

# Mayo Endoscopic Score (MES) as a reference for the histological active disease of ulcerative colitis

*by Agung Ary Wibowo*

---

**Submission date:** 19-Feb-2023 06:13PM (UTC+0700)

**Submission ID:** 2017707116

**File name:** 3.pdf (494.08K)

**Word count:** 3177

**Character count:** 17411

## Mayo Endoscopic Score (MES) as a reference for the histological active disease of ulcerative colitis



CrossMark

Agung Ary Wibowo<sup>1\*</sup>, HENDY BUANA VIJAYA<sup>2</sup>, DIDIK DWI SANYOTO<sup>3</sup>, HENDRA SUTAPA<sup>4</sup>,  
HUSNA DHARMA PUTERA<sup>5</sup>, KENANGA MARWAN SIKUMBANG<sup>6</sup>

### ABSTRACT

**Background:** The degree of inflammation dramatically affects the morbidity of ulcerative colitis. Local and systemic inflammation features are modalities to determine disease severity and evaluation. Furthermore, local inflammation can be seen from endoscopic and histological examinations. This study aimed to examine the relationship of histological inflammatory profile with endoscopic scoring in ulcerative colitis patients.

**Method:** A retrospective study was conducted using colonoscopic and histologic data from 68 ulcerative colitis patients. The endoscopic grade was assessed based on the Mayo Endoscopic Score (MES). The histological grade was analyzed using a microscope by assessing acute and chronic inflammatory cells and the presence of ulceration and crypt changes based on the Nancy Score Index and Geboes Score Index. Furthermore, the analysis test used Spearman and Mann-Whitney.

**Results:** There is a significant positive relationship between endoscopic and histology scoring. The Nancy Score Index and MES combination yields 95% CI: 0.000-0.043,  $p=0.000$ , Correlation coefficient ( $r$ )=0.810, and odds ratio (OR)=3.272. Meanwhile, the combination of the Geboes Score Index with MES yields 95% CI: 0.000-0.043;  $p=0.000$ ;  $r=0.727$ ; and OR=1.347. In each histological scoring, there was a significant difference between the Nancy Score Index and Geboes Score Index to ( $r = 0.018$ ;  $p<0.05$ ).

**Conclusion:** There is a significant relationship between histological and endoscopic scoring. Therefore, an endoscopic examination can be a reference for histologically active disease.

**Keywords:** Geboes Score Index, Mayo Endoscopic Score, Nancy Score Index, ulcerative colitis.

**Cite This Article:** Wibowo, A.A., Vijaya, H.B., Sanyoto, D.D., Sutapa, H., Putera, H.D., Sikumbang, K.M. 2023. Mayo Endoscopic Score (MES) as a reference for the histological active disease of ulcerative colitis. *Bali Medical Journal* 12(1): 340-344. DOI: 10.15562/bmj.v12i1.3766

<sup>1</sup>Department of Surgery, Digestive Division, Department of Surgery, Faculty of Medicine, Universitas Lambung Mangkurat, Banjarmasin, South Kalimantan, Indonesia;

<sup>2</sup>Surgeon Resident, Department of Surgery, Faculty of Medicine, Universitas Lambung Mangkurat, Banjarmasin, South Kalimantan, Indonesia;

<sup>3</sup>Department of Anatomy, Faculty of Medicine, Universitas Lambung Mangkurat, Banjarmasin, South Kalimantan, Indonesia;

<sup>4</sup>Department of Surgery, Urology Division, Department of Surgery, Faculty of Medicine, Universitas Lambung Mangkurat, Banjarmasin, South Kalimantan, Indonesia;

<sup>5</sup>Department of Surgery, Orthopaedic Division, Faculty of Medicine, Universitas Lambung Mangkurat, Banjarmasin, South Kalimantan, Indonesia;

<sup>6</sup>Department of Anesthesiology, Faculty of Medicine, Universitas Lambung Mangkurat, Banjarmasin, South Kalimantan, Indonesia;

\*Corresponding author:

Agung Ary Wibowo;  
Department of Surgery, Digestive Division, Department of Surgery, Faculty of Medicine, Universitas Lambung Mangkurat, Banjarmasin, South Kalimantan, Indonesia;  
agung.wibowo@ulm.ac.id

