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Crohn's Disease: A Clinical Update

[1]Bhagawat Pratibha, [2]Hambir Supriya, [3]Proof. Waghmare Santosh, [4]Dr. Kamble Hemant.

[1,2,3,4]Loknete Shree Dadapatil Pharate College of Pharmacy Mandavgan Pharata, Tal-Shirur, Dist- Pune.

ABSTRACT

The prevalence of Crohn's disease is rising on a global scale. It results from a complicated interaction between environmental factors and genetic predisposition. To give the most recent evidence-based method for identifying and treating Crohn's disease patients, databases and clinical practice guidelines were searched. There isn't one lone gold standard inquiry. While thorough ileocolonoscopy with biopsies continues to be the gold standard for diagnosis, new less invasive imaging modalities as well as the use of serological markers are actively being examined in the workup. The use of drugs for illness onset and remission, dietary and lifestyle changes when needed, and the possibility of surgical intervention in cases where medical therapy has failed should all be part of management.

Keywords: risk factors for colorectal cancer, Crohn's disease, inflammatory bowel disease, diagnosis, and management.

Introduction

Chronic relapsing inflammatory bowel illness called Crohn's disease (IBD). The ileum, colon, or both are frequently affected, but it can affect any region of the digestive tract and is distinguished by a transmural granulomatous inflammation. Over the past 50 years, its frequency has steadily climbed, with northern Europe, the United Kingdom, and North America reporting the greatest incidence rates. Patients nevertheless report considerable limitations on lifestyle and everyday activities during both flare-ups and remissions, despite biological treatment being associated with a better health-related quality of life. According to a meta-analysis, the standardized mortality ratio for CD patients is 1.52, which is consistently higher than that of the general population. This estimate has not changed statistically significantly over the past 30 years, therefore CD is still relevant to a wide range of doctors working on the multidisciplinary management of affected patients.

Methods

This evidence-based review was created after a thorough search of numerous databases, including PubMed, Ovid Medline, and the Cochrane library. MeSH phrases including "Crohn's disease," "Inflammatory Bowel Disorders," "epidemiology," "risk factors," "diagnostic," "investigations," "management," and "colorectal cancer" were also utilized in the search.

Clinical features

The CD is a clinical diagnosis generated through the association of clinical symptoms and signs, objective imaging data including endoscopic and histologic data, and laboratory tests. The most typical presenting symptom is chronic diarrhea, which is defined as a decrease in stool consistency for more than 4 weeks. Other common CD findings include abdominal pain (70%) and weight loss (60%) as well as blood, mucus, or both, in the stools (40–50%). A third of IBD patients experience extraintestinal symptoms. Primary peripheral arthritis, aphthous stomatitis, uveitis, erythema nodosum, and ankylosing spondylitis are the most frequent extraintestinal manifestations, while pyoderma gangrenosum, psoriasis, and primary sclerosing cholangitis are rather infrequent. Up to 35% of CD patients experience fistulae, a complication, with perianal fistula occurring in 20% of cases. A systematic analysis that examined the determinants of HRQOL in CD indicated that these clinical characteristics linked to disease activity contributed to 37% of HRQOL. A patient-reported qualitative analysis shows that there is an impact on lifestyle in terms of taking regular medication, restricting diet, and avoiding certain trigger foods, as well as an impact on daily activities where patients report missing work or school during acute flares because of pain and exhaustion.

Risk factors

The 30-39 age group has the highest prevalence of CD, and different populations have different gender influences. Females are 10–30% more probable than males to develop the condition in Canada and New Zealand, whereas males with CD are believed to be up to three times more common in Japan and Korea. It is a complicated interaction between genetic predisposition, environmental risk factors, and immunological dysregulation of gut microbiota, despite the fact that the specific etiology is yet unknown. Concordant monozygotic twins with CD had identical disease geography and behavior, as well

