73443_Auto_Edited.docx

Retrospective Study

Endoscopic ultrasonography in the evaluation of condition and prognosis of ulcerative colitis

Fang RJ *et al*. EUS in UC

Abstract

BACKGROUND

Ulcerative colitis (UC) is usually diagnosed through histopathology, enteroscopy, clinical symptoms, and physical findings; however, it is difficult to accurately evaluate disease severity.

AIM

To investigate the value of endoscopic ultrasonography (EUS) in the evaluation of the severity and prognosis of UC.

METHODS

Patients with UC who were seen in our hospital from March 2019 to December 2020 were eligible, and disease severity was evaluated according to the modified Truelove and Witts and Mayo scores. We performed EUS, calculated the UC endoscopic index of severity (UCEIS) and EUS-UC scores, and administered appropriate treatment. The UCEIS and EUS-UC scores of patients were assessed in relation to disease severity, and the correlations between UCEIS and EUS-UC scores and disease severity was also

analyzed. The UCEIS and EUS-UC scores before and after treatment were also compared.

RESULTS

A total of 79 patients were included in this study. According to the Mayo Index, 23, 32, and 24 patients had mild, moderate and severe UC, respectively. The UCEIS and EUS-UC scores were higher in moderate cases (4.98 ± 1.04 and 5.01 ± 0.99, respectively) than in mild cases (1.56 ± 0.82 and 1.64 ± 0.91, respectively, $P < 0.05$). Furthermore, the UCEIS and EUS-UC scores (7.31 ± 1.10 and 7.59 ± 1.02, respectively) were higher in severe cases than in moderate cases ($P < 0.05$). According to the modified Truelove and Witts scores, 21, 36, and 22 patients were classified as having mild, moderate and severe disease, respectively. The UCEIS and EUS-UC scores were significantly higher in moderate disease (4.79 ± 1.11 and 4.96 ± 1.23, respectively) than in mild disease (1.71 ± 0.78 and 1.69 ± 0.88, respectively, $P < 0.05$). Additionally, the UCEIS and EUS-UC scores in severe disease (7.68 ± 1.22 and 7.81 ± 0.90, respectively) were significantly higher than in moderate disease ($P < 0.05$). The UCEIS and EUS-UC scores were significantly and positively correlated with disease severity according to the modified Truelove and Witts score and Mayo score ($P < 0.05$). The UCEIS and EUS-UC scores after 2 mo of treatment (3.88 ± 0.95 and 4.01 ± 1.14, respectively) and after 6 mo of treatment (1.59 ± 0.63 and 1.64 ± 0.59, respectively) were lower than the respective scores before treatment (5.93 ± 1.79 and 6.04 ± 2.01) ($P < 0.05$).

CONCLUSION

EUS can clarify the status of UC and accurately evaluate the treatment response, providing an objective basis for formulation and adjustment of the treatment plan.

Key Words: Endoscopic ultrasonography; Ulcerative colitis; Disease severity; Prognosis; Ulcerative colitis endoscopic index of severity score; Endoscopic ultrasonography-ulcerative colitis score; Mayo disease activity index

INTRODUCTION

Ulcerative colitis (UC) is a chronic, nonspecific, clinically heterogeneous colitis characterized by recurrent attacks and nonspecific clinical symptoms, which have a great impact on patients' physical and mental health and quality of life. In recent years, UC has gradually become a worldwide social and public health problem that must be addressed[1,2].

The diagnosis of UC is relatively difficult. At present, the disease is usually diagnosed through pathological biopsy, enteroscopy, clinical symptoms, and physical findings; however, it is difficult to accurately evaluate the severity of the disease, and there are some limitations in clinical applications[3,4]. In recent years, with the continuous improvement of medical technology, the application of endoscopic ultrasonography (EUS) in the diagnosis and treatment of UC has attracted widespread attention. It has the advantages of both endoscopy and ultrasonography, can effectively evaluate the changes in intestinal wall thickness and hierarchical structure, and allows monitoring for changes in disease activity and severity[5,6].

In this study, we investigated the value of EUS in the evaluation of the status and prognosis of UC.