Received: 2022-09-28

Accepted: 2022-12-28

Published: 2023-01-19

### INTRODUCTION

Ulcerative colitis is an inflammation of the intestine or lamina propria and is more common than Crohn's disease. It is common in industrialized countries such as North America and Western Europe, with all cases reported from 1.2 to 20.3 per 100,000 people/year. Meanwhile, the prevalence of ulcerative colitis is 7.6 to 246 cases per 100,000 people, and the diagnosis cannot be confirmed with a single diagnostic study.<sup>1,2</sup> Therefore, it is based on the interpretation of clinical manifestations, laboratory, radiological and endoscopic tests, and histology.<sup>3</sup>

In ulcerative colitis, there is epithelial damage due to the continuous inflammatory process and the involvement of pathogenic bacteria capable of damaging the mucin layer. The body's first line of defense is the Intestinal Epithelium (IEC) and columnar cell layer, which contains enterocytes, Goblet cells that produce MUC2, Paneth cells, enteroendocrine cells, and M cells. Chemokines are part of cytokines that act as chemo-attractants

causing leukocytes to be deposited in areas of mucosal inflammation.<sup>4</sup> The infiltration into the mucosa is seen in histological samples and can describe disease activity.

Endoscopic visualization can see the extent of inflammation spreading from the colon to the rectum. The endoscopic findings range from low activity, with coarse granular mucosa, reduced vascular markings, and mild erythema, to severe activity characterized by ulceration and spontaneous bleeding.<sup>3,4</sup> The inflammatory activity level in the form of inactive or Low MES (0-I) and active or High MES (II-III) is classified based on the endoscopic appearance using the Mayo Endoscopic Score (MES).<sup>5</sup> Furthermore, endoscopic assessment of mucosal healing can be used as a measure of disease activity.<sup>6</sup> Histological improvement may be associated with clinical outcomes, including reduced cancer risk and recurrence rates, which refer to histologic remission as a therapeutic goal in ulcerative colitis.<sup>7</sup> Many indices used to assess the histological activity of patients show

good reproducibility and agreement with endoscopic scoring systems.<sup>8</sup> Therefore, it is essential to determine the relationship between endoscopic and histological findings to assess disease activity in ulcerative colitis.

## METHODS

### Patient and study design

We conducted a retrospective data analysis with a total sampling from January 2017 to March 2022. Sixty-eight samples with criteria have two examinations of colonoscopic and histologic data performed in Ulin General Hospital. It is the form of electronic data from colonoscopy results and histological samples of patients with ulcerative colitis. This study used a cross sectional study.

### Endoscopic and histologic assessment

The Mayo Endoscopic Score is an endoscopy index to assess inflammation on the surface of the colon. This assessment has a subscore of 0 = Normal, Score 1 = Mild (mild erythema or decreased vascular pattern), score 2 = Moderate (erythema, absence of vascular pattern fragility and erosion), score 3 = Severe (spontaneous bleeding and ulceration). This assessment is divided into subgroups Low MES = score 0-1 and High MES = score 2-3. Histology assessment uses 2 scores, the Nancy Score Index and the Geboes Score Index. Histological assessment based on the infiltration of lymphocytes and neutrophils, involvement of crypts, ulceration, and granulation. Each subscore is in the table of patient characteristics.

### Statistics and analysis

Variables were stated as mean and standard deviation (SD). Statistical tests carried out data analysis correlate the Mayo scoring index with the Nancy Score and the Geboes scoring index. Statistical analysis was conducted using an unpaired non-parametric in the form of Spearman's test with a significance level of 95%, using the Statistical Package for the Social Sciences (SPSS) version 25 software.

## RESULTS

Based on the analysis, 68 patients met the inclusion and exclusion criteria, most

**Table 1. Patients' characteristics.**

Variable	n (%)
Gender	
Male	36 (52.9)
Female	32 (47.1)
Age (years) (mean±SD)	44.94±7.22
< 40	22 (32.4)
≥ 40	46 (67.6)
Diagnosis on colonoscopy	
Abdominal pain	3 (4.4)
Hematochezia	31 (31.6)
Constipation	12 (17.6)
Colitis	22 (32.3)
Mayo Endoscopic Score (mean ± SD)	1.48±0.68
Low MES (0-1)	39 (57.3)
High MES (2-3)	29 (42.7)
Geboes Score Index (mean ± SD)	2.38±0.83
Active (>3.1)	40 (58.8)
Inactive (<3.1)	28 (41.2)
Nancy Score Index (mean ± SD)	2.79±1.02
Normal-Mild (0-2)	42 (61.8)
Moderate (3)	18 (26.5)
Severe (4)	8 (11.7)