as a modest degree of agreement for the age of diagnosis, according to co-twin British cohort research. This genetic influence is in line with earlier findings from a German study of co-twins. There is evidence of familial aggregation, with most children developing the condition earlier than their parents did. High incidence has also been discovered amongst Jewish people while the varied prevalence in different geographic places demonstrates the involvement of environmental factors as well. Asthma, psoriasis, pericarditis, ankylosing spondylitis, atopic dermatitis, and primary sclerosing cholangitis are inflammatory conditions that have been linked to CD. Moreover, environmental risk factors have contributed to CD's increased prevalence globally. Their influence is more prevalent during childhood. Smoking has been confirmed to alter the phenotype of CD and a meta-analysis indicated that smoking raised the chance of CD by more than twofold. A high intake of fats, polyunsaturated fatty acids, omega-6 fatty acids, and meats has been linked to an increased risk of CD, but a high intake of fiber and fruit has been shown to be protective. Prior history of symptomatic mumps has also been linked to an increased risk of CD. A meta-analysis analysing the quantitative risk of the oral contraceptive pill (OCP) in the aetiology of CD reported a pooled relative risk for women currently exposed to the OCP was 1.51 (95%CI 1.17-1.96, p = 0.002). The oral contraceptive pill has also been linked to the development of CD.

Diagnosis and investigations

There isn't a single, conclusive diagnostic test available to diagnose CD. Currently, full ileocolonoscopy with biopsies is the most popular diagnostic test. This may only detect noncaseating granulomas in up to 60% of resected tissues, and even less frequently in biopsy samples. The diagnostic assessment of CD has been using cross-sectional imaging investigations more and more. This comprises magnetic resonance imaging (MRI), computed tomography (CT), and ultrasonography (MRI). US showed a sensitivity and specificity of 85% (95% CI 83-87%) and 98% (95% CI 95-99%), respectively, according to a systematic study assessing the accuracy of each cross-sectional imaging modality in the diagnosis of CD. MRI exhibited an overall sensitivity and specificity of 78% (95% CI 67-84%) and 85% (95% CI 76-90%), respectively, which was inferior to this. Another comprehensive study contrasting the diagnostic efficacy of computed tomography (CTE) and magnetic resonance enterography (MRE) discovered that MRE had a diagnostic yield equivalent to CTE but did not entail the same radiation exposure hazards, particularly for younger patients.

A normal ileocolonoscopy result does not rule out the diagnosis of CD because 27% of patients have a terminal ileal illness, which can be challenging to identify. For small bowel exploration, capsule endoscopy, a relatively new, straightforward, noninvasive imaging procedure, is becoming more popular. The experiment involves ingesting a temporary, tiny, wireless camera that is enclosed in a capsule and travels through the digestive system to allow for direct observation of the mucosa. An enhanced diagnosis rate of 15% over colonoscopy with ileostomy was discovered in a meta-analysis comparing the diagnostic yield of capsule endoscopy to other imaging modalities.

In addition to ileocolonoscopy with biopsy and other imaging techniques, disease heterogeneity and unusual manifestations of IBD have highlighted the need for additional diagnostic tools. Serological markers have been examined as a result, with anti-Saccharomyces cerevisiae antibodies (ASCA) and atypical perinuclear anti-neutrophil cytoplasmic antibodies (pANCA) receiving the most attention. ASCA antibodies are made against mannose epitopes from the yeast Saccharomyces cerevisiae, whereas pANCA antibodies are made against proteins in neutrophil nuclear lamina.

In patients who are genetically vulnerable, the production of antibodies most frequently results from an aberrant mucosal immune system response to commensal gut flora. Sera with positive ASCA and negative pANCA, with 52–64% and 92–94%, respectively, were determined to be the most sensitive and specific test for CD, according to a systematic evaluation of the function of serological antibodies in the diagnosis of IBD. The discovery of these indicators can aid in distinguishing CD from ulcerative colitis, where the diagnosis is still debatable based on clinical, histological, and endoscopic evidence. Moreover, because these markers can foretell the onset of CD, they can help facilitate early management.

Management

CD management decisions should always be reached after consultation with the multidisciplinary team and the patients themselves. Smoking is a risk factor that should be eliminated owing to its negative effects on the course of the disease and, depending on the patient's circumstances, the OCP. A balanced diet with high fiber and fruits has been demonstrated to be protective against CD and should be encouraged.