MATERIALS AND METHODS

Baseline data

This study was approved by the ethics committee of our hospital. Patients who underwent endoscopic ultrasound to investigate UC at our hospital between March 2019 and December 2020 were eligible for enrollment. Inclusion criteria were as follows: (1) diagnostic criteria for UC[7] were met; (2) patients or their families provided written informed consent to participate in the study; (3) patient adherence to, and completion of, the investigation; and (4) age > 18 years. Exclusion criteria were as follows: (1) malignant tumors of the digestive system; (2) history of psychosis; (3) history of allergy; (4) kidney, liver, and other organ dysfunction; (5) pregnancy or lactation; (6)

contraindications to endoscopy; (7) administration of relevant treatment before inclusion in the study; (8) infectious enteritis (including *Cytomegalovirus, Clostridium difficile, Campylobacter jejuni,* acute gastroenteritis, and amoebic bowel disease); (9) Behçet's disease and Crohn's disease; and (10) radiation enteritis and ischemic colitis.

EUS

A Fujinon SP701 micro ultrasonic probe (Fujinon, Omiya, Japan), with frequency of 20 MHz and rotary scanning mode, and a Fujifilm SU-9000 ultrasonic probe (Fujifilm, Minato City, Japan) with frequencies of 7.5, 10, and 12 MHz were used. Before the examination, the patients were examined, and those with contraindications were excluded from analysis. Four hours before the examination, patients were instructed to consume three packets of polyethylene glycol electrolyte powder, diluted in 3 L of warm water, within two hours. After verifying passage of clear water, endoscopy was performed with the patient in the left lying position. Lubricant was applied to the endoscope, and the investigator expanded the patient's anus moderately. Air and degassed water in the intestinal cavity were aspirated, prior to the endoscope being withdrawn.

First, endoscopy was performed to determine the degree and scope of the lesion; then, endoscopic ultrasound was performed at and around the lesions. Depending on the specific condition of the lesion, each was scanned using one of the two following methods. (1) Degassed water filling method: This method can be implemented in many cases. First, excess air is removed, and 200–300 mL of degassed water is injected into the intestinal cavity through the endoscopic working channel to ensure that the focus and ultrasonic probe are submerged in water; and (2) Direct contact method: The ultrasonic probe at the tip of the endoscope is placed in direct contact with the intestinal mucosa. During the examination, the body position was changed according to the specific investigational needs to ensure that the degassed water effectively filled the space between the probe and the focus. The distance between the probe and the focus was set

at 1 cm to ensure optimal ultrasonic images could be acquired at all levels of the intestinal wall.

All images were evaluated by physicians with extensive experience in reading endoscopic ultrasound images in our hospital. The UC endoscopic index of severity (UCEIS) and EUS-UC scores were then calculated. The scoring criteria are shown in Table 1 and Table 2 for UCEIS scoring and EUS-UC scoring, respectively.

Evaluation of disease severity

Disease severity was evaluated using the Mayo scale and the modified Truelove and Witts scores. The evaluation criteria are shown in Table 3 and Table 4 for the modified Truelove and Witts and the Mayo evaluation criteria, respectively.

Treatment method

According to the consensus on the diagnosis and treatment of inflammatory bowel disease in 2018, targeted interventions were administered according to the patient's condition. Treatments included oral mesalazine with or without corticosteroids, and intravenous infusion of infliximab. Colonoscopy was repeated 2 and 6 mo after the initiation of treatment.

Observation indexes

The UCEIS and EUS-UC scores of patients with different disease severities were counted and analyzed. The correlations between UCEIS and EUS-UC scores and disease severity were analyzed. The UCEIS and EUS-UC scores before and after treatment were statistically analyzed.

Statistical analysis

SPSS 22.0 software (IBM Corp., Armonk, NY, USA) was used for data analysis. Measurement data were analyzed using the t-test and are expressed as mean ± SD. Enumerated data were analyzed using the χ^2 test and are expressed as n (%). The

Spearman method was used for correlation analysis. A *P* value < 0.05 indicated a statistically significant difference.

RESULTS

Of the 79 patients with UC included in the analysis, 46 were men and 33 were women. The average age was 49.96 years (range 21-78 years). The lesions were located in the left colon in 17 cases, the rectum in 17 cases, the sigmoid colon in 23 cases, and were extensive in 22 cases.

UCEIS and EUS-UC scores of patients with different Mayo scores

According to the Mayo disease activity index, there were 23, 32, and 24 cases of mild, moderate and severe UC, respectively. The UCEIS and EUS-UC scores were higher in moderate cases (4.98 ± 1.04 and 5.01 ± 0.99, respectively) than in mild cases (1.56 ± 0.82 and 1.64 ± 0.91, respectively). Furthermore, the UCEIS and EUS-UC scores were higher still in severe cases (7.31 ± 1.10 and 7.59 ± 1.02, respectively) than in moderate cases, and the differences were statistically significant (*P* < 0.05) (Table 5).