**Table 2. Relationship of MES with Nancy and Geboes Score Index.**

Histology Scoring	95%CI		p	r	OR
	Min	Max			
Nancy Score Index	0.000	0.043	0.000	0.810	3.272
Geboes Score Index	0.000	0.043	0.000	0.727	1.347

**Table 3. Histological activity (Geboes Score Index) based on Endoscopical Activity.**

Histological Activity	Mayo Endoscopic Score (MES)			
	0 (Normal)	1 (Mild)	2 (Moderate)	3 (Severe)
Geboes Score < 3.1	1	25	3	0
Geboes Score > 3.1	0	13	20	6
	N = 39 (Low MES)		N = 29 (High MES)	

**Table 4. Histological activity (Nancy Score Index) based on Endoscopical Activity.**

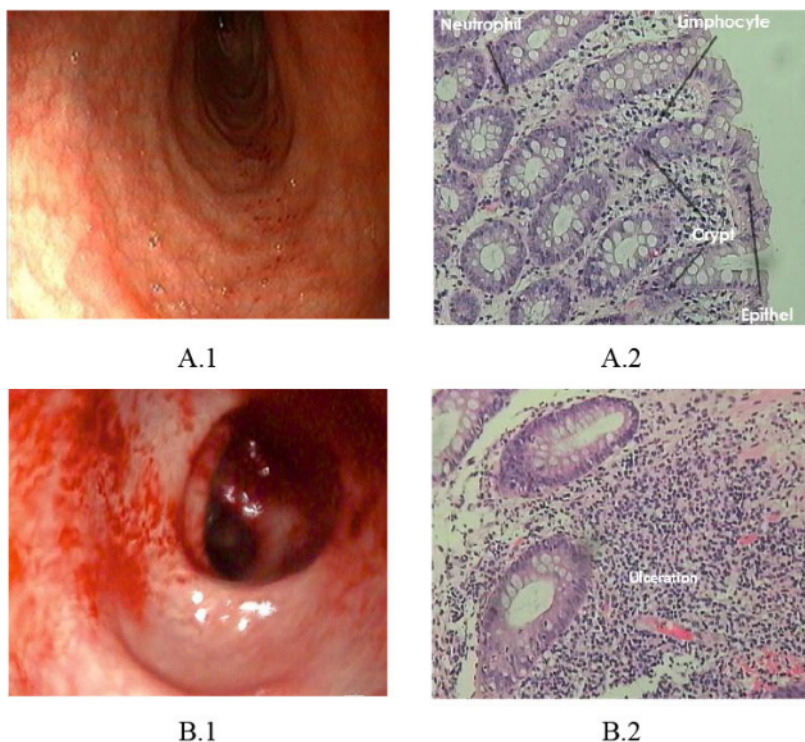
Histological activity (Nancy Score Index)	Mayo Endoscopic Score (MES)			
	0 (Normal)	1 (Mild)	2 (Moderate)	3 (Severe)
Grade 0-II	1	36	5	0
Grade III	0	2	16	0
Grade IV	0	0	2	6
	n=39 (Low MES)		n= 29 (High MES)	

male (52.9%) with a mean age of 44.94 years old and most in the ≥ 40 years old group (67.6%). The majority of diagnoses of colonoscopy was hematochezia (31.6%). The mean Mayo Endoscopic Score (MES) was 1.48±0.68, and the majority of the subject classified in low MES (57.3%). The mean Geboes Score Index was 2.38±0.83,

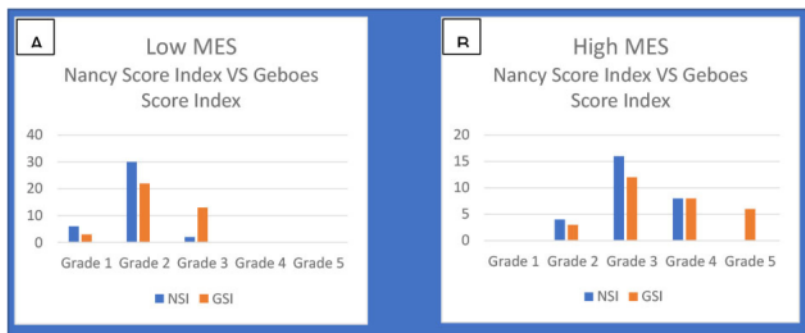
with most subjects classified as active (58.5%). The mean of the Nancy Score Index was 2.79±1.02, and most subjects were classified as normal-mild (61.8%), as shown in Table 1.