Pharmacological management

A variety of therapeutic treatments are now readily available to treat CD, and medications designed to decrease the inflammatory response are also available. The traditional method of treating active disease is based on progressively escalating medication therapy, with an emphasis on achieving and sustaining clinical remission. Evidence, however, points to the use of vigorous treatment early on to enhance clinical outcomes in patients with risk factors increasing the severity of their disease. Smoking, the initial need for steroid use, being under 40, and having perianal illness are some of them. Typically, drugs like corticosteroids, budesonide, or mesalazine are first recommended to induce remission. Patients who are resistant to standard therapy can also benefit from anti-tumour necrosis factor (TNF) immunosuppressive medications. Patient education is essential to the medical therapy of CD, and nonadherence is independently correlated with patient age and follow-up by a gastroenterologist.

Due to accumulating resistance over time, patient reliance, and negative side effects from prolonged treatment, corticosteroids are frequently given for the establishment of remission but rarely for its maintenance. Because to substantial first-pass hepatic degradation by cytochrome p-450 enzymes, budesonide is a different enteral glucocorticoid utilised for induction with limited systemic bioavailability. According to a systematic analysis, budesonide

was substantially more effective than a placebo up to 8 weeks for the induction of remission in CD, with a relative risk (RR) of 1.96 (95% CI, 1.19-3.23). Budesonide had considerably less corticosteroid-related adverse effects compared to those receiving conventional corticosteroids (RR 0.64; 95% CI 0.54-0.76), while being demonstrated to be less effective than conventional steroids for the induction of remission in active CD (RR 0.85; 95% CI 0.75-0.97).

Originally known as sulfasalazine, a mixture of 5-aminosalicylic acid and sulfapyridine, 5-aminosalicylates have a long history of use in IBD. More recently, 5-aminosalicylic acid has been identified as the active ingredient in place of sulfapyridine, which was the main cause of negative side effects. Insufficient data was discovered in a systematic review evaluating the effectiveness of 5-aminosalicylates in CD, either in generating remission or preventing relapse.

Although there is inconsistent and disputed evidence, the purine antimetabolites azathioprine and 6-mercaptopurine have both been utilized in patients with active CD. A Cochrane study found 48% of patients receiving antimetabolites achieved remission compared with 37% of placebo patients, with no statistically significant difference between the two groups. The question of whether purine analogs are better than a placebo for keeping CD patients in surgically-induced remission is still unanswered. At 40 weeks, intramuscular methotrexate, another antimetabolite with antagonistic activity against folic acid, outperformed placebo in terms of maintaining remission; 65% of patients receiving it did so as opposed to 39% of those receiving placebo (RR 1.67 95% CI 1.05-2.67).

Another class of drugs often reserved for patients unresponsive to conventional therapy is infliximab and adalimumab, which together make up the majority of anti-TNF immunosuppressive medications. 56.8% of patients receiving combination therapy achieved corticosteroid-free clinical remission at week 26 compared to 44.4% of patients receiving infliximab alone ($p = 0.02$) and 30.0% of patients receiving azathioprine alone (p 0.001), according to a randomized controlled trial evaluating the efficacy of infliximab monotherapy, azathioprine monotherapy, and combination of both. The superiority of combination therapy compared with monotherapy of adalimumab remains unknown.

Vedolizumab, a monoclonal antibody that targets 47, has more recently demonstrated effectiveness in a randomized controlled trial for the induction of CD remission compared with placebo (14.5% and 6.8%, respectively, $p = 0.02$) as well as for maintaining remission. Vedolizumab has also proven to be equally effective as natalizumab, another anti-4 integrin, despite the fact that it does not have the same risk of progressive multifocal leukoencephalopathy. Adalimumab was discovered by a network meta-analysis to be superior to vedolizumab in maintaining remission, however, its function in the stepwise therapy of CD remains to be determined in subsequent studies. These biological treatments are anticipated to alter the approach to medical management in the near future. Ustekinumab, a monoclonal antibody against interleukin-12, has also shown a function in maintaining CD remission

Surgical management

Within 10 years of initial diagnosis, the majority of CD patients will undergo surgical resection. Malnutrition, recurring intestinal blockage, failed medicinal treatments, and septic consequences such as perforations and abscesses all call for surgical intervention. In addition to enhancing the quality of life, it helps to prevent other issues such as complex perianal illness and internal fistulas. Nonetheless, the underlying pathology continues to exist, leading to a significant rate of illness recurrence—between 28 and 45% at five years and 36 to 61% at ten years. More than half of all hospital admissions are for surgical procedures, which also account for over 40% of all patient financial expenses.

