchetti F, Church M et al. Effect of resection margins on the reccurence of Crohn's disease in the small bowel: a randomized controlled trial. Ann Surg 1996; 224: 563-71. http://dx.doi.org/10.1097/00000658-199610000-000147

26. Shental O, Tulchinsky H, Greenberg R et al. Positive histological inflammatory margins areassociated with increased risk for intra-abdominal septic complications in patients undergoing ileocolic resection for Crohn's disease. Dis Colon Rectum 2012; 11: 1125-30 http://dx.doi.org/10.1097/DCR.0b013e318267c74c4.

27. Pennington L, Hamilton SR, Bayless TM et al. Surgical management of Crohn's disease: influence of disease at margin resection. Ann Surg 1980; 192: 311-8. https://doi.org/10.1097/00000658-198009000-00006

28. Mijac DD, Janković GL, Jorga J, Krstić MN. Nutritional status in patients with active inflammatory bowel disease: prevalence of malnutrition and methods for routine nutritional assessment. Eur J Intern Med 2010; 21: 315-9. https://doi.org/10.1016/j.ejim.2010.04.012

29. Yamamoto T, Allan RN, Keighley MR. Risk factors for intraabdominal sepsis after surgery in Crohn's disease. Dis Colon Rectum 2000; 43: 1141-5. https://doi.org/10.1007/BF02236563

30. Myrelid P, Olaison G, Sjödahl R, Nyström PO, Almer S, Andersson P. Thiopurine therapy is associated with postoperative intraabdominal septic complications in abdominal surgery for Crohn's disease. Dis Colon Rectum 2009; 52: 1387-94. https://doi.org/10.1007/DCR.0b013e3181a7ba96

31. Post S, Betzler M, von Ditfurth B, Schürmann G, Küppers P, Herfarth C. Risks of intestinal anastomoses in Crohn's disease. Ann Surg 1991; 213: 37-42. https://doi.org/10.1097/00000658-199101000-00007

32. Shental O, Tulchinsky H, Greenberg R, Klausner JM, Avital S. Positive histological inflammatory margins are associated with increased risk for intra-abdominal septic complications in patients undergoing ileocolic resection for Crohn's disease. Dis Colon Rectum 2012; 55: 1125-30. https://doi.org/10.1097/DCR.0b013e318267c74c

33. Tay GS, Binion DG, Eastwood D, Otterson MF. Multivariate analysis suggests improved perioperative outcome in Crohn's disease patients receiving immunomodulator therapy after segmental resection and/or strictureplasty. Surgery 2003; 134(4): 565-572; discussion 572-3. https://doi.org/10.1016/S0039-6060(03)00298-8

34. Heimann TM, Greenstein AJ, Mechanic L, Aufses AH. Early complications following surgical treatment for Crohn's disease. Ann Surg 1985; 201: 494-8. https://doi.org/10.1097/00000658-198504000-00015

35. Resegotti A, Astegiano M, Farina EC, Ciccone G, Avagnina G, Giustetto A, Campra D, Fronda GR. Side-to-side stapled anastomosis strongly reduces anastomotic leak rates in Crohn's disease surgery. Dis Colon Rectum 2005; 48: 464-8. https://doi.org/10.1007/s10350-004-0786-6

36. Kanazawa A, Yamana T, Okamoto K, Sahara R. Risk factors for postoperative intra-abdominal septic complications after bowel resection in patients with Crohn's disease. Dis Colon Rectum 2012; 55: 957-62. https://doi.org/10.1097/DCR.0b013e3182617716

37. Huang W, Tang Y, Nong L, Sun Y. Risk factors for postoperative intra-abdominal septic complications after surgery in Crohn's disease: A meta-analysis of observational studies. J Crohns Colitis 2015; 9: 293-301. https://doi.org/10.1093/ecco-jcc/jju028

38. Tzivanakis A, Singh JC, Guy RJ, Travis SP, Mortensen NJ, George BD. Influence of risk factors on the safety of ileocolic anastomosis in Crohn's disease surgery. Dis Colon Rectum 2012; 55: 558-62. https://doi.org/10.1097/DCR.0b013e318247c433

39. Alves A, Panis Y, Bouhnik Y, Pocard M, Vicaut E, Valleur P. Risk factors for intra-abdominal septic complications after a first ileocecal resection for Crohn's disease: a multivariate analysis in 161 consecutive patients. Dis Colon Rectum 2007; 50: 331-6. https://doi.org/10.1007/s10350-006-0782-0

40. Yamamoto T. Factors affecting recurrence after surgery for Crohn's disease. World J Gastroenterol 2005; 11: 3971-9. https://doi.org/10.3748/wjg.v11.i26.3971

41. Iesalnieks I, Kilger A, Glass H, Müller-Wille R, Klebl F, Ott C, Strauch U, Piso P, Schlitt HJ, Agha A. Intraabdominal septic complications following bowel resection for Crohn's disease: detrimental influence on long-term outcome. Int J Colorectal Dis 2008; 23: 1167-74. https://doi.org/10.1007/s00384-008-0534-9

Pojava postoperativnih komplikacija kod bolesnika podvrgnutih hirurškim intervencijama zbog Kronove bolesti: prikaz slučaja

Vladimir Joksimović[1], Nikola Jankulovski[1], Svetozar Antović[1],
Marija Joksimović[2], Ljubinka Mančeva[3]

[1]*Univerzitetska klinika za digestivnu hirurgiju, Klinički centar Majka Tereza, Skoplje, BJR Makedonija*
[2]*Univerzitetska klinika za ginekologiju i akušerstvo, Skoplje, BJR Makedonija*
[3]*Opšta bolnica Strumica, Strumica, BJR Makedonija*

SAŽETAK

Kronova bolest je hronično inflamatorno oboljenje gastrointestinalnog trakta zbog kojeg se javljaju strikture, zapaljenski procesi, fistule, apscesi, krvarenja i kancer. Ovo oboljenje obično zahvata tanko crevo, debelo crevo, rektum i anus. Nešto ređe su zahvaćeni želudac, jednjak i usna duplja. Uzrok ove bolesti nije poznat i ne postoji terapija koja bi dovela do izlečenja. Aktuelni medicinski i hirurški tretmani su efektivni u kontroli ove bolesti, ali čak i sa optimalnim tretmanom, rekurence i relapsi su česti.

Različiti faktori rizika koji su specifični za stanja povezana sa ovom bolešću mogu da utiču na ishod hirurškog tretmana u postoperativnom periodu. Ti faktori rizika mogu biti preoperativni laboratorijski inflamatorni markeri, poput vrednosti leukocita i CRP-a, flegmone prednjeg abdominalnog zida, preoperativnog interintestinalnog apscesa i pozitivnih resekcionih margina.

U radu je predstavljen bolesnik koji je hirurški lečen kao urgentni slučaj zbog komplikacija Kronove bolesti. Po prijemu, bolesnik je imao leukocitozu, povećane vrednosti CRP-a, anemiju, kao i nizak nivo ukupnih proteina i albumina.

Ključne reči: **Kronova bolest, faktori rizika, komplikacije**