Faecal Calprotectin Utility in Management of Ulcerative Colitis in Clinical Practice

Sanaa Berrag*, Mouna Tamzaourte, Tarik Adioui, Fouad Nejjari and Aziz Aourarh

Department of Gastroenterology I, Military Hospital, Mohamed V University of Rabat, Rabat, Morocco

*Corresponding Author: Sanaa Berrag, Department of Gastroenterology I, Military Hospital, Mohamed V University of Rabat, Rabat, Morocco.

Received: June 19, 2020; Published: August 05, 2020

Abstract

Monitoring of inflammatory bowel disease (IBD) involves using repeated serological inflammatory markers and invasive colonoscopies. The aim is to recognize disease exacerbation, especially in asymptomatic ulcerative colitis (UC) patients.

The ideal monitoring tools have to be simple, non-invasive and cost effective. Several studies have been carried out in recent years for IBD management. Most of them were focused on the use of fecal markers as fecal calprotectin (FC) in monitoring of UC patients.

We aimed through this mini-review to summarize the usefulness of FC measurement to determine the monitor disease activity, treatment response and prediction of disease relapse and post-surgery recurrence in UC patients.

Keywords: Inflammatory Bowel Disease (IBD); Ulcerative Colitis (UC); Fecal Calprotectin (FC)

Introduction

Ulcerative colitis is a form of inflammatory bowel disease characterised by diffuse inflammation of the colonic mucosa that affects the rectum and can extends along of the colon. Colonoscopy is the main tool to evaluate disease activity and severity in ulcerative colitis (UC). However, repeated surveillance endoscopies may be exhausting for these patients [1]. The development of non-invasive and cost-effective tools is heavily needed to optimize management of UC.

Among these biomarkers, faecal calprotectin (FC) has displayed to be reliable tool to measure intestinal inflammation [2]. FC can monitor disease activity and response to treatment. It’s also a good indicator of mucosal healing and can also identify patients with risk of relapse [3].

Calprotectin is a calcium- and zinc-binding protein of the S-100 protein family which is mostly found into neutrophils and throughout the human body [4]. Calprotectin plays a major role in many physiological functions including inflammation [5]. It induces cells receptor expression involved in migration, adhesion and phagocytosis of neutrophils, promotes chemotaxis and is involved in the innate immune response. This situation leads to increased neutrophil migration into the gastrointestinal tissue. Also, bacterial components derived from the intestinal lumen stimulate the liberation calprotectin from neutrophils. This explains the presence of high concentration of calprotectin in faeces [4].

Faecal Calprotectin Utility in Management of Ulcerative Colitis in Clinical Practice

Role of FC for monitoring disease activity

Objective evaluation of the presence and degree of intestinal inflammation is important during management of UC patients. Colonoscopy is the gold standard to detect and quantify mucosal inflammation in these patients. However, endoscopy cannot always be performed to monitor UC in routine practice due to its possible complications and high cost. So, it’s not an ideal tool for iterative regularly evaluation of disease activity [3].

Several studies showed that FC have a strong correlation with endoscopic disease with high sensitivity and specificity (88% and 73% respectively) [6,7]. This correlation seems to be better with endoscopic activity than clinical scores [8]. Optimal FC cut-off values for the detection of endoscopic active disease fluctuate from 50 to 250 mg/g in the literature. The use of different test kits and different study populations explain the variation of FC cut-off [9,10]. Thus, FC is an objective reliable biomarker of intestinal inflammation and can be used to assess disease activity in UC patients.

Role of FC for assessment response to therapy

Mucosal healing is the main target of treatment for UC. Patients with UC are often prescribed long-term aminosalicylates, corticosteroids, antibiotics, immuno-suppressors and/or biotreatments.

Traditionally, the assessment of response to UC treatment was specialized based on clinical symptoms. But this symptom are often non-specific and do not reflect the underlying mucosal inflammation. Moreover, performing colonoscopy during flow-up of UC patients cannot always be performed to evaluate endoscopic injuries. Actually, mucosal healing can be assessed by non-invasive markers by performing FC in feces [11].

FC levels seems to be significantly correlate with mucosal healing and histological activity [12]. FC can be used as a biomarker to assess the response to 5-aminosalicylate in maintenance therapy in UC patients. Thus, 5-aminosalicylate dose may be increased in patients elevated FC levels in feces [13]. Furthermore, FC can also monitor UC patients under biotreatments. Increased FC rates predicts short-term relapse after de-escalate therapy with patients in deep remission [14]. In acute severe colitis, FC was useful to predict short-term outcome of corticosteroid treatment. Thus, FC levels may guide the decision for introducing biotreatments or performing colectomy [15].

Role of FC for prediction of disease relapse

FC can be considered as a surrogate marker to predict endoscopic and histological healing in UC patients. An FC cut-off value under 250 mg/g is associated with the absence of colic mucosal injuries in clinical remission with a sensitivity and a specificity of 71% and 100%, respectively [16,17]. A low FC value can distinguish patients with a low risk of clinical relapse. During the follow up, a cut off ≥ 120 mg/g can predict a higher risk of recurrence of active disease within the following months [18].

Role of FC for prediction post-operative IBD recurrence

Elevated FC levels appear to predict early endoscopic inflammation of the pouch in patients with UC that underwent a proctocolectomy with ileo-anal pouch. T. Yamamoto., et al. [19] reported that FC cut-off of 53 mg/g is correlated with the development of pouchitis after restorative proctocolectomy for UC. Also, they reported that FC increased two months before the occurrence of clinical symptoms. Differently, FC remained at low levels in patients without pouchitis.

Conclusion

Faecal calprotectin is a non-invasive biomarker for the management of ulcerative colitis. Despite the fact that FC is not specific, it can be a sensitive and objective tool for monitoring patients that require repeated endoscopic investigations. It may also play an important

Citation: Sanaa Berrah., et al. “Faecal Calprotectin Utility in Management of Ulcerative Colitis in Clinical Practice”. EC Gastroenterology and Digestive System 7.9 (2020): 17-20.
role in the assessment of therapy response and predicting disease relapse to guide decisions about therapy adjustments or performing further investigations.

**Bibliography**


**Citation:** Sanaa Berrag., et al. "Faecal Calprotectin Utility in Management of Ulcerative Colitis in Clinical Practice". *EC Gastroenterology and Digestive System* 7.9 (2020): 17-20.