In gastrointestinal surgery, laparoscopy is frequently preferred to open surgery in CD. While there are certain benefits of laparoscopy, such as smaller abdominal wounds, a decreased risk of hernia, and a lowered rate of small intestinal blockage, there are also worries that severe strictures and concealed disease segments may be overlooked because of a lack of tactile ability. The likelihood of postoperative recurrence was not significantly different between open surgery and laparoscopic surgery, while there was a lower risk of perioperative problems in the laparoscopic group compared to the open surgery group (12% to 18%, RR = 0.71, CI = 0.58-0.86, $p = 0.001$). The overall cost comprising hospital stay expenditures and costs related to lost working days between laparoscopic-assisted bowel resection and open surgery was no different. Despite the evidence supporting the benefits of laparoscopic surgery, more randomized controlled trials with sufficient follow-up are necessary before definitive recommendations can be made.

Malignancy

Despite the fact that the risk of colorectal cancer is declining, the link between CD and malignancy is well established. In general, patients with CD had a pooled standardised incidence ratio (SIR) of 1.7 (95% CI: 1.01-2.5), according to a meta-analysis of population-based cohort studies, while referral centers had a pooled SIR of 4.4 (95% CI: 1.5-7.2). The risk of malignant change in individuals with persistent perianal fistulas should not be disregarded by the treating doctor. Regarding the frequency of colonoscopic surveillance, there is no agreement. The British Society of Gastroenterology (BSG) advises yearly, 3-yearly, or 5-yearly intervals after 10 years, depending on risk factors, while the American Gastroenterological Association (AGA) recommends surveillance intervals of 1-3 years for a maximum of 8 years after diagnosis. A more modern technique is chromoendoscopy, which involves the topical application of dyes or pigments to detect small mucosal abnormalities more effectively than traditional white light endoscopy. Although chromoendoscopy exhibited a 7% increase in dysplasia detection (95% CI 3.2-11.3) compared to white light endoscopy, a meta-analysis revealed that it is unclear whether this confers a survival benefit on patients given that the majority of the dysplasia detected were of low grade. Chromoendoscopy is still suggested as the optimum method for monitoring for dysplasia in IBD by the SCENIC consensus statement (Surveillance for Colorectal Endoscopic Neoplasia Detection and Management in Inflammatory Bowel Disease Patients: International Consensus Guidelines).

Conclusion

The evidence for the diagnosis and treatment of CD still has several holes in it. Age, probable site of disease, disease severity, and the likelihood of recurrence must all be taken into account when determining which investigation is best for each patient. Many diagnostic methods, including imaging modalities and serological markers, have helped with CD diagnosis and follow-up. In order to evaluate the effectiveness of some innovative therapeutic drugs, including vedolizumab and ustekinumab, and their involvement in active CD to conventional anti-TNF therapy, more study is required.