The analysis results showed that MES has a significant relationship with the Nancy Score ( $p < 0.05$ ,  $r = 0.810$ , OR





**Figure 1.** (A.1) Colonoscopic appearance with MES grade I; (A.2) Neutrophils in the lamina propria and crypts, there are lymphocytes; (B.1) There is spontaneous ulceration and bleeding; and (B.2) Significant ulceration with granulation.



**Figure 2.** Graph of histological activity based on endoscopic activity. (A) Low MES (grade 0-I) and (B) High MES (grade II-III).

3.272) and Geboes Score Index ( $p < 0.05$ ,  $r = 0.727$ , OR 1.347), as shown in Table 2. In Low MES (grade 0-I), 39 samples showed inactive inflammation, namely the Nancy and Geboes Score Index of 37, and (Inactive  $< 3.1$ ) 26 samples at 94% and 70.2%. In High MES, 29 samples showed active inflammation, namely the Nancy and Geboes Score Index of 24, and (active  $> 3.1$ ) 26 samples at 82.7% and

89.0%. Based on the relationship table, it was found that there was a significant positive relationship between endoscopic scoring and histology scoring with a 95% confidence interval, i.e., an increase in the MES score was significantly associated with an increase in the Nancy Score Index score by 3.272 times (OR), while in the MES with the Geboes Score Index by 1.347 times (OR). Therefore, most Low MES

give an equivalent description with a mild histological grade or inactive disease on endoscopic scoring.

**DISCUSSION**

Mucosal healing with a subscore of 0-1 based on endoscopic assessment using MES is a predictive value recommended in clinical practice. Histological remission was also reviewed and considered essential to evaluate disease severity in ulcerative colitis patients. Healing is a therapeutic target in Inflammatory Bowel Disease (IBD), which is associated with a reduced number of hospitalized patients, incidence of colorectal cancer, and risk of surgery.

There was a significant relationship between endoscopic and histology scoring. Colonoscopy with Low MES in 39 samples or inactive inflammation showed equivalence with histological examination of the Nancy and Geboes Score Index. This condition provides a macroscopic description with a decrease in the vascular pattern of the colonic mucosa. Furthermore, it reflects infiltration into the lamina propria by chronic inflammatory cells in the form of lymphocytes and a few neutrophils assessed histologically. The Low MES sample had crypt involvement infiltrated by neutrophils at the histological level based on the Geboes Score Index in 13 samples (19.1%). After four months of illness, the neutrophil cell infiltration and architectural changes in the crypts are signs of chronicity in IBD. However, no clinical assessment was carried out, including the onset of the disease.

The 29 samples with High MES gave a clinical description of clear erythema; some had ulceration with bleeding. In the histological picture, the Nancy and Geboes Score Index (grade III-IV) of 24 (82.7%) and (active  $> 3.1$ ) 26 samples (89.0%) showed a distortion of the crypts followed by massive neutrophil infiltration and ulceration of the colonic mucosa. However, there was no sampling point in the colon for histological examination. This study is consistent with Kim DB et al. in that most of the mucosal samples with High MES showed histologically active inflammation with a Geboes Score Index  $> 3.1$ . In 94% of samples, normal endoscopic

mucosa showed a Geboes Score Index <3.1.<sup>8</sup>

A previous study found that from 378 sampling sites in the large intestine of 54 patients with ulcerative colitis, 88.1% with MES of 0 showed a histologic score of 1.<sup>8,12</sup> Therefore, chronic ulcerative colitis is inactive and confirms that the endoscopic score is consistent with the histological score. These results agree with Shah J et al., which correlated MES with GI, RHI, and NI. Based on Table 1, 57.3% of patients (1.48 + 0.68) had a Low MES score, while the Geboes and Nancy Score Index found the inactive disease in 58.8% (2.38 + 0.83), and 61.8% (2.79 + 1.02).<sup>7</sup> Endoscopic examination with High MES can effectively predict ulcerative colitis associated with dysplasia and colorectal cancer.<sup>5</sup> Ulcerative colitis-associated dysplasia impacts the poor prognosis of patients. In High MES with active disease conditions accompanied by severe intestinal inflammation, there is a risk of repeated recurrences.<sup>5,9</sup> Xu W et al., comparing clinical outcomes between patients, showed that the remission phase (p=0.024) was more common with Low MES. Meanwhile, those with High MES tend to have an active disease (p=0.033), serious complications (p < 0.001), and undergo surgery (p < 0.001).<sup>5</sup>

