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FECAL LEUKOCYTE ESTERASE: AN ALTERNATIVE BIOMARKER TO FECAL CALPROTECTIN IN INFLAMMATORY BOWEL DISEASE.

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Background: Fecal calprotectin (FC) is a non-invasive biomarker used in inflammatory bowel disease (IBD) management and risk stratification of non-specific gastrointestinal symptoms. Leukocyte esterase is an inexpensive and widely available point-of-care inflammatory marker present on urinalysis test strips.
Aims: We aim to assess the diagnostic accuracy of fecal leukocyte esterase (FLE) relative to FC and endoscopy and demonstrate its use as an alternative biomarker for IBD.
Methods: In this prospective cohort study, 70 patients who had FC ordered as part of standard clinical care also received FLE testing. FLE levels were compared to various FC cut-off values, endoscopy and pathology findings as gold standard.
Results: As the FC cut-off increased from 50 to 500 μg/g, FLE sensitivity increased from 67% to 95% while the specificity decreased from 86% to 76%. The area under the receiver operating characteristic (AUROC) increased from 0.79 to 0.90. An FLE of ≥1+ had the best test characteristics. Amongst patients who underwent endoscopic evaluation, FLE demonstrated an identical sensitivity (75%) and specificity (86%) to FC in predicting endoscopic inflammation. AUROC was 0.80 for FLE and 0.85 for FC with an optimal cut-off of ≥2+ and 301 μg/g, respectively. When used to distinguish between active IBD and no/inactive IBD patients, FLE had a sensitivity of 84% and specificity of 90%, comparable to the 84% and 83%, respectively, of FC. AUROC was 0.88 for FLE and 0.91 for FC with an optimal cut-off of ≥2+ and 145 μg/g, respectively.
Conclusions: FLE demonstrates adequate correlation and comparable accuracy to FC in predicting endoscopic inflammation and distinguishing between patients with active versus inactive IBD.

Table 2. FLE sensitivity and specificity values derived from receiver-operator characteristic curves. A) FLE relative different FC cut-offs. N = 70 for all cut-offs. FLE of 1+ or greater is the optimal cut-off value. **B)** FLE relative to presence of inflammation on colonoscopy. N = 27 (n = 20 inflammation vs 7 no inflammation). FLE of 2+ or greater and FC of 301 µg/g is the optimal cut-off value. **C)** FLE relative to presence of active IBD. N= 59 (n = 19 active IBD vs 40 no/inactive IBD). FLE of 2+ or greater and FC of 145 µg/g is the optimal cut-off value.

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	FC ≥50 µg/g	FC ≥100 µg/g	FC ≥250 µg/g	FC ≥500 µg/g
Sensitivity (%)	67	74	88	95
Specificity (%)	86	83	78	76
Positive likelihood ratio	4.67	4.33	3.96	3.89
Negative likelihood ratio	0.39	0.31	0.15	0.06

B

	FLE ≥2+	FC >301 µg/g
Sensitivity (%)	75	75
Specificity (%)	86	86
Positive likelihood ratio	5.25	5.25
Negative likelihood ratio	0.29	0.29

C

	FLE ≥2+	FC >301 µg/g
Sensitivity (%)	84	84
Specificity (%)	90	83
Positive likelihood ratio	8.42	4.81
Negative likelihood ratio	0.18	0.19

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