Fecal Lactoferrin: Sensitive Marker for Monitoring Pediatric Patients with Inflammatory Bowel Disease (IBD)

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Introduction: Lactoferrin, a glycoprotein (80kD), is found in many body fluids such as human milk, tears, synovial and seminal fluid. On the other hand, it is a major component of secondary granules of neutrophils. Fecal lactoferrin levels increase quickly with the influx of leucocytes during the onset of intestinal inflammation.

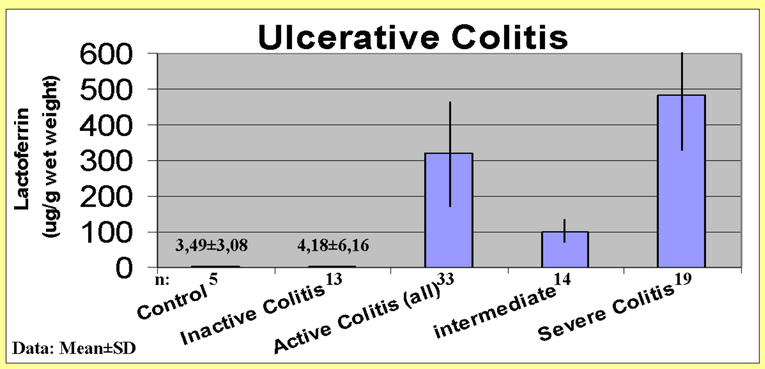
Aim of Study: Monitoring of disease activity (active disease to remission following therapy) by quantitative measurements of fecal lactoferrin in pediatric patients suffering from IBD.

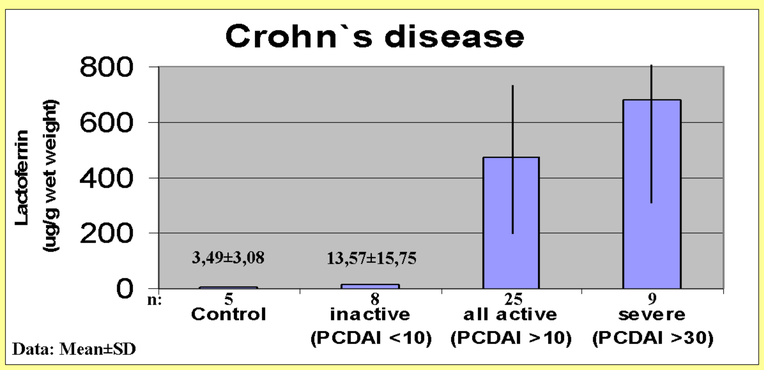
Methods: Fecal lactoferrin levels were determined quantitatively by an enzyme-linked immunoassay (*IBD-SCAN*™; TechLab®). The test uses a rabbit polyclonal antibody specific for human lactoferrin. Fecal specimens were serially diluted and lactoferrin levels were determined by measurement of the optical density at 450nm/630nm. Lactoferrin standards from 6.25 to 100 ng/ml were used to create a standard curve and to calculate the concentration of the specimens. The levels are reported as µg lactoferrin/g wet weight of feces.

Patients: 84 specimens from a total of 26 patients, ages from 3.5 to 15 years (mean 10 years) were analysed:
Ulcerative colitis (UC): 46 tests from 12 patients, 8 with two or more specimens
Crohn`s disease (CD): 33 tests from 8 patients, 6 with multiple examinations
Indeterminate Colitis (IC): 1 patient with 4 tests
Controls: 5 patients, 3 with recurrent abdominal pain, 1 with constipation and 1 with feeding problems.
Disease activity was determined by physicians assessment and Truelove index (UC) or PCDAI (CD).

