

Endoscopic Severity Factors during UC: The Place of the UCEIS Score

Manal Cherkaoui Malki*, S Mechhor, H Elbacha, N Benzoubeir and I Errabih

Department of Gastroentero-Hepatology and Proctology "Médecine B", Ibn Sina Hospital, University Mohammed V of Rabat, Morocco

***Corresponding Author:** Manal Cherkaoui Malki, Department of Gastroentero-Hepatology and Proctology "Médecine B", Ibn Sina Hospital, University Mohamed V of Rabat, Morocco.

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Abstract

Endoscopy has a main role in managing UC. The purpose of our work is to assess the severity in UC using the UCEIS score and to identify its main predictive parameters of clinical severity. Our retrospective, descriptive and analytical study was conducted in a period of 8 years including 320 patients followed for Ulcerative Colitis. The endoscopic severity of the disease was assessed by the UCEIS score and clinical activity by the Truelove and Witts score.

The location was distal in 19.56%, left in 23.91% and pancolitis in 56.52%. Clinically, 21.9% of patients were in mild flare, 57.72% were in moderate flare and 19.71% were in severe flare. The 3-endpoint study of the UCEIS score showed an absent vascular frame in 66.23% of the patients, decreased in 27.27% and normal in 6.49%. Bleeding was absent in 46.8%, mucous membranes in 42.9%, scanty luminal in 37.7% of the cases and profuse in only 1.3% of patients. Ulcers were absent in 18.2% of cases, less than 5 mm in 37.7% of cases, more than 5 mm in 19.5% of patients and deep in 24.7%. In total, 6.5% of patients were in endoscopic remission, 33.8% were in mild flare, 49.4% were in moderate flare, and 3.9% were in severe flare. In multivariate analysis, vascular weft decrease and ulceration are correlated to the clinic with $p = 0.038$; $OR = 7.2$; $IC = 95\% [0.8 - 8.11]$ and $p = 0.049$, $OR = 1.9$; $IC = 95\% [1 - 3.6]$ respectively. The UCEIS endoscopic score is a reliable tool for assessing the severity of UC thrust, it is the only validated score for detecting endoscopic lesions of severity.

Keywords: Ulcerative Colitis; UCEIS; Severity; Diagnosis

Introduction

Ulcerative Colitis (UC) is a chronic inflammatory bowel disease characterized by relapses-remission of immuno-modulated inflammation of the colorectal mucosa. A severe clinical presentation inaugurating or during the course of the disease can lead to a certain number of complications with a potential risk of colectomy. About 20% of patients will develop an episode of severe acute colitis which is a medico-surgical emergency defined by clinical-biological criteria, and does not include imaging or endoscopy. The place of endoscopy in severe and severe acute attacks is controversial, because of the dangerous nature it can have, nevertheless it has many interests, including that of guiding treatment, and performing biopsies to eliminate a infection that could trigger the outbreak, especially *Clostridium difficile* or CMV infection. It makes it possible to search for severe lesions which will prompt the start of alternative treatments as quickly as possible in the event of failure of systemic corticosteroid therapy and not to delay surgery and to calculate the UCEIS endoscopic score (Ulcerative colitis endoscopic index of severity).

Objective of the Study

The objective of our work is to establish the most predictive endoscopic factors of the severity of UC, and to define the place of the UCEIS score in the assessment of severity.

Methods

Study population

This is a retrospective, descriptive and analytical single-center study conducted within the Medicine B department of the CHU IBN SINA in Rabat, which included 495 patients with UC (hospitalized and followed in consultation) between January 2013 and January 2021. All patients over 18 years old with UC who underwent total colonoscopy or rectosigmoid endoscopy were included. UC patients who underwent colectomy, patients in clinical-endoscopic or deep remission, patients refusing follow-up by endoscopy and files not found or incomplete were excluded.

Events studied

Severe and severe endoscopic thrust during a clinical flare: Clinical flare was defined by the Truelove and Witts score and severe endoscopic flare was defined by a UCEIS score of 7 - 8.

Statistical analysis

The statistical study was carried out using the Statistical Package for the Social Sciences SPSS software for Windows version 20.0 (SPSS, Chicago, IL). The qualitative variables were expressed in number and percentage. Quantitative Gaussian distribution variables were expressed as mean and standard deviation, normality was assessed by the Kolmogorov-Smirnov test. The study of endoscopic severity factors associated with clinical severity was carried out using logistic regression in univariate and multivariate models. The risk of error was set at 5%, with a significance level of $p = 0.05$.

