

Calprotectin (CALPRO), Fecal

Indications for Ordering

- Aid in differentiation of inflammatory bowel disease (IBD) from irritable bowel syndrome (IBS) and other functional disorders of the gastrointestinal (GI) system
- Aid in monitoring IBD and prediction of relapse

Test Description

Quantitative enzyme-linked immunosorbent assay

Tests to Consider

Primary test

[Calprotectin, Fecal 0092303](#)

- Differentiate IBD from IBS
- Monitor IBD

Related test

[Lactoferrin, Fecal by ELISA 0061164](#)

Clinical validation

Test performance for diagnosis of IBD

- Sensitivity – 95%
- Specificity – 91%
- Precision of test was higher in children than adults
- Calprotectin was superior to CRP, ESR, ASCA, p-ANCA (von Roon AC, Am J Gastroenterol 2007; Henderson P, Am J Gastroenterol, 2012)

Fecal calprotectin reduces the number of unnecessary procedures (van Rheenen PF, BMJ, 2010)

- ~67% reduction in adults requiring endoscopy
- ~6% false negative test results

Appropriate use of fecal calprotectin saved \$417 per individual in one study when pretest probability of IBD was <75% (adults) or <65% (children) (Yang Z, Clin Gastroenterol Hepatol, 2014)

- Cost saved by avoiding endoscopy
- Individuals with prior probability >75% should not be tested but go directly to endoscopy
- Test to triage with lower prior probability of IBD
 - Confirm positive results by endoscopy, follow negative result clinically

Disease Overview

Incidence

IBD – ~1.4 million annually in U.S.

Physiology

- CALPRO accounts for 60% of total protein in neutrophils
 - Antibacterial and antifungal activity
 - Inhibits metalloproteinases
- CALPRO is stable in stool samples
- Any disorder that causes damage to the GI tract with release of neutrophils may increase CALPRO
 - CALPRO in feces is proportional to inflammation

Diagnostic issues

- IBD symptoms may be vague and similar to IBS (eg, diarrhea, abdominal pain)
 - IBS much more prevalent than IBD
- Differentiation of IBD from IBS may require invasive procedures, which are often unnecessary
 - CALPRO may be useful in differentiation of IBS from IBD, preventing unnecessary invasive procedures

Monitoring issues

- Monitoring by endoscopy is invasive
- CALPRO can differentiate quiescent from active IBD
- Mucosal healing is associated with sustained remission
 - New goal for IBD treatment
 - Normalization of CALPRO correlates with healing (Sipponen T, Inflamm Bowel Dis, 2008; Jones J, Clin Gastroenterol Hepatol, 2008)

Test Interpretation

Results

- Normal – ≤50 µg/g
 - Likely to rule out IBD in adults with <75% prior probability
- Borderline – 51-120 µg/g
 - Recommend reevaluation in 4-6 weeks
- Abnormal – ≥121 µg/g
 - Supports diagnosis of IBD

Limitations

- CALPRO is not specific for IBD
 - Elevated in
 - Infections
 - Other inflammatory conditions – eg, celiac disease (CD), microscopic colitis, diverticulitis
 - Colorectal cancer
- CALPRO is not diagnostic for IBD
- CALPRO does not distinguish CD from ulcerative colitis
- Results may fluctuate as disease activity fluctuates
 - GI bleeding results in increased CALPRO
- False negatives are more common in children than adults