UCEIS and EUS-UC scores of patients with different modified Truelove and Witts scores

Among the 79 cases in this study, 21, 36 and 22 patients were classified as having mild, moderate, and severe UC according to the modified Truelove and Witts scores. The UCEIS and EUS-UC scores in moderate cases (4.79 ± 1.11 and 4.96 ± 1.23, respectively) were higher than in mild cases (1.71 ± 0.78 and 1.69 ± 0.88, respectively). Furthermore, the UCEIS and EUS-UC scores in severe cases (7.68 ± 1.22 and 7.81 ± 0.90, respectively) were higher than in moderate cases, and the differences were statistically significant (*P* < 0.05) (Table 6).

Correlation between UCEIS and EUS-UC scores and disease severity

According to our analysis, the UCEIS and EUS-UC scores were significantly and positively correlated with disease severity (modified Truelove and Witts scores, Mayo score) ($P < 0.05$) (Table 7).

UCEIS and EUS-UC scores before and after treatment

The UCEIS and EUS-UC scores after 2 mo of treatment (3.88 ± 0.95 and 4.01 ± 1.14, respectively) and after 6 mo of treatment (1.59 ± 0.63 and 1.64 ± 0.59, respectively) were lower than the UCEIS and EUS-UC scores before treatment (5.93 ± 1.79 and 6.04 ± 2.01, respectively) ($P < 0.05$) (Table 8).

DISCUSSION

The clinical diagnosis and treatment efficacy of UC are mainly established through histopathological examination, barium enema, and endoscopy. However, histopathological studies and routine endoscopy can only evaluate surface lesions of the intestinal mucosa. Therefore, it is difficult to accurately determine the degree of damage to the intestinal mucosa and submucosa, and the structural changes in the intestinal wall, which can affect the accuracy of the evaluation of the severity of UC[8-10]. Therefore, accurate diagnosis and evaluation of UC is still a research hotspot.

EUS is an auxiliary examination method widely used in clinical practice in recent years. It combines the advantages of digestive endoscopy and ultrasonography, can provide clear images of the gastrointestinal wall and its internal structure, and accurately locate, measure, and evaluate submucosal edema and wall thickening[11,12]. Ultrasound endoscopy involves the installation of an ultrasound probe on the front of the endoscope, which can transmit colonic mucosal images to the computer processing center and present the relevant content on the monitor. Through the display screen, the device can accurately and clearly illustrate the subtle changes in the large intestinal mucosa, including submucosal lesions, diverticula, hemangiomas, polyps, pigmentation, bleeding, ulcers, erosions, and inflammation. The image is more realistic and clearer, and biopsy forceps can be inserted through the endoscope channel to

obtain tissues for pathological examination from ultrasound regions of interest, so as to evaluate the nature of lesions[13,14]. Relevant data showed that EUS can directly locate diseased intestinal segments, and the examination results are less affected by subjective and objective factors, thus ensuring the accuracy of diagnosis and evaluation.

When detecting UC, EUS can accurately determine the location of enteritis. The imaging manifestations include abnormally increased thickness of the intestinal wall, abnormal hierarchical structure of the intestinal wall, and irregular or unclear boundaries between various layers of the intestinal wall. Some patients with UC have submucosal vasodilation and extraintestinal lymph node enlargement[15,16]. Other scholars have pointed out that through ultrasonic endoscopy, we can clearly evaluate the condition of the anal canal, terminal ileum, rectum, ileocecal valve, colon, and sigmoid colon with the help of enteroscopy, and we can perform cytological and pathological examination of potentially diseased regions[17,18].

Patients with UC have different degrees of bleeding, mucosal erosion, ulceration, congestion, inflammatory infiltration, and intestinal wall thickening. In addition, the modified Truelove and Witts score and Mayo score are important scales for clinical evaluation of the severity of UC. In this study, these scales and EUS were used to diagnose and evaluate patients with UC. The results showed significant differences in UCEIS and EUS-UC scores in patients with UC, in line with the different disease severity scores according to the modified Truelove and Witts and Mayo scores. Our findings suggest that EUS can accurately detect lesions in patients with UC and can provide an objective reference for the evaluation of disease severity, which is of great guiding significance for diagnosis and treatment. In addition, some studies have pointed out that even if the clinical symptoms of patients with UC are completely relieved and abnormal endoscopic findings are resolved, persistent histological inflammation may still occur in the body, affecting the disease prognosis. EUS can provide more information about UC lesions, especially in the submucosa, muscle layer, serosa, and even outside the serosa. Therefore, EUS may be of great significance in evaluating the severity and prognosis of UC[19,20].