A combination of clinical, serological, endoscopic, and histological examinations is required in patients with ulcerative colitis to accurately assess and evaluate the ongoing inflammatory process. This is because each examination has its strengths and weaknesses.<sup>8</sup> Assessment of disease activity in determining the severity and extent of inflammation is very important for planning treatment strategies. Endoscopy is a modality for assessing mucosal activity and disease extension in the luminal gastrointestinal tract, and the correlation with histology scoring can be used in clinical practice.<sup>9,16,17</sup>

Concerning the strength of this study, the inflammatory profile can be analyzed endoscopically and histologically. There is a significant positive relationship between endoscopic and histological inflammatory profiles. Therefore, endoscopic assessment can reflect the histological features of inflammation to determine disease severity and evaluate therapy. The limitations of

this study were retrospective; there was no follow-up with patients who could provide an overview of disease progression and evaluation of treatment. This study uses two parameters which are endoscopic and histological. In ulcerative colitis, the number of parameters used is directly proportional to the accuracy in assessing the inflammatory profile and disease severity, such as epidemiological and clinical factors, the examination of fecal calprotectin, and the neutrophil-lymphocyte ratio.<sup>18</sup> Future studies are expected to assess the relationship between these parameters. Therefore, the profile of inflammation and disease severity of ulcerative colitis can be determined.

## CONCLUSION

There is a significant relationship between histological and endoscopic scoring. Therefore, an endoscopic examination can be a reference for histologically active disease.

## ETHICAL CONSIDERATION

This study has been approved by the Research Ethics Committee of the Faculty of Medicine, University of Lambung Mangkurat Banjarmasin, under No. 137/KEPK-FK ULM/MEC/V/2022.

## CONFLICT OF INTEREST

The authors declared that no competing financial interests or personal relationships tend to influence the work reported in this study.

## FUNDING

The authors are responsible for the study's funding without the involvement of a grant, scholarship, or any other funding resource.

## AUTHOR CONTRIBUTIONS

AAW is responsible for conceptualization, methodology, validation and formal analysis. HBV is responsible for data curation, writing - original and administration. DDS is responsible for software, validation, formal analysis and resources, and HS is responsible for writing - review and editing, administration and resources. HDP is responsible for the

supervision, writing - review & editing, and KMS is responsible for writing - reviewing & editing resources.

