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Early Change in Fecal Lactoferrin is a Better Predictor of Treatment Induced Remission in Patients with Ulcerative Colitis

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INTRODUCTION

Mucosal healing is the target in ulcerative colitis (UC) for better long term outcomes (1). Assessment of mucosal healing by endoscopy is invasive, costly and not preferred by the patients. Fecal biomarkers are non-invasive and specific surrogate markers for intestinal inflammation. So they can be used for predicting response to therapy and further optimization of the therapy (2).

AIM

The present study aims to evaluate the role of early change in the levels of fecal calprotectin (FC), fecal lactoferrin (FL) and fecal myeloperoxidase (MPO) in predicting the treatment induced remission in UC and to correlate the fecal biomarkers with clinical, endoscopic and histological remission.

METHODS

We conducted a prospective observational study involving 59 UC patients with moderate or severe disease. The diagnosed cases of UC with Mayo score of >2 and endoscopic subscore of ≥ 1 were included. The baseline stool and blood samples were collected. Endoscopic assessment of the disease activity was done and biopsy was also taken. They were treated as per the standard protocol of UC and they were followed up between days 7 to 10 after 1st visit and at day 90. Patients were assessed clinically, stool and blood samples were collected at each visit and sigmoidoscopy with biopsy was done at day 90 with patients consent. Clinical remission was defined as partial may score of ≤ 2 and endoscopic remission with endoscopic subscore of ≤ 1.

RESULTS

The mean age was 35.2 years and 28 (47.5 %) patients were female. The mean duration of disease was 3.8 years and mean number of exacerbations in the previous years was 1.64. At baseline 38 (64.4 %) patients had moderate disease and 21 (35.6 %) patients had severe disease. After initial assessment 31 (52.5 %) patients were continued on 5 – ASA with dose optimization and steroids were given in 28 (47.5 %) patients. Fifty three patients completed the 90 day follow up and 40 patients underwent sigmoidoscopy at day 90. Clinical remission was achieved in 28 (52.8 %) patients. Among the patients who underwent sigmoidoscopy at last visit, 21 (52.5 %) were in endoscopic remission. Baseline Mayo endoscopic score or ulcerative colitis endoscopic index of severity didn't predict the response to therapy and endoscopic remission. The cut off value of FC for predicting endoscopic remission at day 90 was 130 µg/g with sensitivity of 74% and specificity of 62% (AUC: 0.66, 95% CI 0.49 to 0.79). The cut off value of FL for predicting endoscopic remission at day 90 was 44 µg/g with sensitivity of 74% and specificity of 76% (AUC 0.76, 95% CI 0.6 to 0.88). Similarly the cut off value for MPO in predicting endoscopic remission at day 90 was 21 µg/g with a sensitivity of 53% and specificity of 85% (AUC 0.64, 95% CI 0.47 to 0.78). The change in value of fecal biomarkers from baseline to 2nd visit for predicting clinical, endoscopic and histological remission at day 90 has been shown in table 1.

Biomarker	Decrease from baseline to 2nd visit	Clinical remission			Endoscopic remission			Histologic remission		
		AUC (95% CI)	Sensitivity (%)	Specificity (%)	AUC (95% CI)	Sensitivity (%)	Specificity (%)	AUC (95% CI)	Sensitivity (%)	Specificity (%)
FC, µg/g	350	0.63 (0.49 to 0.76)	68	60	0.66 (0.49 to 0.79)	74	62	0.51 (0.35 to 0.67)	39	50
FL, µg/g	50	0.71* (0.57 to 0.86)	68	72	0.76* (0.6 to 0.88)	74	76	0.69* (0.52 to 0.83)	72	73
MPO, µg/g	21	0.64 (0.49 to 0.79)	57	60	0.64 (0.47 to 0.78)	53	85	0.6 (0.44 to 0.75)	67	32

*p <0.05

Table 1. Change in values for fecal biomarkers from baseline to 2nd visit (day 7 to 10) for predicting clinical, endoscopic and histological remission.

CONCLUSIONS

The early change in lactoferrin by 50 µg/g between days 7 to 10 after initiation of treatment for the active disease was the best fecal biomarker in predicting treatment induced remission in patients with UC at day 90.

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