

Challenge PA2207-1

July 2022

Stool: *No ova or parasites, neutrophils, red blood cells*

CMPT QA/QC/ Statistics

This sample was verified by two reference laboratories. Laboratories were expected to report the absence of ova or parasites.

All challenge components are confirmed before shipping by the reference laboratories. No further statistical analysis is performed on the results beyond that described under "Suitability for grading."

SURVEY RESULTS

Reference laboratories: both laboratories reported the absence of parasites and the presence of neutrophils and red blood cells.

Participants: 14/14 (100%) participants reported no ova or parasites; 12/14 labs reported the presence of white blood cells (Table 1).

Suitability for Grading

A challenge component is considered suitable for grading if agreement is reached by both (100%) reference laboratories and at least 70 percent of the participants.

The absence of parasites was reported by both reference laboratories and greater than 70 percent of all laboratories and was thus, determined to be suitable for grading.

CLINICAL RELEVANCE

The presence of white blood cells (WBCs) in feces reflects an inflammatory or invasive process in the colon or distal small bowel. ^{1,2}

Large numbers of neutrophils are most frequently found in patients with bacterial dysentery, amebiasis, pseudomembranous enterocolitis, and ulcerative colitis.

The most common agents of bacterial dysentery are *Shigella*, enterohemorrhagic *Escherichia coli* (EHEC), *Salmonella enteritidis*, *Vibrio parahaemolyticus*, *Clostridium difficile*, and *Campylobacter jejuni*. ³

Although of an invasive nature, amebic colitis might not present with abundant neutrophils in feces because of the cytopathic effect of virulent amebae on mammalian cells and when present, the neutrophils are usually pyknotic. ⁴

Neutrophils are also frequently present in patients with nonspecific inflammatory bowel disease (ulcerative colitis). Therapy for this condition often includes immunosuppressive agents which would be contraindicated in patients with amebiasis. ⁴

On the other hand, neutrophils may cause problems with identification of parasites and can be confused with cysts or trophozoites of *E. histolytica/dispar*. Neutrophils are smaller than *E. histolytica/dispar* cysts (14µm vs 20µm average size), they have a smaller nucleus/cytoplasm ratio (1:1 vs 1:10-trophozoite, 1:2 - cyst), the shape of the nucleus is different (2-4 segments vs. round with central karyosome), and their cytoplasm is granular vs. a uniform, agranular cytoplasm for *E. histolytica/dispar*. ⁴

Grading

Reporting the absence of parasites was graded acceptable.

Table 1. Results reported

Reported	Total	Grade
No ova or parasites	2	Acceptable
No ova or parasites, WBC +/- RBC, +/- CLC +/- yeast	12	Acceptable
Total	14	

Garcia ⁴ recommends that host cells (neutrophils, red blood cells, macrophages, yeasts) be reported and quantitated (rare, few, moderate, many).

Mononuclear leukocytes may be found in the stools of patients infected with organisms that penetrate through the intestinal mucosa and multiply in the lymphatic or reticuloendothelial cells (*Salmonella typhi*, *Yersinia*, *Campylobacter jejuni*) when diarrhea is present. ³

REFERENCES

1. Guerrant RL, Van Gilder T, Steiner TS, et al. Practice guidelines for the management of infectious diarrhea. *Clinical Infectious Diseases*. 2001;32:331-351.
2. Thielman NM, Guerrant RL. Acute infectious diarrhea. *N Engl J Med*. 2004;350:38-47.
3. Guerrant R, Steiner TS. *Gastrointestinal infections and food poisoning*. In: Mandell D, Bennett, ed. Vol 1. 6th ed. Philadelphia; Churchill Livingstone: Elsevier; 2005:1215.
4. Garcia L.S. Artifacts that can be confused with parasitic organisms. In: *Diagnostic Medical Parasitology*. 5th ed ed. Washington, DC: ASM; 2007:947.
5. Clinical Laboratory Standards Institute. Procedures for the recovery and identification of parasites from the intestinal tract; approved guideline - second edition. Wayne, PA.: CLSI; 2005;25:M28-A2