## REFERENCES

- Sheng YH, Hasnain SZ, Florin THJ, McGuckin MA. Mucins in inflammatory bowel diseases and colorectal cancer. *J Gastroenterol Hepatol*. 2012;27(1):29-38.
- Wolff BG. Ulcerative Colitis. *Clin Colon Rectal*. 2004;17(1):3.
- Kucharzik T, Koletzko S, Kannengießer K, Dignaß A. Colitis ulcerosa - Diagnostische und therapeutische Algorithmen. *Dtsch Arztebl Int*. 2017;117(33-34):564-573.
- Molnar T. Pathogenesis of Ulcerative Colitis and Crohn's Disease: Similarities, Differences and a Lot of Things We Do Not Know Yet. *J Clin Immunol*. 2014;13:1-15.
- Xu W, Liu F, Tang W, et al. The Mayo Endoscopic Score Is a Novel Predictive Indicator for Malignant Transformation in Ulcerative Colitis: A Long-Term Follow-Up Multicenter Study. *Int Surg*. 2022;9:1-9.
- Sharara AI, Malaeb M, Lenfant M, Ferrante M. Assessment of Endoscopic Disease Activity in Ulcerative Colitis: Is Simplicity the Ultimate Sophistication? *Inflamm Intest Dis*. 2022;7(1):7-4.
- Shah J, Dutta U, Das A, et al. Relationship between Mayo endoscopic score and histological scores in ulcerative colitis: A prospective study. *Open*. 2020;4(3):382-386.
- Kim DB, Lee KM, Lee JM, et al. correlation between histological activity and endoscopic, clinical, and serologic activities in patients with ulcerative colitis. *Gastroenterol Res Pract*. 2016;2016:1-8.
- Tontini GE, Bisschops R, Neumann H. Endoscopic scoring systems for inflammatory bowel disease: Pros and cons. *Expert Rev Gastroenterol Hepatol*. 2014;8(5):543-554.
- Flis D, Simian D, Flores L, Ibañez P, Lubascher J, et al. Clinical, endoscopic and histological correlation and measures of association in ulcerative colitis. *J Dig Dis*. 2017;18(11):634-641.
- Shamaningsih SM. Serum markers of Inflammatory Bowel Disease: A literature review. *Bali Medical Journal*. 2018;7(2):491-8.
- Sharara AI, Malaeb M, Lenfant M, Ferrante M. Assessment of Endoscopic Disease Activity in Ulcerative Colitis: Is Simplicity the Ultimate Sophistication? *Inflamm Intest Dis*. 2022;7(1):7-8.
- Marchal Bressenot A, Riddell RH, Boulagnon-Rombi C, et al. Review article: The histological assessment of disease activity in ulcerative colitis. *Aliment Pharmacol Ther*. 2017;42(8):957-967.
- Jaregui-amezaga A, Geerits A, Das Y, et al. Original Article A Simplified Geboes Score for Ulcerative Colitis. *Journal of Crohn's and Colitis*. 2017;11(3):305-313.
- Lang-Schwarz C, Rubio CA, Vieth M. Diagnostic Impact of Crypt Branching in

- 15 Patients With Crohn's Disease: A Validation Study. *Anticancer Res.* 2022;42(4):1919-1923.
16. Kirchgerner J, Svrcek M, Gall G Le, et al. Nancy Index Scores of Chronic Inflammatory Bowel Disease Activity Associate With Development of Colorectal Neoplasia. *Clin Gastroenterol Hepatol.* 2020;18:150-157.
17. Ungaro R, Colombel JF, Lissos T, Peyrin-Biroulet L. A Treat-to-Target Update in Ulcerative Colitis: A Systematic Review. *Am J Gastroenterol.* 2019;114(6):874-883.
18. Prabawa IPY, Bhargah A, Liwang F, Tandio DA, Tandio AL, Lestari AAW, Budiana ING, Manuaba IBAP. Pretreatment Neutrophil-to-Lymphocyte ratio (NLR) and Platelet-to-Lymphocyte Ratio (PLR) as a Predictive Value of Hematological Markers in Cervical Cancer. *Asian Pac J Cancer Prev.* 2019;20(3):863-868.



This work is licensed under a Creative Commons Attribution

# Mayo Endoscopic Score (MES) as a reference for the histological active disease of ulcerative colitis

---

## ORIGINALITY REPORT

---

24%

SIMILARITY INDEX

%

INTERNET SOURCES

24%

PUBLICATIONS

%

STUDENT PAPERS

---

## PRIMARY SOURCES

---

- 1 Tom de Waal, Niklas Handin, Joachim Brouwers, Marc Ferrante et al. "The impact of inflammation on the expression of drug transporters and metabolic enzymes in colonic tissue from ulcerative colitis patients", *International Journal of Pharmaceutics*, 2022  
Publication 2%
  - 2 Dae Bum Kim, Kang-Moon Lee, Ji Min Lee, Yoon Yung Chung et al. "Correlation between Histological Activity and Endoscopic, Clinical, and Serologic Activities in Patients with Ulcerative Colitis", *Gastroenterology Research and Practice*, 2016  
Publication 2%
  - 3 Yongfang Ji, Haiyan Wang. "Prognostic prediction of systemic immune-inflammation index for patients with gynecological and breast cancers: a meta-analysis", *World Journal of Surgical Oncology*, 2020  
Publication 1%
-



4

Christopher Ma, Rocio Sedano, Ahmed Almradi, Niels Vande Casteele et al. "An international consensus to standardize integration of histopathology in ulcerative colitis clinical trials", *Gastroenterology*, 2021

