

CLINICAL SPECIFICATIONS

YERSINIA ENTEROCOLITICA

Pathogen Type:

Yersinia enterocolitica (*Y. enterocolitica*) is a gram-negative coccobacillus-shaped bacterium that is widespread in nature. *Y. enterocolitica* can be found in reservoirs ranging from the intestinal tracts of numerous mammals, avian species, and cold-blooded species. Human pathogenic strains are usually confined to the intestinal tract and lead to enteritis/diarrhea.

Associated With:

Yersiniosis¹
 Arthritis¹
 Graves' disease^{2,3}
 Gastrointestinal disorders⁴
 Heart disorders⁴

Known Cross-Reactions: *Brucella*, thyroid-stimulating immunoglobulin;^{5,6} *Borrelia burgdorferi*;⁷ *Afpia clevelandensis*⁸

Clinical Significance:

The detection of antibodies to *Y. enterocolitica* indicates the patient has increased risk of gastrointestinal disorders, eye inflammation, thyroid autoimmunity, reactive arthritis. *Y. enterocolitica* is associated with intestinal disorders, including enterocolitis with an inflammatory diarrhea in affected infants and young children; acute terminal ileitis and mesenteric lymphadenitis mimicking appendicitis in older children and young adults, and less frequently with extraintestinal manifestations including urinary tract and respiratory tract infection (empyema), osteoarticular infection (reactive arthritis), erythema nodosum, infected mycotic aneurysm, axillary abscesses, and endocarditis.^{reviewed in 4} *Y. enterocolitica* has the ability to penetrate the intestinal wall and produced heat-stable enterotoxin.⁴ Due to cross-reactivity or molecular mimicry with human tissues, *Y. enterocolitica* may play a role in some arthritic and thyroid disorders. Indeed IgG antibodies to *Y. enterocolitica* were significantly higher in patients with Graves' disease and patient with Hashimoto's thyroiditis.⁹

This array tests for IgG immune reactivity associated with *Yersinia enterocolitica*. This is not a measurement of acute infection. Equivocal or out-of-range results indicate IgG antibody reactivity to the tested antigen. We tested 288 blood donor sera against *Y. enterocolitica* antigens at optimal dilution, 12% of these donors were IgG reactive.

References:

1. Rawlins, et al. Evaluation of a Western Blot method for the detection of *Yersinia* antibodies: evidence of serological cross-reactivity between *Yersinia* outer membrane proteins and *Borrelia burgdorferi*. Clin Diag Lab Immunol, 2005; 12(11):1269-1274.
2. Heyma, et al. Thyrotrophin (TSH) binding sites on *Yersinia enterocolitica* recognized by immunoglobulins from humans with Graves' disease. Clin Exp Immunol, 1986; 64:249-254.
3. Tomer and Davies. Infection, thyroid disease, and autoimmunity. Endocr Rev, 1993; 14:107-120.
4. Sabina, et al. *Yersinia enterocolitica*: Mode of transmission, molecular insights of virulence, and pathogenesis of infection. J Pathogens, 2001; Article ID 429069.
5. Bottone. *Yersinia enterocolitica*: the charisma continues. Clin Microbiol Rev, 1997; 10(2):257-276.
6. Hargreaves, et al. *Yersinia enterocolitica* provides the link between thyroid-stimulating antibodies and their germline counterparts in Grave's disease. J Immunol, 2013; 190(11):5373-5381.
7. Bruckbauer, et al. Crossreactive proteins of *Borrelia burgdorferi*. Eur. J. Clin Microbiol Infect Dis, 1992; 11:224-232.
8. Drancourt, et al. *Afpia clevelandensis* antibodies and cross-reactivity with *Brucella* spp. and *Yersinia enterocolitica* O:9. Clin Diag Lab Immunol, 1997; 4(6):748-752.
9. Wenzel, et al. Antibodies to plasmid-encoded proteins of enteropathogenic *Yersinia* in patients with autoimmune thyroid disease. Lancet, 1988; 1(8575-6):56.