References

- Oral 5-aminosalicylic acid for maintenance of medically induced remission in Crohn's disease. Akobeng A., Gardener E. 2005. Cd003715 is the Cochrane Database Syst Rev.
- Crohn's disease: Baumgart D., Sandborn W. (2012) 1590–1605, in Lancet 380.
- Predictors of Crohn's disease: Beaugerie L, Seksik P, Nion-Larmurier I, Gendre J, Cosnes J (2006) 650–656 in Gastroenterology 130.
- Moum B., Sauar J., Jahnsen J., Aamodt G., Bengtson M., Solberg C., et al (2009) Crohn's disease and ulcerative colitis are separated by the clustering of familial IBD throughout time. Bowel Inflammation 15: 1867–1874
- (2000) Risk factors for surgery and postoperative recurrence in Crohn's disease. Bernell O., Lapidus A., Hellers G. 38–45. Ann Surg 231:
- Bernstein C., Blanchard J., Rawsthorne P., and Yu N. (2001) A population-based investigation of the prevalence of extraintestinal illnesses in inflammatory bowel disease. 96: 1116–1122 in Am J Gastroenterol.
- Bernstein C., Wajda A., and Blanchard J. (2005) Population-based investigation on the clustering of various chronic inflammatory disorders in inflammatory bowel disease. 827-836. Gastroenterology 129.
- The epidemiology of inflammatory bowel disease in Canada: a population-based study, Bernstein C., Wajda A., Svenson L., Mackenzie A., Koehoorn M., Jackson M., et al., 2006. 1559–1568 in Am J Gastroenterol 101.
- Serologic indicators in inflammatory bowel illness, Bossuyt X. (2006) 52: 171–18 in Clin Chemistry.
- In 2015, Bryant R., Sandborn W., and Travis S. published Bringing Vedolizumab to Clinical Practice: Who, When, and How. J Crohns Colitis 9(3):356-366.
- The natural history of postoperative Crohn's disease recurrence is discussed in a 2012 review article by Buisson A., Chevaux J., Allen P., Bommelaer G., and Peyrin-Biroulet L. 35: 625–633. Aliment Pharmacol Ther.
- Recommendations for colorectal cancer screening and surveillance in moderate and high-risk groups were published by Cairns S., Scholefield J., Steele R., Dunlop M., Thomas H., Evans G., et al. in 2010. (update from 2002). Gut 59: 666–689.
- A meta-analysis evaluating smoking's connection to inflammatory bowel disease was published in 1989 by Calkins B. 1841–1854, in Dig Dis Sci 34.
- Canavan C., Abrams K., and Mayberry J. Mortality in Crohn's disease: a meta-analysis. Food and Drug Therapy 25: 861-870.
- Azathioprine or 6-mercaptopurine for inducing remission in Crohn's disease, Chande, Tsoulis, and Macdonald (2013). Cd000545, Cochrane Database Syst Rev 4.
- Cleynen I., Gonzalez J., Figueroa C., Franke A., McGovern D., Bortlik M., et al. (2013) Results from the IBDCHIP European project. Genetic variables imparting a greater susceptibility to develop Crohn's disease also influence disease phenotype. Gut 62: 1556–1565.
- Mummert, L., Becker, R., Roth, and Cohen (2000) The expense of hospitalization in Crohn's disease. 524-530 in Am J Gastroenterol 95.
- Infliximab, azathioprine, or combination therapy for Crohn's disease? Colombel J., Sandborn W., Reinisch W., Mantzaris G., Kornbluth A., Rachmilewitz D., et al. (2010) 362: 1383–1395 N Engl J Med.
- The risk of oral contraceptives in the genesis of inflammatory bowel disease: a meta-analysis, Cornish J., Tan E., Simillis C., Clark S., Teare J., Tekkis P. (2008) 2394–2400 in Am J Gastroenterol, 2003.
- Epidemiology and natural history of inflammatory bowel illnesses, Cosnes J., Gower-Rousseau C., Seksik P., and Cortot A. (2011) GI journal 140: 1785-1794.
- Laparoscopic versus open surgery for small bowel Crohn's disease: Dasari, McKay, and Gardiner (2011) Cd006956 is the Cochrane Database Syst Rev.
- Church J., Delaney C., Kiran R., Senagore A., O'Brien-Ermlich B., Hull T., et al (2003) Within 30 days of Crohn's disease surgery, quality of life increases. 196: 714–721. J Am Coll Surg.