Publication

---

1 %

5

Weimin Xu, Fangyuan Liu, Wenbo Tang, Yubei Gu, Jie Zhong, Long Cui, Peng Du. "The Mayo Endoscopic Score Is a Novel Predictive Indicator for Malignant Transformation in Ulcerative Colitis: A Long-Term Follow-Up Multicenter Study", *Frontiers in Surgery*, 2022

Publication

---

1 %

6

"UEG Week 2020 Oral Presentations", *United European Gastroenterology Journal*, 2020

Publication

---

1 %

7

Hunter Wang, Ingrid Fewings, Lee Bornman, Bruce Shadbolt, Mitali Fadia, Kavitha Subramaniam. "Histologic Remission (NANCY Index) is Superior to Endoscopic Mucosal Healing in Predicting Relapse Free Survival in Patients With Ulcerative Colitis in Clinical and Endoscopic Remission", *Journal of Clinical Gastroenterology*, 2022

Publication

---

1 %

8

Arianna Dal Buono, Giulia Roda, Marjorie Argollo, Laurent Peyrin-Biroulet, Silvio Danese. "Histological healing: should it be

1 %



considered as a new outcome for ulcerative colitis?", Expert Opinion on Biological Therapy, 2020

Publication

---

9

Aude Marchal-Bressenot, Julia Salleron, Camille Boulagnon-Rombi, Claire Bastien et al. "Development and validation of the Nancy histological index for UC", Gut, 2017

Publication

---

1 %

10

Heidi Drescher, Trevor Lissoos, Elaine Hajisafari, Elisabeth R. Evans. "Treat-to-Target Approach in Inflammatory Bowel Disease: The Role of Advanced Practice Providers", The Journal for Nurse Practitioners, 2019

Publication

---

1 %

11

Natasa Smrekar, David Drobne, Lojze M. Smid, Ivan Ferkolj, Borut Stabuc, Alojz Ihan, Andreja Natasa Kopitar. "Dendritic cell profiles in the inflamed colonic mucosa predict the responses to tumor necrosis factor alpha inhibitors in inflammatory bowel disease", Radiology and Oncology, 2018

Publication

---

1 %

12

Olga Maria Nardone, Yifat Snir, James Hodson, Rosanna Cannatelli et al. "Advanced technology for assessment of endoscopic and histological activity in ulcerative colitis: a systematic review and meta-analysis",

1 %

# Therapeutic Advances in Gastroenterology, 2022

Publication

---

13

Weimin Xu, Zhebin Hua, Yaosheng Wang, Yubei Gu, Jie Zhong, Long Cui, Peng Du. "The endoscopic prediction model of simple endoscopic score for Crohn's disease (SES-CD) as an effective predictor of intestinal obstruction in Crohn's disease: A multicenter long-term follow-up study", *Frontiers in Surgery*, 2022

Publication

---

1 %

14

"38 Inflammatory Bowel Disease and Microscopic Colitis", Georg Thieme Verlag KG, 2018

Publication

---

1 %

15

Carlos A. Rubio, Michael Vieth, Corinna Lang - Schwarz. "The frequency of dysplastic branching crypts in colorectal polypoid tubular adenomas", *International Journal of Experimental Pathology*, 2023

Publication

---

1 %

16

"Crohn's Disease and Ulcerative Colitis", Springer Science and Business Media LLC, 2017

Publication

---

1 %

17

Baldeep Singh Pabla, David Allen Schwartz. "Assessing Severity of Disease in Patients with

1 %

# Ulcerative Colitis", Gastroenterology Clinics of North America, 2020

Publication

---

18

Hanna Borgli, Vajira Thambawita, Pia H. Smedsrud, Steven Hicks et al. "HyperKvasir, a comprehensive multi-class image and video dataset for gastrointestinal endoscopy", Scientific Data, 2020

Publication

---

1 %

19

Hanna Öhlmann, Laura Ricarda Koenen, Franziska Labrenz, Harald Engler, Nina Theysohn, Jost Langhorst, Sigrid Elsenbruch. "Altered Brain Structure in Chronic Visceral Pain: Specific Differences in Gray Matter Volume and Associations With Visceral Symptoms and Chronic Stress", Frontiers in Neurology, 2021

Publication

---

1 %

20

Lara Hart, Mallory Chavannes, Omar Kherad, Chelsea Maedler et al. "Faecal Calprotectin Predicts Endoscopic and Histological Activity in Clinically Quiescent Ulcerative Colitis", Journal of Crohn's and Colitis, 2020

