

FECAL LACTOFERRIN IN CHILDREN WITH GASTROINTESTINAL SYMPTOMS



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ABSTRACT

Lactoferrin is a glycoprotein found in neutrophils and mucosal secretions. The aim of this study is to compare fecal lactoferrin levels in children with symptomatic inflammatory bowel disease (IBD) versus non-IBD who are undergoing colonoscopy ± esophagogastroduodenoscopy.

Methods: Fresh stool samples from outpatients undergoing colonoscopy were collected and frozen within 72 hours prior to the bowel cleansing regimen. Fecal lactoferrin was determined using a polyclonal antibody-based enzyme-linked immunoassay. An elevated value is ≥ 7.25 $\mu\text{g/g}$ fecal wet weight.

Results: Thirty-seven patients (3-16 years old, 24 males) participated: 5 had active IBD (Crohn's disease = 3, ulcerative colitis = 2) and 32 had non-IBD diagnoses (irritable bowel syndrome = 8, polyposis = 6, functional abdominal pain = 4, constipation = 2, hemorrhoids = 2, others = 10). The mean \pm SD fecal lactoferrin was 659 ± 605 $\mu\text{g/g}$ for IBD and 42 ± 176 $\mu\text{g/g}$ for non-IBD patients ($p < 0.0001$). Fecal lactoferrin was elevated in 4/5 IBD (80% sensitivity) and normal in 21/32 non-IBD patients (66% specificity).

Conclusions: Fecal lactoferrin is a sensitive test for detecting active IBD and may be a useful screening test in differentiating IBD versus non-IBD patients.

INTRODUCTION

Lactoferrin is an iron-binding glycoprotein found in secondary granules of polymorphonuclear neutrophils, a primary component of the acute inflammatory response. During intestinal inflammation, leukocytes infiltrate the mucosa, resulting in an increased fecal lactoferrin concentration.

Elevated fecal lactoferrin can discriminate adult patients with active IBD from healthy controls and those with IBS. Normal values in adults are below 7.25 $\mu\text{g/g}$ fecal wet weight.

AIM

To compare fecal lactoferrin levels in children with active IBD versus children with other GI conditions undergoing endoscopic evaluation.

METHODS

Fresh stool samples from outpatients undergoing colonoscopy were collected and frozen within 72 hours prior to the bowel cleansing regimen. Fecal lactoferrin was determined using a polyclonal antibody-based enzyme-linked immunoassay.

RESULTS

Table 1: Diagnoses in 37 enrolled subjects (13 female/ 24 male, 3-16 y.o)

IBD	5
IBS	8
Other:	24
GI polyps	6
Functional abdominal pain	4
Constipation	2
Hirschsprung's disease s/p surgery	2
Hemorrhoids	2
Lymphoid hyperplasia in colon	1
Feeding intolerance	1
Reflux esophagitis	1
Lactase deficiency	1
Small bowel transplant	1
Jejunal atresia	1
Mild acute colitis	1
Rectal bleeding (normal endoscopy)	1

RESULTS (continued)

Figure 1: Mean Lactoferrin Levels

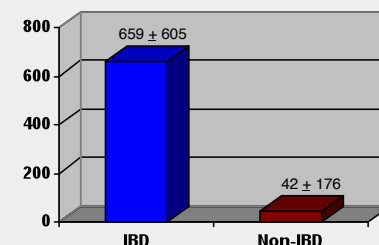
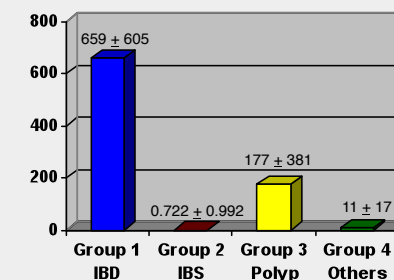


Figure 2: Mean Lactoferrin Level-Subgroups



- Using ANOVA, a significant difference ($p < 0.001$) was observed among the mean lactoferrin levels of IBD, IBS, polyp and "other" groups.
- Using Tukey's method for paired comparisons, the mean lactoferrin level of the IBD group was significantly greater than the IBS, polyp, and "other" groups ($p < 0.05$).
- No significant difference was observed in the mean lactoferrin levels among the IBS, polyp and "other" groups.

RESULTS (continued)

Table 2: Fecal Lactoferrin in IBD vs. Non-IBD

	IBD (n)	Non-IBD (n)
Elevated fecal lactoferrin	4	11
Normal fecal lactoferrin	1	21

- The sensitivity of fecal lactoferrin in identifying IBD patients is 80% with specificity of 66%.
- Using chi square analysis, there was a trend for finding an elevated fecal lactoferrin in IBD compared to non-IBD patients ($p = 0.076$).

Table 3: Fecal Lactoferrin in Subgroups of IBD, IBS, Polyp, and "Other"

	IBD (n)	Polyp (n)	IBS (n)	"Other" (n)
Elevated lactoferrin	4	4	1	6
Normal lactoferrin	1	2	7	12

$p = 0.063$
 $p = 0.032$
 $p = 0.089$

- Using chi square, a significant difference was observed in the proportion of patients with elevated lactoferrin among the IBD, IBS, polyp, and "other" groups ($p < 0.05$). When comparing individual groups, the only significant difference observed was between the IBD and IBS groups.

CONCLUSIONS

- Fecal lactoferrin level is a sensitive test for detecting active IBD.
- Measurement of fecal lactoferrin is useful in differentiating IBD vs non-IBD patients.
- Fecal lactoferrin can be elevated in other inflammatory GI conditions.