- The burden of inflammatory bowel disease: a patient-reported qualitative analysis and creation of a conceptual model. Devlen J., Beusterien K., Yen L., Ahmed A., Cheifetz A., Moss A. (2014) 20: 545–552. Inflamm Bowel Disease.
- Future Directions in the Management of Inflammatory Bowel Disease. D'haens G., Sartor R., Silverberg M., Petersson J., Rutgeerts P. (2014). 8: 726-734 J Crohns Colitis.
- The second European evidence-based consensus on the diagnosis and management of Crohn's disease: current management. Dignass A., Van Assche G., Lindsay J., Lemann M., Soderholm J., Colombel J., et al. J Crohn's Colitis 4, pages 28–62.
- In patients with suspected and confirmed small-bowel Crohn's disease, capsule endoscopy had a much greater diagnostic yield, according to a meta-analysis by Dionisio P., Gurudu S., Leighton J., Leontiadis G., Fleischer D., Hara A., et al. 105: 1240–1248; quiz 1249; Am J Gastroenterol.
- Capsule endoscopy for small bowel evaluation in Crohn's disease, Doherty G., Moss A., Cheifetz A. (2011) 74: 167–175 of Gastrointest Endoscopy.
- Dupreee H., Senagore A., Delaney C., Brady K., and Fazio V. (2002). Benefits of Laparoscopic resection for Ileocecal Crohn's disease 45: 605–610, Dis Colon Rectum.
- The following authors' (2010) AGA Medical position statement on the diagnosis and therapy of colorectal neoplasia in inflammatory bowel illness. Farraye F., Odze R., Eaden J., Itzkowitz S., McCabe R., Dassopoulos T. 738–745 in Gastroenterology 138.
- A case-control study of childhood environmental risk factors for the development of inflammatory bowel disease was conducted by Feeney M. A., Murphy F., Clegg A. J., Trebble T. M., Sharer N. M., and Snook J. A. in 2002. 14: 529-534 Eur J Gastroenterol Hepatol
- Epidemiology of Crohn's disease in the Jewish Population of Central Israel, 1970-1980. Fireman Z., Grossman A., Lilos P., Eshchar Y., Theodor E., Gilat T. (1989). A Journal of Gastrol 84: 255-258.
- "Efficacy of 5-aminosalicylates in Crohn's disease: systematic review and meta-analysis" by Ford A., Kane S., Khan K., Achkar J., Talley N., Marshall J., et al. 106: 617–629 in Am J Gastroenterol.
- Increased incidence of Crohn's disease in Canterbury, New Zealand: results of an epidemiologic study. Gearry R., Richardson A., Frampton C., Collett J., Burt M., Chapman B., et al. 12: 936–943. Inflamm Bowel Disease.
- Azathioprine with 6-Mercaptopurine for Maintenance of Surgically-Induced Remission in Crohn's Disease, Gordon M., Taylor K., Akobeng A., Thomas A. (2014) Cd010233, Cochrane Database Syst Rev 8,
- Environmental Determinants in Inflammatory Bowel Disease: A Co-Twin Control Study of a Swedish-Danish Twin Population, Halfvarson J., Jess T., Magnuson A., Montgomery S., Orholm M., Tysk C., et al., 2006. 925–933 Inflamm Bowel Dis 12,
- G. Hazlewood, A. Rezaie, M. Borman, R. Panaccione, S. Ghosh, C. Seow, et al (2015) A network meta-analysis comparing the comparative efficacy of immunosuppressants and biologics for producing and maintaining remission in Crohn's disease. 148: 344–354.e345; quiz e314–345 in Gastroenterology.
- Inflammatory bowel disease and dietary intake: a systematic review of the literature, Hou J., Abraham B., and El-Serag H. (2011). 106: 563-573 Am J Gastroenterol
- Assessment of persistent diarrhoea: Juckett G, Trivedi R (2011). Am Fam Med 84: 1119–1126.
- Incidence and natural course of inflammatory bowel disease in Korea, 2006-2012: a countrywide population-based study. Kim H., Hann H., Hong S., Kim K., Ahn I., Song J., et al. 623-630. Inflamm Bowel Disease 21.
- Budesonide for maintenance of remission in Crohn's disease. Kuenzig M., Rezaie A., Seow C., Otley A., Steinhart A., Griffiths A., et al. (2014) Cd002913, Cochrane Database Syst Rev 8,
- SCENIC international consensus statement on surveillance and management of dysplasia in inflammatory bowel disease. Laine L., Kaltenbach T., Barkun A., McQuaid K., Subramanian V., Soetikno R. (2015). 148: 639–651.e628 in Gastroenterology.
- Novel IBD genetics: shared pathways with other diseases, Lees C., Barrett J., Parkes M., Satsangi J. (2011). Gut 60: 1739–1753.
- In the north and south of Europe, there is a clinical homogeneity of inflammatory bowel disease throughout the first year of the condition, according to Lennard-Jones and Shivananda's 1997 study. IBD Study Group for EC. 9: 353-359, Eur J Gastroenterol Hepatol.
- Lourenco S., Hussein T., Bologna S., Sipahi A., and Nico M. (2010) Review of six instances of oral symptoms of inflammatory bowel disease. 204–207 in J Eur Acad Dermatol Venereol 24.
- An updated meta-analysis of population-based cohort studies on the declining risk of colorectal cancer in inflammatory bowel illness was published in 2013 by Lutgens M., Van Oijen M., Van Der Heijden G., Vleggaar F., Siersema P., and Oldenburg B. Disc 19 Inflamm Bowel:789-799

