

Yersinia enterocolitica, an Enigmatic Microbial Entity

Edward J Bottone*

Division of Infectious Disease, Ichan School of Medicine at Mount Sinai, Gustave L. Levi Place, New York, NY 10029, United States

*Corresponding author: Edward J Bottone, Division of Infectious Disease, Ichan School of Medicine at Mount Sinai, Gustave L. Levi Place, New York, NY 10029, United States, Tel: +1-914-707-8994; Fax: +1-212-534-3240; E-mail: edward.bottone@mssm.edu

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Description

Y. enterocolitica is a gram negative bacterium which is basically an important cause of acute gastroenteritis. While taxonomically related species *Yersinia pseudotuberculosis* and *Yersinia pestis* have been known since the 18th century. In the United States *Y. enterocolitica* was first reported in 1939 by Schleifstein and Coleman [1] who isolated a bacterium which in retrospect was identified as *Yersinia enterocolitica* 08 and followed by a bacteremia case in 1974 authored by Keet [2]. However in the United States the most important event was the 1974 outbreak in Holland Patent in upstate New York [3] in which 227 school children and employees in 5 area schools ingested *Yersinia enterocolitica* contaminated chocolate milk resulting in 12 children undergoing appendectomies unnecessarily. This epidemic outbreak was investigated by doctor RF Black et al who published his report in 1978 [3]. Interestingly, the doctors learned that the abdominal symptoms were not attributable to appendectomies revealed that *Y. enterocolitica* gastrointestinal infection could mimic appendicitis. Amazingly, 5 years later [3] a second outbreak occurred in a summer camp also in upstate which involved 239 campers of which five underwent appendectomies.



Figure 1: Bacillary forms are a methylene blue stained smear of *Yersinia enterocolitica* after growth on agar media.

Both outbreaks were attributed to serotype 0:8 *Y. enterocolitica* which has been thought to exist only in limited areas of North America. Based on this data, *Y. enterocolitica* was described as psychrophilic and can survive and replicate at temperatures ranging

from 0 to 44 degrees. This finding was confirmed by Keet who reported a hiker who developed a *Y. enterocolitica* septicemia after drinking melted water from a frozen mountain stream. Keet subsequently cultured water from the frozen stream and recovered a strain of *Y. enterocolitica* identical to the isolate responsible for the hikers' septicemia that was indole positive and serotype 0:8 (Figures 1 and 2).

Clinically *E. enterocolitica* over the years has widened its capacity to cause a wide range of nongastrointestinal primary infections worldwide inclusive of cutaneous infections, endocarditis, abscesses, pneumonia, nosocomial infections, meningitis, osteomyelitis, mycotic aneurism, urinary tract infections, and septic arthritis. *Yersinia enterocolitica* can evade host defense to cause infections in both immunocompromised and immunocompetent individuals.

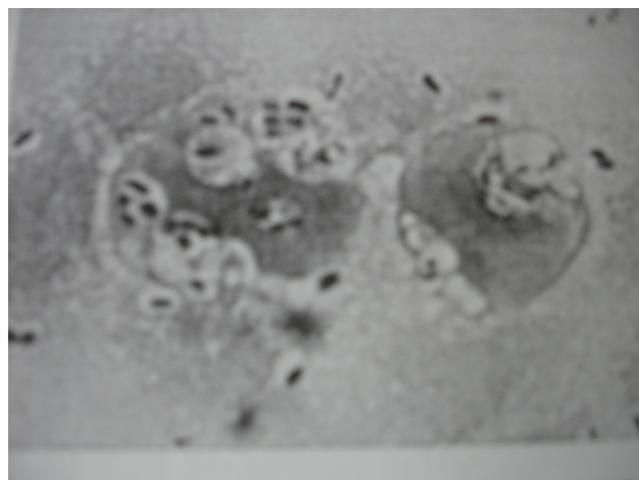


Figure 2: Gram stained smear showing coccobacilli *Yersinia enterocolitica* some with capsules (clear halos around them).

References

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