To verify the above findings, the patients included in this study received treatment for UC and were followed up after 2 and 6 mo of treatment. The results showed that the ultrasonic endoscopy findings (UCEIS and EUS-UC scores) of the patients after treatment were improved compared with those before treatment. This confirms that ultrasonic endoscopy also has value in assessing the treatment effect and prognosis of UC. Additionally, the technique can guide clinical prevention and intervention in subsequent exacerbations, so as to improve the treatment effect and prognosis of the disease as a whole. This study confirmed that EUS has significant clinical value in the early treatment of UC, in improving patient prognosis, formulating an effective treatment plan in a timely manner, and, to a certain extent, can assist in the provision of an individualized treatment plan.

However, this study was limited by a small sample size, and some small differences cannot be effectively reflected. In our future research, we will strive to expand the sample size and explore the application value of EUS in individualized treatment.

CONCLUSION

EUS can effectively clarify the disease status of patients with ulcerative colitis, stratify the disease severity, and accurately evaluate the treatment response, to provide an objective basis for the clinical formulation or further adjustment of a patient's treatment plan.

REFERENCES

1 **Walsh AJ**, Bryant RV, Travis SP. Current best practice for disease activity assessment in IBD. *Nat Rev Gastroenterol Hepatol* 2016; **13**: 567-579 [PMID: 27580684 DOI: 10.1038/nrgastro.2016.128]

2 **Kinoshita K**, Katsurada T, Nishida M, Omotehara S, Onishi R, Mabe K, Onodera A, Sato M, Eto K, Suya M, Maemoto A, Hasegawa T, Yamamoto J, Mitsumori D, Yoshii S, Ono K, Sakamoto N. Usefulness of transabdominal ultrasonography for assessing

ulcerative colitis: a prospective, multicenter study. *J Gastroenterol* 2019; **54**: 521-529 [PMID: 30519747 DOI: 10.1007/s00535-018-01534-w]

3 **Yan B**, Feagan B, Teriaky A, Mosli M, Mohamed R, Williams G, Yeung E, Yong E, Haig A, Sey M, Stitt L, Zou GY, Jairath V. Reliability of EUS indices to detect inflammation in ulcerative colitis. *Gastrointest Endosc* 2017; **86**: 1079-1087 [PMID: 28760533 DOI: 10.1016/j.gie.2017.07.035]

4 **Sugiura K**, Kato S, Ishibashi A, Aoyama T, Kani K, Yakabi K. [Comparison of transabdominal ultrasound with quantitative power Doppler and colonoscopic findings for the evaluation of colonic inflammation in active ulcerative colitis]. *Nihon Shokakibyo Gakkai Zasshi* 2020; **117**: 695-705 [PMID: 32779587 DOI: 10.11405/nisshoshi.117.695]

5 **Allocca M**, Fiorino G, Bonovas S, Furfaro F, Gilardi D, Argollo M, Magnoni P, Peyrin-Biroulet L, Danese S. Accuracy of Humanitas Ultrasound Criteria in Assessing Disease Activity and Severity in Ulcerative Colitis: A Prospective Study. *J Crohns Colitis* 2018; **12**: 1385-1391 [PMID: 30085066 DOI: 10.1093/ecco-jcc/jjy107]

6 **Bermejo F**, Aguas M, Chaparro M, Domènech E, Echarri A, García-Planella E, Guerra I, Gisbert JP, López-Sanromán A; en representación de GETECCU. Recommendations of the Spanish Working Group on Crohn's Disease and Ulcerative Colitis (GETECCU) on the use of thiopurines in inflammatory bowel disease. *Gastroenterol Hepatol* 2018; **41**: 205-221 [PMID: 29357999 DOI: 10.1016/j.gastrohep.2017.11.007]

7 **Rubin DT**, Ananthakrishnan AN, Siegel CA, Sauer BG, Long MD. ACG Clinical Guideline: Ulcerative Colitis in Adults. *Am J Gastroenterol* 2019; **114**: 384-413 [PMID: 30840605 DOI: 10.14309/ajg.0000000000000152]

