

Yersina enterocolitica in adults with gastrointestinal disturbances need for cold enrichment

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الخلاصة

خلال مسح للمرضى الكبار المتواجدين في المستشفى . تم استخدام بيئة باردة للبراز حيث كانت النتيجة وجود نسبة من جرثومة البارسينيا أنتيروكوليتكا تساوي جرثومة أصناف السالمونيلا حيث تبين ليس من السهل التعرف عليها وتشخيصها عند استخدام الطرق المختبرية الروتينية الاعتيادية للتشخيص الجرثومي .

ABSTRACT :

In a survey of hospitalized adult, cold environment of feces resulted in an incidence rate of *Yersina enterocolitica* equal of Salmonella species, *Yersina enterocolitica* was not recovered by routine procedures.

INTRODUCTION :

The most common of clinical infection with *Yersina enterocolitica* in humans is acute gastro enteritis with abdominal pain and bloody or non bloody diarrheas; fever may or may not be present. Other forms of illness include:

- 1 - A syndrome of pseudo appendicitis, mesenteric lymphadenitis or terminal ileitis.
- 2 - Septicemia.
- 3 - Meningitis.
- 4 - Urinary tract infection, squalled includes arthritis, erythema nodosum, and Reiter's Syndrome⁽¹⁾.

Yersina enterocolitica is easy to isolate from extra intestinal sources, but is difficult to grow from stool specimens. Cold temperature enrichment is of value in recovery of *Yerisina Enterocolitica* from feces⁽²⁾ .

MATERIALS AND METHODS :

Thirty two patients admitted to the Hammad Shihab Military Hospital between April and November 1995 has been shown to equal the incidence of Salmonellosis.

This is the first time that the incidence of gastro intestinal *Yerisina enterocolitica* has been assessed in an adult population group in the army.

Fecal maternal was processed by routine procedure and by cold enrichment. feces were inoculated directly on to primary plating media which included Macconkey , Salmonella – Shegella , and Xylase – lysine deoxycholate agar plate and on to gram – negative enrichment broth .

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The next morning the fourteen – eighteen hours broth was subculture on to Salmonella – Shigella, Macconkey and brilliant green agar plates. All plates were incubated for 48 hours at 35 C°, the Macconkey and Salmonella – Shigella plates were held for additional 48 hours at 25 C° before being discarded as negative.

A portion of feces was also inoculated into ten ml. of phosphate – buffered saline containing 1% mannitol (pH 7.3). The tubes were incubated for 21 days at 4 C° and subcultured on to Macconkey and Salmonella–Shigella agar plates at seven, fourteen and twenty one days . These media were incubated at 25 C° for 48 hours.

Lactose - negative colonies were picked to and inoculated on to screening media which included triple sugar in an agar, lysine – iron agar. Urea and phenylalanine slants.

Confirmatory biochemical tests were performed on suspect colonies. Isolate of Salmonella species were serogrouped .

RESULTS :

All isolate of *Yersina enterocolitica* were serogrouped, unfortunately, this was in our lab. Just one type of serotype for *Yersina enterocolitica* was o:3 only .

Yersina enterocolitica was recovered from six specimens of five patients from a total of 50 specimens (32 patients), by cold enrichment only. Routine cultured of these five patients failed to yield *Yersina enterocolitica* or other enteric pathogens.

Two isolates of *Yersina enterocolitica* were recovered from the 7 – days transfer from cold enrichment tubes; the rest were isolated from 14 – days transfer subculture of cold enrichment tubes. On to Salmonella - Shigella agar resulted in a high percentage of *Yersina enterocolitica* isolate than did subculture on to Macconkey agar bacteria were recovered 48 hours after subculture to enteric media. During the same period and in the same group of specimens and patients, Salmonella species were isolates from six specimens of five other patients, no patients yielded Shigella.

DISCUSSION :

In this series, cold enrichment resulted in an incidence rate of *Yersina enterocolitica* equal to that of Salmonella species. The need for cold enrichment for the recovery of *Yersina enterocolitica* has previously been documented by⁽³⁾ which showed cold enrichment resulted in an approximately 40% increase in recovery of *Yersina enterocolitica* particularly serotype o:3 . Several investigators have reported that cold enrichment is not essential for isolate of *Yersina enterocolitica* o:3 strains in diarrheic stool , although cold enrichment significantly enhanced recovery of this organisms in stools obtained from a symptomatic carries or convalescents patients⁽⁴⁾ .

They concluded however that recovery of non – o:3 serotypes of *Yersina enterocolitica* will be increased by cold enrichment . This finding is confirmed in the present series in which various non o:3 serogroups were recovered . Each patient from whom *Yersina enterocolitica* was grown had abdominal pain; these had diarrhea and one had fever.

One patient under went surgery for suspected small bowel obstruction prior to recovery of *Yersina enterocolitica* ; no obstruction was found , since no other enteric pathogens were isolated from these symptomatic individuals .

Yersina enterocolitica was assumed to be the etiological agent of disease. The need for cold enrichment is evident, since *Yersina enterocolitica* was not recovered by other method.

CONCLUSION :

Unfortunately, cold enrichment is not of immediate clinical value, because of the time required to isolate the *Yersina enterocolitica*. All of the *Yersina enterocolitica* isolated in this study were indol positive, serogroup o:3 positive only two isolates and others were non typable .

Future improvement of techniques for isolating *Yersina enterocolitica* from stool specimens will undoubtedly reveal more information regarding the distribution of serogroups in my country as well as the extent of enteric disease due to *Yersina enterocolitica*.

REFERENCES :

1. Bottone E .J, *Yersina enterocolitica*: a panoramic view of charismatic microorganisms. Review of microbiology. 1977 , 5: 211-241.
 2. High Smith A .K, J, C. Feely and G. K. Morris *Yersina enterocolitica* : a review of the bacterium and recommended laboratory methodology . Health laboratory science 1987 , 14: 253–260.
 3. Eiss, J. Selective culturing of *Yersina enterocolitica* at low temperature. Scandinavian journal of infectious diseases 1975 , 7: 249–251.
 4. Pai, C. H, S. Sarger, L. Lafleur, L. Lackman and M. Marks efficacy of cold enrichment techniques for recovery of *Yersina enterocolitica* from human stools .J. Clinical microbiology 1988 , 9: 712–715.
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