Gastroenterol Hepatol. 2016;39(8):508–515

Gastroenterología y Hepatología

www.elsevier.es/gastroenterologia

ORIGINAL ARTICLE

Correlation between serological biomarkers and endoscopic activity in patients with inflammatory bowel disease

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Received 14 December 2015; accepted 22 January 2016
Available online 25 March 2016

KEYWORDS
C-reactive protein;
Crohn's disease;
Endoscopic activity;
Mucosal healing;
Ulcerative colitis

Abstract
Background/aims: Endoscopy is the gold standard for assessing disease severity in inflammatory bowel disease (IBD), although it is an invasive procedure. Biological markers have been routinely used as a non-invasive means of determining disease activity. The aim of this study was to determine the correlation between common biological markers and endoscopic activity in IBD.
Methods: Consecutive patients with IBD were included. Serum concentrations of different biomarkers (C-reactive protein [CRP], orosomucoid [ORM], erythrocyte sedimentation rate [ESR], fibrinogen, platelets, leukocytes, neutrophils and hemoglobin [Hb]) were measured, and their accuracy in detecting endoscopic activity was determined.
Results: Eighty patients were included (mean age 46 years, 53% Crohn's disease), 70% with endoscopic activity. Among Crohn's disease patients, 24% had mild endoscopic activity, 12% moderate activity and 39% severe activity. Among ulcerative colitis patients, 35% had an endoscopic Mayo score of 0–1 points, 30% 2 points and 35% 3 points. None of the biomarkers included had a good correlation with endoscopic activity (Area Under the ROC curve [AUC] < 0.70) in ulcerative colitis. ORM, fibrinogen and platelets had the best accuracy to detect endoscopic activity in Crohn's disease (AUC: 0.80–0.085). A sub-analysis in postoperative Crohn's disease patients found no correlation between endoscopic recurrence and biomarkers (AUC < 0.70).
Conclusion: Serological biomarkers, including CRP, have low accuracy to detect endoscopic activity in ulcerative colitis and postoperative Crohn's disease. ORM, fibrinogen and platelets have the best accuracy to detect endoscopic activity in Crohn's disease.

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PALABRAS CLAVE
Proteína C reactiva;
Enfermedad de Crohn;
Actividad endoscópica;
Cicatrización de la mucosa;
Colitis ulcerosa

Correlación entre los marcadores biológicos y la actividad endoscópica en pacientes con enfermedad inflamatoria intestinal

Resumen
Antecedentes/objetivos: La endoscopia es el criterio de referencia para evaluar la severidad en la enfermedad inflamatoria intestinal (EII), aunque es un procedimiento invasivo. Se han utilizado rutinariamente marcadores biológicos como medios no invasivos para determinar la actividad de dicha enfermedad. El objetivo de este estudio fue el de determinar la correlación entre los marcadores biológicos comunes y la actividad endoscópica en la EII.
Métodos: Se incluyó a pacientes consecutivos con EII. Se midieron las concentraciones séricas de los diferentes marcadores (proteína C reactiva, proteína orosomucoide, índice de sedimentación de eritrocitos, fibrinógeno, plaquetas, leucocitos, neutrófilos y hemoglobina) y se determinó su precisión en la detección de la actividad endoscópica.
Resultados: Se incluyó a 80 pacientes (edad media de 46 años, el 53% con enfermedad de Crohn), el 70% de ellos con actividad endoscópica. Entre los pacientes con enfermedad de Crohn, el 24% tenía una actividad endoscópica leve, el 12% moderada y el 39% una actividad severa. Entre los pacientes con colitis ulcerosa, el 35% tenía un índice de Mayo de 0–1 puntos, el 30% de 2 puntos y el 35% de 3 puntos. Ninguno de los biomarcadores incluidos reflejó una buena correlación con la actividad endoscópica (área bajo la curva ROC < 0,70) en los casos de colitis ulcerosa. Los valores de proteína orosomucoide, fibrinógeno y plaquetas reflejaron la mejor fiabilidad para la detección de la actividad endoscópica en la enfermedad de Crohn (área bajo la curva ROC 0,80–0,085). Un subanálisis postoperatorio realizado a los pacientes con enfermedad de Crohn no reflejó relación alguna entre la recidiva endoscópica y los biomarcadores (área bajo la curva ROC < 0,70).
Conclusión: Los biomarcadores séricos, incluyendo la proteína C reactiva, son poco fidedignos en los casos de colitis ulcerosa y enfermedad de Crohn postoperatoria. Los valores de proteína orosomucoide, fibrinógeno y plaquetas son más precisos para la detección de la actividad endoscópica en la enfermedad de Crohn.

Introduction

Inflammatory bowel diseases (IBDs), Crohn's disease (CD) and ulcerative colitis (UC), are chronic entities with a characteristic course including asymptomatic and active periods. Symptoms may vary from mild to severe abdominal pain or diarrhea, but these symptoms can be due to other processes: infectious diarrhea, irritable bowel syndrome, etc. Thus, the assessment of disease activity can be sometimes challenging if it is based only on clinical presentation.

Ileocolonoscopy is the gold standard to determine disease activity in IBD, although it is an invasive procedure.[1] It has already been proven that there is a lack of concordance between clinical activity, on the one hand, and serological[2] or endoscopic activity,[3] on the other. Serological markers have been routinely used to determine disease activity in a non-invasive manner, but there is no proven evidence of their accuracy to assess endoscopic activity in IBD.

Due to the importance of mucosal healing, colonoscopy and cross-sectional imaging are proposed to guide the follow-up of IBD patients to adequately assess the presence of inflammation. However, colonoscopy is an invasive procedure, and both cross-sectional imaging and endoscopy are expensive and time consuming. For this reason, it would be useful to find indirect non-invasive markers that correlate with endoscopic activity. They might help to identify patients who should undergo an additional diagnostic (invasive or expensive) procedure and, accordingly, they could guide treatment decisions.[4]

Most of the serological biomarkers that have been previously evaluated are acute phase reactants, and therefore they can be elevated in the presence of multiple processes, including those with an extra-digestive origin. On the other hand, these biomarkers are inexpensive, easy to perform and non-invasive, what make them an attractive potential tool to assess disease activity in a daily practice setting. Nonetheless, several studies tried to evaluate the accuracy of serological biomarkers to determine endoscopic activity with confusing results, and only some studies have compared different biological markers in the same study population.

The aim of this study was to determine the correlation between common biological markers [C reactive protein (CRP), orosomucoid, erythrocyte sedimentation rate (ESR), fibrinogen, platelets, leukocytes, neutrophils and hemoglobin] and endoscopic activity in IBD patients.

Methods

Study subjects

In this retrospective study, the study sample comprised 80 patients followed-up at the IBD Unit from a single hospital, including CD and UC, who underwent an ileocolonoscopy