[S1423] Serial Fecal Lactoferrin Measurements are Useful in the Interval Assessment of Patients with Active and Inactive Inflammatory Bowel Disease

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INTRODUCTION

- Lactoferrin is an iron-binding glycoprotein found in neutrophil secondary granules and mucosal secretions.
- Elevated fecal lactoferrin (FLA) levels discriminate patients with active inflammatory bowel disease (IBD) from those with Irritable Bowel Syndrome (IBS) and healthy controls.
- We propose that serial fecal lactoferrin levels are useful non-invasive surrogate markers of intestinal inflammation in patients with IBD.

PURPOSE

To determine the ability of serial FLA measurements to predict disease recurrence or demonstrate a response to medical therapy in pediatric and adult subjects with IBD.

METHODS

The study population was comprised of 72 subjects. 32 subjects had Crohn's disease (CD), 21 subjects had ulcerative colitis (UC), and 6 subjects had Irritable Bowel Syndrome (IBS). The age range was from 4 to 51 years. The gender ratio was 1 to 1.
Stool samples were collected every 2 - 4 weeks.
FLA (mcg/ml feces) was measured by ELISA in 282 specimens collected from 53 subjects with IBD, and in 19 samples collected from 6 subjects with IBS using IBD-SCAN® (TechLab, Blacksburg, VA).
Disease flare (active disease) in this study was defined as clinical deterioration warranting a change in a subject's medical regimen.

RESULTS

Figure 1: Lactoferrin levels discriminate patients with active IBD from those with inactive disease or IBS.

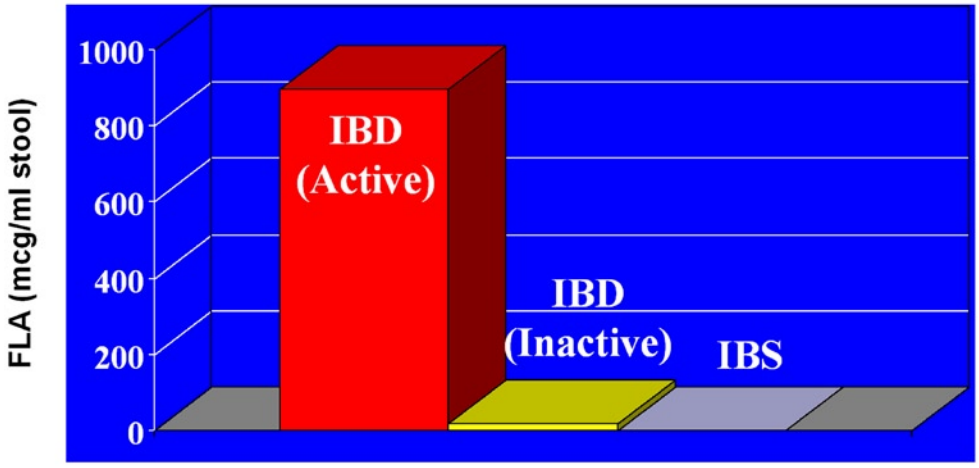

Figure 1: Elevated fecal lactoferrin (FLA) levels discriminate patients with active inflammatory bowel disease (IBD) from those with inactive disease and from those with irritable bowel syndrome (IBS).

- FLA level measured in 14 samples collected from 12 subjects with clinically active IBD was 897 ± 263 (mean ± S.E.).
- FLA level measured in 77 samples from 22 subjects with consistently inactive IBD (sustained remission longer than three months) was 18 ± 5.89 (mean ± S.E.).
- FLA level measured in 18 samples collected from 5 subjects with IBS was 1.19 ± 0.48 (mean ± S.E).