Results

Demographics of our population

Among the 320 patients included in our study, 146 were men (45.6%) and 174 were women (54.4%), the average age at diagnosis was $44 \pm 6.42.6$ years with extremes ranging from 17 to 71 years. 21 of our patients were smokers (6%). 10 had a family history of chronic inflammatory bowel disease (3.1%).

Clinical data of our population

At the time of the attack, the median duration of disease progression in our patients was 9 years [3-16]. The topography of UC according to the Montreal classification was as follows: 64 proctitis (20%), 128 distal (39.9%), 128 extended colic (40.1%) The severity of the UC flare according to the Truelove and Witts score was mild in 70 patients (22.08%), moderate in 153 patients (48.05%) and severe in 91 patients (28.57%). During the push, 165 patients (51.5%) were on aminosalicyles (oral and/or enema/suppository), 84 patients were on thiopurines (26.25%), 9 patients were on anti-TNF (2.8%) and 62 patients were under no treatment (19.37%).

Endoscopic data of our population

Score UCEIS

The distribution of the UCEIS score in our patients was as follows (Figure 1): Between 0 - 1 (endoscopic remission) in 20 patients (6.50%), between 2 - 4 (light) in 108 patients (33.80%), between 5 - 6 (moderate) in 158 patients (49.50%) between 7 - 8 (severe) in 32 patients (10.2%).

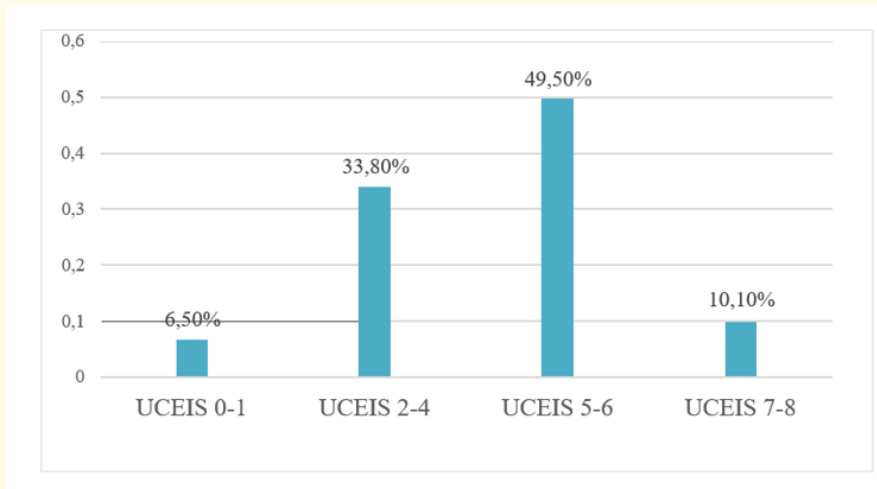


Figure 1: Distribution of the UCEIS score in our diseases.

Endoscopic predictive factors of severity and gravity

The most predictive endoscopic lesions of clinical severity were studied in the 320 patients. The clinical severity being defined by a severe attack according to the Truelove and Witts score. It is the dependent variable which is of qualitative type, therefore its associated endoscopic factors will be studied using a simple logistic regression for the univariate and multiple analysis for multivariate analysis. The significance threshold for introducing a variable into the multivariate model is set at $p < 0.3$.

In multivariate analysis, and adjusting for the factors studied, the vascular pattern and ulcers/erosions are associated with the severity of the clinical flare with (OR: 1.5. CI [1.04 - 2.1], $p < 0.001$), and (OR: 3.3 CI [1.5 - 7.1], $p = 0.002$) respectively (Table 1).

| Lesions elementary endoscopic | Univariate analysis | | | Multivariate analysis | | |
|--|---------------------|-----------------|---------|-----------------------|---------------|---------|
| | OR | IC 95% | P | OR | IC 95% | P |
| Vascular framework | 1.5 | [1.035 - 1.070] | < 0.001 | 1.75 | [1.04 - 2,1] | < 0,001 |
| Bleeding | 1.51 | [1.09 - 2,1] | 0.013 | 0,89 | [0,46 - 1,73] | 0,74 |
| Ulcers/Erosions | 3.607 | [2.36 - 5.50] | < 0.001 | 3.3 | [1,5 - 7,1] | 0,002 |
| Friability | 1.04 | [0.69 - 1,59] | 0.82 | | | |
| Erythema | 1.02 | [1.01 - 1,02] | 0.39 | | | |
| OR: Odd Ratio; IC: Confidence Interval | | | | | | |

Table 1: Elementary endoscopic lesions predicting clinical severity.