8 **Bots S**, Nylund K, Löwenberg M, Gecse K, Gilja OH, D'Haens G. Ultrasound for Assessing Disease Activity in IBD Patients: A Systematic Review of Activity Scores. *J Crohns Colitis* 2018; **12**: 920-929 [PMID: 29684200 DOI: 10.1093/ecco-jcc/jjy048]

9 **Kucharzik T**, Koletzko S, Kannengiesser K, Dignass A. Ulcerative Colitis-Diagnostic and Therapeutic Algorithms. *Dtsch Arztebl Int* 2020; **117**: 564-574 [PMID: 33148393 DOI: 10.3238/arztebl.2020.0564]

10 **Fodor I**, Serban O, Serban DE, Farcau D, Fufezan O, Asavoaie C, Man SC, Dumitrascu DL. The value of abdominal ultrasonography compared to colonoscopy and faecal calprotectin in following up paediatric patients with ulcerative colitis. *Med Ultrason* 2021; **23**: 153-160 [PMID: 33626119 DOI: 10.11152/mu-3005]

11 **Mohammed Vashist N**, Samaan M, Mosli MH, Parker CE, MacDonald JK, Nelson SA, Zou GY, Feagan BG, Khanna R, Jairath V. Endoscopic scoring indices for evaluation of disease activity in ulcerative colitis. *Cochrane Database Syst Rev* 2018; **1**: CD011450 [PMID: 29338066 DOI: 10.1002/14651858.CD011450.pub2]

12 **Vuitton L**, Peyrin-Biroulet L, Colombel JF, Pariente B, Pineton de Chambrun G, Walsh AJ, Panes J, Travis SP, Mary JY, Marteau P. Defining endoscopic response and remission in ulcerative colitis clinical trials: an international consensus. *Aliment Pharmacol Ther* 2017; **45**: 801-813 [PMID: 28112419 DOI: 10.1111/apt.13948]

13 **Bhattacharya S**, Cross RK. Is Endoscopic Remission in Ulcerative Colitis Still Good Enough? *Inflamm Bowel Dis* 2019; **25**: 1729-1730 [PMID: 31412124 DOI: 10.1093/ibd/izz177]

14 **Li K**, Marano C, Zhang H, Yang F, Sandborn WJ, Sands BE, Feagan BG, Rubin DT, Peyrin-Biroulet L, Friedman JR, De Hertogh G. Relationship Between Combined Histologic and Endoscopic Endpoints and Efficacy of Ustekinumab Treatment in Patients With Ulcerative Colitis. *Gastroenterology* 2020; **159**: 2052-2064 [PMID: 32853634 DOI: 10.1053/j.gastro.2020.08.037]

15 **Takenaka K**, Ohtsuka K, Fujii T, Negi M, Suzuki K, Shimizu H, Oshima S, Akiyama S, Motobayashi M, Nagahori M, Saito E, Matsuoka K, Watanabe M. Development and Validation of a Deep Neural Network for Accurate Evaluation of Endoscopic Images From Patients With Ulcerative Colitis. *Gastroenterology* 2020; **158**: 2150-2157 [PMID: 32060000 DOI: 10.1053/j.gastro.2020.02.012]

16 **Roushan N**, Ebrahimi Daryani N, Azizi Z, Pournaghshband H, Niksirat A. Differentiation of Crohn's disease and ulcerative colitis using intestinal wall thickness of the colon: A Diagnostic accuracy study of endoscopic ultrasonography. *Med J Islam Repub Iran* 2019; **33**: 57 [PMID: 31456981]

17 **Sagami S**, Kobayashi T, Aihara K, Umeda M, Morikubo H, Matsubayashi M, Kiyohara H, Nakano M, Ohbu M, Hibi T. Transperineal ultrasound predicts endoscopic and histological healing in ulcerative colitis. *Aliment Pharmacol Ther* 2020; **51**: 1373-1383 [PMID: 32383166 DOI: 10.1111/apt.15767]

18 **Spiceland CM**, Lodhia N. Endoscopy in inflammatory bowel disease: Role in diagnosis, management, and treatment. *World J Gastroenterol* 2018; **24**: 4014-4020 [PMID: 30254405 DOI: 10.3748/wjg.v24.i35.4014]