Figure 2: Fecal lactoferrin levels measured in patients with inactive disease

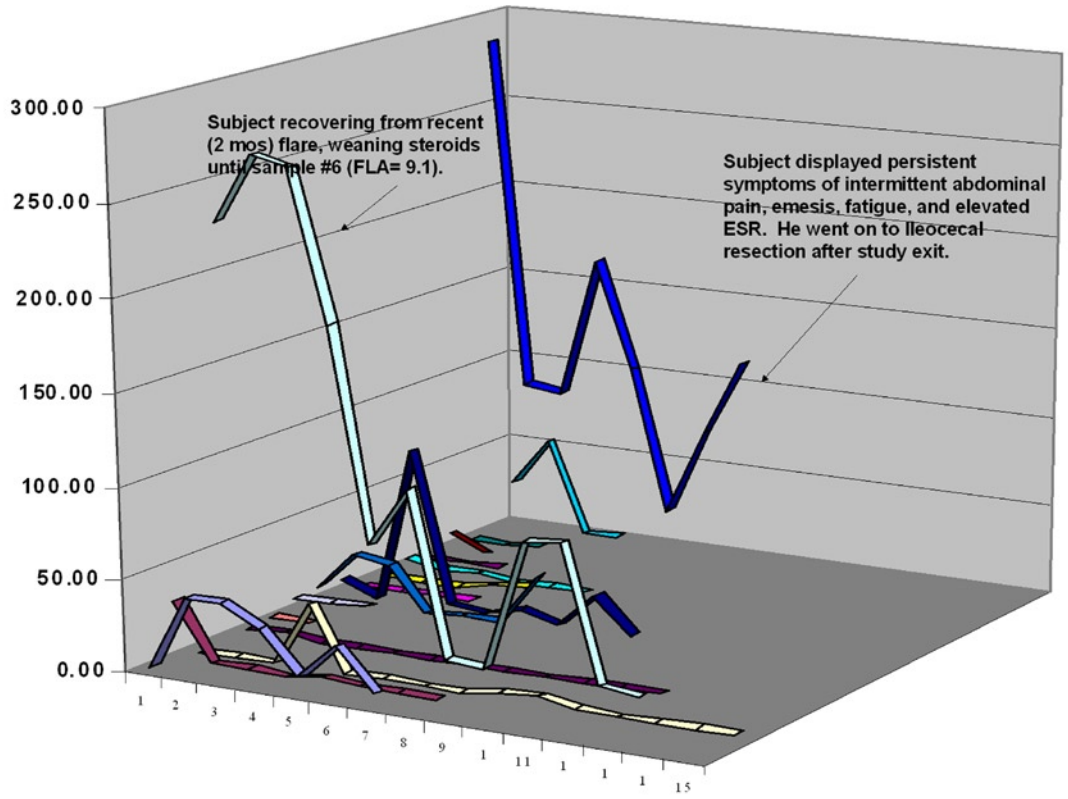

Figure 3: Elevations in fecal lactoferrin levels occur prior to the development of clinical symptoms in patients with active IBD

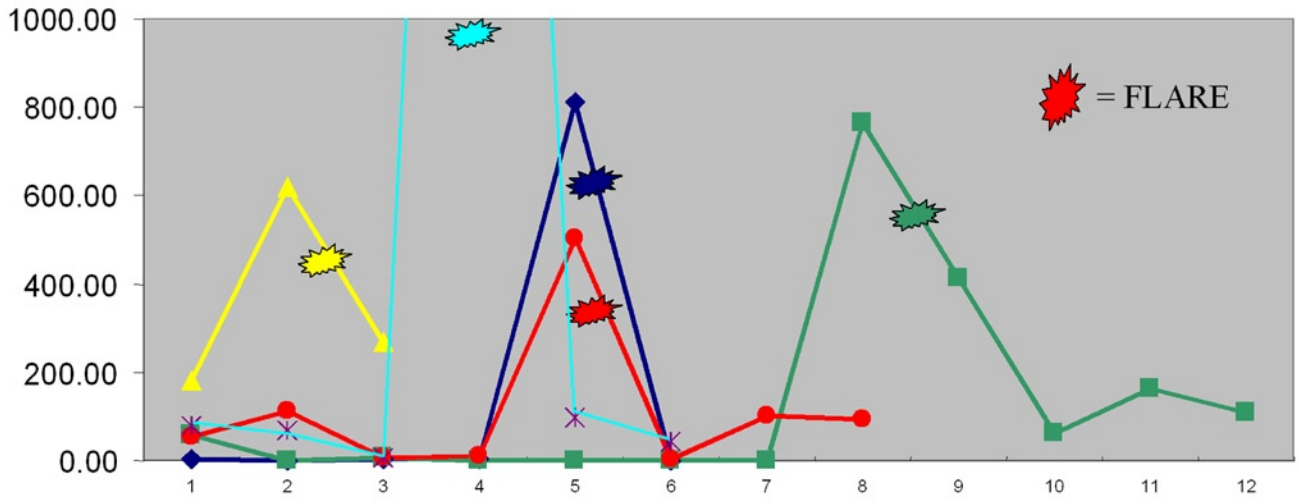

Figure 3: Elevated FLA can predict subsequent clinical flares

- Five subjects in sustained clinical remission (≥ 3 Months) demonstrated clinical flares during enrollment.
- Four of five had elevated fecal lactoferrin levels that preceded clinical symptoms associated with their flaring disease.