Publication

---

1 %

21

"UEG Week 2015 Poster Presentations", United European Gastroenterology Journal, 2015

Publication

---

<1 %

22

Jimil Shah, Usha Dutta, Ashim Das, Vishal Sharma et al. "Relationship between Mayo endoscopic score and histological scores in ulcerative colitis: A prospective study", JGH Open, 2019

Publication

<1 %

23

Dominik Kobylarek, Piotr Iwanowski, Zuzanna Lewandowska, Nattakarn Limphaibool et al. "Advances in the Potential Biomarkers of Epilepsy", Frontiers in Neurology, 2019

Publication

<1 %

24

Daniela Fluxá, Daniela Simian, Lilian Flores, Patricio Ibáñez et al. "Clinical, endoscopic and histological correlation and measures of association in ulcerative colitis", Journal of Digestive Diseases, 2017

Publication

<1 %

25

Ayman Ibrahim, Saud M. Elsaughier, Bahaa Eldin Shamandy, Ahmed Abdel-Galeel. "Aortic Valve Sclerosis Severity Index is a Predictor of Coronary Artery Disease Severity in Diabetic Patients with Ischemic Heart Disease", The Egyptian Journal of Hospital Medicine, 2020

Publication

<1 %

26

Christian Selinger, Jenelyn Carbonell, John Kane, Mandour Omer, Alexander Charles Ford. "Acceptability of a 'treat to target' approach in inflammatory bowel disease to

<1 %



patients in clinical remission", Frontline Gastroenterology, 2020

Publication

---

27

Luiz Claudio Santos Thuler, Bárbara Reis Wariss, Angélica Nogueira-Rodrigues, Andreia Cristina de Melo, Anke Bergmann. "The utility of pretreatment systemic inflammatory response biomarkers on overall survival of cervical cancer patients stratified by clinical staging", European Journal of Obstetrics & Gynecology and Reproductive Biology, 2021

Publication

---

<1 %

28

Pengfei Xu, Tengteng Lv, Shenghui Dong, Zhihao Cui, Xinyuan Luo, Baolei Jia, Che Ok Jeon, Jie Zhang. "Association between intestinal microbiome and inflammatory bowel disease: Insights from bibliometric analysis", Computational and Structural Biotechnology Journal, 2022

Publication

---

<1 %

29

Udayakumar Navaneethan, Bo Shen. "Pros and Cons of Medical Management of Ulcerative Colitis", Clinics in Colon and Rectal Surgery, 2010

Publication

---

<1 %

30

Daniela Simian. "Inflammatory bowel disease: A descriptive study of 716 local Chilean

<1 %

patients", World Journal of Gastroenterology, 2016

Publication

---

31

Thomas Chateau, Roger Feakins, Aude Marchal-Bressenot, Fernando Magro, Silvio Danese, Laurent Peyrin-Biroulet. "Histological Remission in Ulcerative Colitis", The American Journal of Gastroenterology, 2020

Publication

---

32

"Endoscopy in Inflammatory Bowel Disease", Springer Science and Business Media LLC, 2015

Publication

---

33

Pedro Boal Carvalho, José Cotter. "Mucosal Healing in Ulcerative Colitis: A Comprehensive Review", Drugs, 2017

Publication

---

34

Song, Young Shin, Jung Ah Lim, Hoonsung Choi, Jae-Kyung Won, Jae Hoon Moon, Sun Wook Cho, Kyu Eun Lee, Young Joo Park, Ka Hee Yi, Do Joon Park, and Jeong-Sun Seo. "Prognostic effects of TERT promoter mutations are enhanced by coexistence with BRAF or RAS mutations and strengthen the risk prediction by the ATA or TNM staging system in differentiated thyroid cancer patients : TERT Mutations Benefit High-Risk DTC", Cancer, 2016.

Publication

<1 %

<1 %

<1 %

<1 %

---

35

Vincenzo Villanacci, Luca Reggiani-Bonetti,  
Flavio Caprioli, Luca Saragoni et al.  
"Histopathology of inflammatory bowel  
disease — Position statement of the  
Pathologists of the Italian Group for the Study  
of Inflammatory Bowel Disease (IG-IBD) and  
Italian Group of Gastrointestinal Pathologists  
(GIPAD-SIAPEC)", Digestive and Liver Disease,  
2020

<1 %

Publication

---

---

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off