19 **Lin WC**, Chang CW, Chen MJ, Hsu TC, Wang HY. Effectiveness of sigmoidoscopy for assessing ulcerative colitis disease activity and therapeutic response. *Medicine (Baltimore)* 2019; **98**: e15748 [PMID: 31124958 DOI: 10.1097/MD.0000000000015748]

20 **Fukunaga S**, Kusaba Y, Tsuruta O. Use of Endocytoscopy for Ulcerative Colitis Surveillance: A Case Study. *Gastroenterology* 2020; **158**: e1-e2 [PMID: 31738921 DOI: 10.1053/j.gastro.2019.11.018]

Table 1 Scoring criteria of ulcerative colitis endoscopic index of severity

Items	0 score	1 score	2 score	3 score
Erosion and ulcer	Normal	Erosion, rough	The surface is covered with white moss, erosive and rough	Deep concave ulcer
Bleeding	No	Old blood stains, and disappear after washing with water	Blood stain, oozes again after washing with water	Active bleeding
Vascular texture	Normal	Vague	Disappear	-

Table 2 Scoring criteria of endoscopic ultrasonography-ulcerative colitis

Items	0 score	1 score	2 score	3 score
Intestinal wall thickness	Normal (≤ 3 mm)	Mild (3.1-4 mm)	Moderate (4.1-6 mm)	Severe (≥ 6.1 mm)
Depth of inflammation	1 layer involved	1-3 layer involved	Muscle layer involved	Transmural
Hyperemia	No	Mild	Moderate	Severe

Table 3 Scoring criteria of modified Truelove and Witts scores

Severity	ESR (mm/1 h)	Hemoglobin	Temperature (℃)	P (times/min)	Hematochezia	Defecation times (times/d)
Mild	< 20	Normal	Normal	Normal	Mild or no	< 4
Severe	> 30	< 75% normal value	> 37.8℃	> 90	Severe	≥ 6
Moderate	Between mild and severe					

ESR: Erythrocyte sedimentation rate

Table 4 Evaluation criteria of Mayo

Item	0 score	1 score	2 score	3 score
Defecation times	Normal	More times than normal 1-2 times/d	More times than normal 3-4 times/d	More times than normal at least 5 times/d
Hematochezia	No	Blood in the stool less than half the time	Most of the time there is blood in the stool	There is always blood in the stool
-	Normal	Mild	Moderate	Severe

Table 5 Comparison of ulcerative colitis endoscopic index of severity and endoscopic ultrasonography-ulcerative colitis scores of patients with different Mayo scores (mean ± SD, scores)

Groups	Cases	UCEIS	EUS-UC
Mild	23	1.56 ± 0.82	1.64 ± 0.91
Moderate	32	4.98 ± 1.04	5.01 ± 0.99
Severe	24	7.31 ± 1.10	7.59 ± 1.02
t/P value (mild vs moderate)		13.102/0.000	12.874/0.000
t/P value (moderate vs severe)		8.095/0.000	9.527/0.000

UCEIS: Ulcerative colitis endoscopic index of severity; EUS-UC: Endoscopic ultrasonography-ulcerative colitis scores.

Table 6 Comparison of ulcerative colitis endoscopic index of severity and endoscopic ultrasonography-ulcerative colitis scores of patients with different modified Truelove and Witts scores (mean ± SD, scores)

Groups	Cases	UCEIS	EUS-UC
Mild	21	1.71 ± 0.78	1.69 ± 0.88
Moderate	36	4.79 ± 1.11	4.96 ± 1.23
Severe	22	7.68 ± 1.22	7.81 ± 0.90
t/P value (mild vs moderate)		11.187/0.000	10.676/0.000
t/P value (moderate vs severe)		9.266/0.000	9.422/0.000

UCEIS: Ulcerative colitis endoscopic index of severity; EUS-UC: Endoscopic ultrasonography-ulcerative colitis scores.

Table 7 The correlation analysis between ulcerative colitis endoscopic index of severity, endoscopic ultrasonography-ulcerative colitis scores and disease severity

Items		UCEIS	EUS-UC
Modified Truelove	r value	0.537	0.559
and Witts score	P value	< 0.001	< 0.001
Mayo score	r value	0.498	0.603
	P value	< 0.001	< 0.001

UCEIS: Ulcerative colitis endoscopic index of severity; EUS-UC: Endoscopic ultrasonography-ulcerative colitis scores.

73443_Auto_Edited.docx