Figure 4: Fecal lactoferrin levels decrease in response to medical therapy

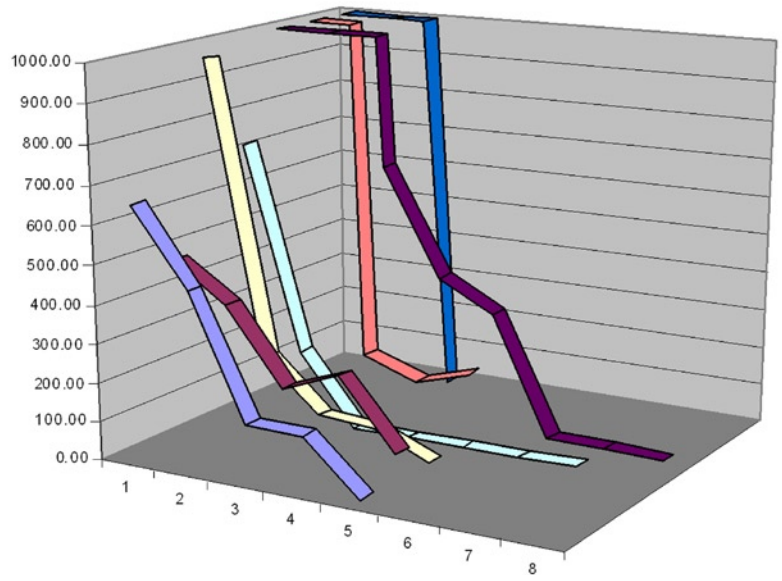

Figure 4: Decreases in FLA parallel clinical improvement in patients with active disease: Subjects demonstrating clinical flares during the study displayed decreasing fecal lactoferrin levels associated with clinical remission.

Figure 5: Elevated fecal lactoferrin levels predict disease recurrence in patients completing steroid tapers

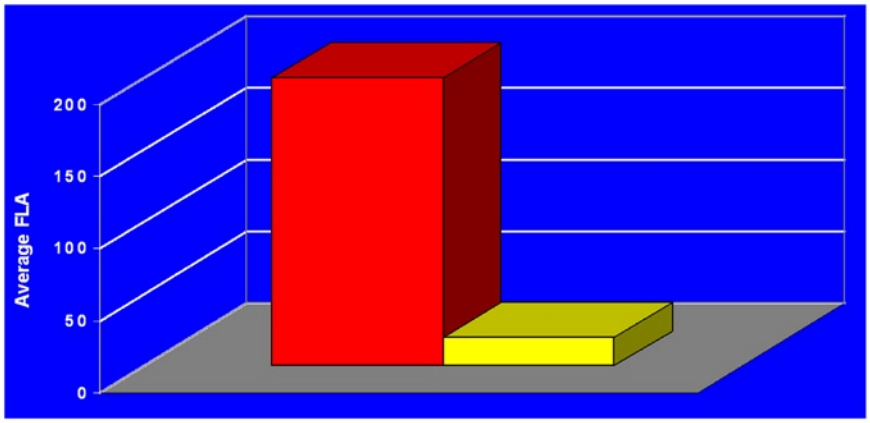

Figure 5: Elevated fecal lactoferrin levels at the time of steroid taper predicts clinical relapse
- Ten subjects were weaned from steroids during study enrollment.
- Three had elevated FLA (> 100) at the time of steroid discontinuation. Two of three went on to flare within two months of discontinuing steroids.
- Seven had elevated FLA (< 100) at the time of steroid discontinuation. Zero of seven went on to flare within two months of discontinuing steroids.
- FLA at the time of completing steroid therapy was 19.7 ± 13.6 (mean ± S.E.) in those subjects demonstrating a sustained remission in contrast to 205 ± 44 for those who subsequently flared (p=0.001).

CONCLUSIONS

These data suggest that serial fecal lactoferrin measurements are important surrogate markers of intestinal inflammation in pediatric and adult patients with IBD. Interval fecal lactoferrin measurements may assist clinicians in making decisions regarding steroid tapers as well as identify patients that may merit closer clinical follow-up.