- Capsule endoscopy, Munoz-Navas M. 15: 1584–1586 in World J Gastroenterol.
- (2007) Capsule endoscopy: past, present, and future. Nakamura T., Terano A. 93–99, in J Gastroenterol 43.
- Ng S., Woodrow S., Patel N., Subhani J., and Harbord M. (2012). Genetic and environmental influences on inflammatory bowel disease in British twins. 18: 725-736 Inflamm Bowel Disease.
- Inflammatory bowel disease diagnostics, S. Nikolaus and S. Schreiber, 2007. 1670–1689 in Gastroenterology 133.
- Panes J, Bouzas R, Chaparro M, Gisbert J, Garcia-Sanchez V, Martinez De Guerenu B, et al (2011) Comprehensive evaluation of abdominal Crohn's disease complications and its diagnosis using computed tomography, magnetic resonance imaging, and ultrasonography. 34: 125–145, Aliment Pharmacol Ther.
- Ott M., Patel M., Patel S., Ramagopalan S. (2013) A meta-analysis of short- and long-term results following laparoscopic surgery for Crohn's disease in comparison to open surgery. 13: BMC Surgery.
- Methotrexate for maintenance of remission in Crohn's disease. Patel V., Wang Y., Macdonald J., MacDonald J., Chande N. (2014). Cd006884, Cochrane Database Syst Rev 8,
- A systematic study of serological antibodies in inflammatory bowel illness was published in Prideaux L., De Cruz P., Ng S., and Kamm M. (2012). 18: 1340–1355, Inflamm Bowel Dis.
- Qiu Y., Mao R., Chen B., Li X., He Y., Zeng Z., et al. (2014) Systematic review and meta-analysis of magnetic resonance enterography versus computed tomography enterography for assessing disease activity in small bowel Crohn's disease 40: 134–146, Aliment Pharmacol Ther.
- Vedolizumab as an induction and maintenance therapy for Crohn's disease: Sandborn W., Feagan B., Rutgeerts P., Hanauer S., Colombel J., Sands B., et al. (2013) 369: 711–721 N Engl J Med.
- Ustekinumab induction and maintenance therapy in refractory Crohn's disease. Sandborn W., Gasink C., Gao L., Blank M., Johanns J., Guzzo C., et al. 367: 1519–1528 N Engl J Med.
- From symptom to diagnosis: clinical differences between diverse kinds of intestinal inflammation, Sands B. 2004. 1518–1532, in Gastroenterology 126.
- Microbial host interactions in IBD: Implications for aetiology and therapy, Sartor R., Muehlbauer M. 2007. 9: 497-507, Current Gastroenterology Reports.
- Buda A., Bassi D., Boetto R., D'inca R., Scarpa M., Ruffolo C., et al (2009) Intestinal surgery for Crohn's disease: indicators of cost, cost-effectiveness, and quality-of-life. 13: 2128-2135 J Gastrointest Surg
- The Natural history of fistulizing Crohn's disease in Olmsted County, Minnesota, by Schwartz D., Loftus E., Jr., Tremaine W., Panaccione R., Harmsen W., Zinsmeister A., et al. 875-880. Gastroenterology 122.
- Budesonide for the induction of remission in Crohn's disease. Seow C., Benchimol E., Griffiths A., Otley A., Steinhart A. (2008). Cd000296 is the Cochrane Database Syst Rev.
- S. Soderlund, L. Brandt, A. Lapidus, P. Karlen, O. Brostrom, R. Lofberg, et al (2009) Reduced colorectal cancer rates over time in a sizable group of patients with inflammatory bowel disease. 136: 1561–1567 in Gastroenterology; quiz: 1818–1569.
- Yao, T., Matsui, and N. Hiwatashi (2000) Epidemiology and diagnostic criteria for Crohn's disease in Japan. S85–S93 in Dis Colon Rectum 43.
- Zelante A., De Giorgi A., Borgoni R., Trevisani L., and Gallerani M. (2014). Patients with inflammatory bowel disease and adherence to medical treatment. 60: 269–274 of Minerva Gastroenterol Dietol.