

False Positive Faecal Calprotectin?

The Camera Never Lies



Louise Asser, Specialist Biomedical Scientist at Luton and Dunstable University Hospital

Louise Asser, Specialist Biomedical Scientist at Luton and Dunstable University Hospital tells us about the work there, following up patients with a false positive calprotectin result. Using a pill-sized camera that the patient swallows, the team gets the inside story on what's really going on.



Small bowel capsule endoscopy, in which the patient swallows a camera within a capsule, allows images to be captured from within the small bowel, with indications agreed by NICE. In light of the introduction of small bowel capsule endoscopy, we reviewed patients with an increased calprotectin but normal colonoscopy, to investigate them for small bowel pathology and re-evaluate presumed false positive results.

We reviewed 81 patients, 76 of whom underwent capsule imaging, the remainder having cross-sectional imaging or a clinical diagnosis. 45% of patients with a raised calprotectin and normal colonoscopy had small bowel Crohn's disease. The median concentration of calprotectin in small bowel Crohn's was significantly higher than patients with small bowel pathology excluded. At a cut-off of 50 $\mu\text{g/g}$, the sensitivity for small bowel Crohn's was 90%, with a more modest specificity of 40%.

As expected, specificity increases at higher cut-off concentrations and, when the concentration of calprotectin is above 200 $\mu\text{g/g}$, 55% of patients were found to have small bowel Crohn's. Previous studies in which the diagnostic performance of calprotectin has been assessed against colonoscopy probably overestimate the false positive rate by up to 50%, with many patients having small bowel Crohn's. Labs should be aware of small bowel pathology as an explanation for raised calprotectin concentrations amongst the cohort of patients that have a normal colonoscopy, who would otherwise be labelled as having false positive calprotectin results.

Earlier detection of small bowel Crohn's and early initiation of medical treatment is expected to improve the outcome through reduced complications and decreased reliance on surgical intervention (Freedman, et al.³)."

Further acknowledgements for this work: Dr Helen Holt, Principal Clinical Biochemist
Dr Matthew Johnson, Consultant Gastroenterologist, Dr Danielle Freedman, Consultant Chemical Pathologist.

References

1. Tharian B, Caddy G and Tham T. (2013). Enteroscopy in small bowel Crohn's: A review. *World J Gastro Endoscopy*. 5: 476-486.
2. van Rhee PF, Van de Vijver E and Fidler V. (2010). Faecal calprotectin for screening of patients with suspected inflammatory bowel disease: diagnostic meta-analysis. *BMJ*. 341 (7765): c 3369.
3. Freedman D, Asser LA, Housley D, Edwards B and Johnson M. (2015). "False-positive" calprotectin results may be indicative of Crohn's disease in the small bowel. American Association of Clinical Chemistry. Lab Solutions Summit. Poster Abstract: <https://www.aacc.org/-/media/files/products/lab-solutions-summit-program-guide-final.pdf?la=en>. Accessed: 24/08/2016.

Alpha Laboratories offers an extensive range of standardised calprotectin assay formats optimised for testing from just one to thousands of samples, from home to the clinic to the lab. Find out more at **www.calprotectin.co.uk** or email: **marketing@alphalabs.co.uk**



Louise Asser (left) and Dr Helen Holt

"Previous studies that have assessed the diagnostic accuracy of calprotectin have generally only used colonoscopy $\pm$ oesophago-gastro-duodenoscopy to exclude inflammatory bowel disease (IBD) and thus categorise patients as normal. If the faecal calprotectin was high in these patients, then they were classified as having had a false positive calprotectin.

Causes of false positive calprotectin have been listed as infections, malignancy, drugs such as NSAID, food allergy, coeliac and cirrhosis. However, Crohn's disease can affect any part of the GI tract and up to 30% of patients may have disease confined to the small bowel (Tharian, et al.¹). Previous estimates of false positivity from a meta-analysis were 9% (van Rhee, et al.²).