Discussion

The severity of the UC flare varies from one patient to another and in the same patient from one evolutionary phase to another. The severity of the disease is assessed by the clinical-biological scores of Truelove and Witts and Lichtiger in patients on corticosteroids, and by

the UCEIS endoscopic score. It can occur at any age, but the peak incidence occurs between 30 - 40 years with a similar incidence in men and women [1,2]. Some studies have suggested a bimodal distribution with a second peak of incidence between 60 - 70 years old [3,4]. The diagnosis is based on a range of arguments, including the endoscopic appearance of the mucosa and the histological characteristics. The severity and severity of an UC flare is defined by clinical and biological criteria. The most used are those of Truelove and Witts. This score is particularly used to define severe acute colitis. It should be used only when the diagnosis of UC is already established. Its elements reflect the systemic toxicity of the flare and provide objective criteria for estimating the severity and gravity of the flare, the need for hospitalization and systemic corticosteroid therapy [5]. There is also the Lichtiger score which has been proposed, and which is a modification of the Truelove and Witts score, and which was initially used in the clinical trial of cyclosporine for corticosteroid-resistant episodes [6]. It has the advantage of being purely clinical, used for the diagnosis and monitoring under treatment of severe flare-ups, it varies between 0 and 21, a score greater than or equal to 10 defines severe flare-up. Colonoscopy has a determining role in the diagnosis of UC, it makes it possible to assess the severity of the lesions and to guide therapy. It is important to know how to identify basic lesions, their degrees of severity and calculate the appropriate endoscopic scores. The various elementary endoscopic lesions are erythema, a granite aspect, superficial or deep ulcerations. They are generally recognizable by the bead which surrounds them, resulting in an elevation > 1 mm. It is sometimes difficult to distinguish superficial and deep ulcerations. In practice, only an open ulceration should be considered as deep, and all the others should be considered as superficial or intermediate. A distinction is made between ulcerations of the type of abrasions or mucous detachments with or without pits, the latter corresponding to a particular form of rounded ulcerations, small in size (2 to 5 mm), very hollow, occurring with a punch and communicating ulcers, and finally the ulcerations exposing the muscularis, identified by the characteristic striation of the internal circular layer and the absence of visualization of the vascularization. A plethora of endoscopic scores have been developed over the years to assess UC [7-10]. Several comparison studies have been conducted to determine which was best suited to guide treatment in order to obtain better mucosal healing. The most used and best suited are the Mayo subscore and the UCEIS score. The UCEIS score, an index of endoscopic activity validated by a group of international experts, and which is considered to be the reference endoscopic score, since it was rigorously developed [7]. This score, made up of three reproducible endoscopic factors (vascular pattern, bleeding, ulceration) is predictive of overall endoscopic severity, with good inter-observer agreement. In severe attacks of UC, the endoscopic severity criteria are defined by the presence on at least one colonic segment, of deep and wide ulcerations, exposing the muscular striation, of deep pit ulcerations, often associated with detachments mucosa, or an abrasion of the mucosa. It has been shown that the presence of these severe lesions is associated with a higher risk of failure of corticosteroid therapy and the need for surgery. These endoscopic criteria are now a therapeutic decision aid, but do not in themselves represent an indication for emergency colectomy if they are present.

In a cohort [12], it was shown that the median UCEIS [6-8] was higher in corticosteroid-resistant patients compared to corticosteroid-sensitive patients for severe acute colitis, suggesting the tendency for a more serious course in these patients. In our patients, 2/3 (60%) had a score ≥ 5 . Several studies have studied this score and confirmed the validation of its use in endoscopic practice. Zhang's Chinese study demonstrated that there was a significant correlation between UCEIS and CRP; knowing that this biological marker in UC is a marker of severity and of non-activity [13]. In an Australian study [14], Corte C., *et al.* conducted a study evaluating the association of the UCEIS score and the outcome of severe acute colitis. Survival analysis showed that patients with a score ≥ 5 reached colectomy compared to those with a score < 5. Multivariate analysis showed that UCEIS was a significant factor associated with the use of intensive treatment and colectomy with (OR = 2.6, 95% CI 1.5 - 4.6, $p = 0.001$) and (OR = 1.9, 95% CI 1.2-3.1, $p = 0.007$), thus suggesting a more severe trend of flare when the score is higher.

Conclusion

The evaluation of the severity of UC is based on a clinical-biological and endoscopic evaluation, whose development of the UCEIS index has been accompanied by better inter-observer reproducibility, followed by multiple studies validating it and showing its perfect correla-

tion with the clinic. This has allowed the harmonization of endoscopic diagnosis and optimal management of UC. factors associated with severe and severe UC flare.

Conflict of Interest

No conflicts of interest.

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