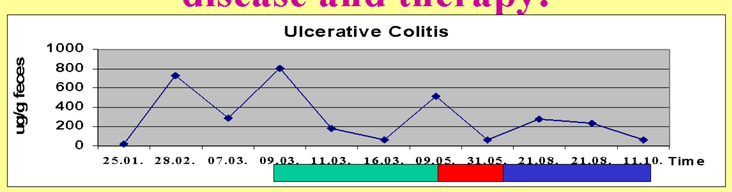
Results:

A) Comparison of fecal lactoferrin and disease activity

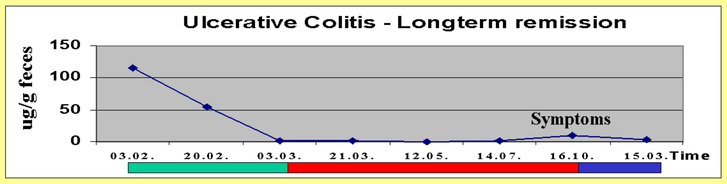




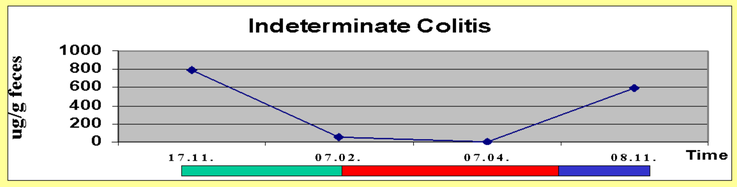
B) Fecal Lactoferrin during course of the disease and therapy:



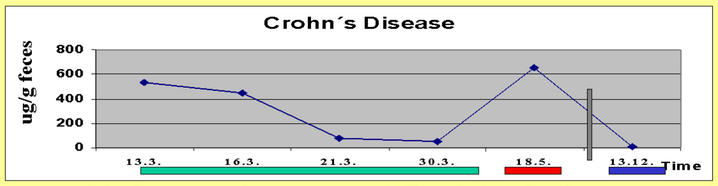
14 year-old boy with UC in first remission. Early and severe relapse. Improvement with CSA but CMV-colitis developed. After CMV-treatment induction of remission with AZT



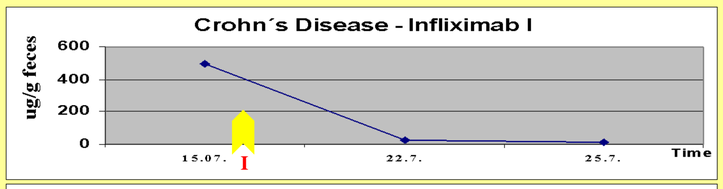
5.5 year-old girl with active UC. Good response on prednisone (1.2 mg/kg/d) and sulfasalazine .Tapering of prednisone to .07 mg/kg/d then clinical signs of relapse. Again induction with prednisone and start of AZT.

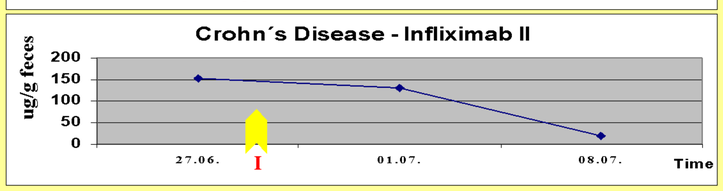


12 year-old girl with active IC. Initial therapy sulfasalazine, prednisone and metronidazole . Stable remission with sulfa-monotherapy (40 mg/kg/d) but relapse after reduction to 20 mg/kg/d.



4 year-old boy with severe CD. Initial therapy sulfasalazine, prednisone and metronidazole .
Early relapse . Now, after Infliximab (3 times) and on sulfasalazine in remission.





2 boys (13 year-old) with refractory CD (PCDAI 40 and 45). Following infliximab rapid improvement of symptoms and decrease of fecal lactoferrin.

Conclusion:

Quantitative determination of fecal lactoferrin is a good marker of disease activity in IBD. This parameter may help to reduce invasive diagnostics and to optimize medical therapy.

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