Reviewer’s report

Title: Symptoms and sources of Yersinia enterocolitica -infection: a case-control study

Version: 1 Date: 2 February 2010

Reviewer: Kare Molbak

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Major revision:

Overall, I find that this is an interesting study. The study has two aims: One is to determine the clinical picture by different types of Yersinia enterocolitica (YE) and the other to identify risk factors for YE according to bio/serotype. The main conclusion (taken from the abstract) is that some strains of YE biotype 1A, which in general is considered nonvirulent, may cause an illness but the symptoms differ from yersiniosis caused by the classic pathogenic YE bio/serotypes. I would be more cautious on the interpretation. Cases were identified among patients who submitted stool samples for faecal analysis, and it is thus inevitable that patients with YE biotype 1A (and any other finding for that matter) suffer from some sort of gastrointestinal complaint. On this basis, it is difficult to draw this conclusion. The 263 patients with YE biotype 1A were identified from a sample base of 41,848 stool specimens (representing an unknown number of patients). It would be interesting to learn whether the prevalence of YE biotype 1A among these patients were different from the prevalence of YE biotype 1A among healthy controls/the general population. Unless these data become available, I propose to focus the paper more on risk factors and sources (where there are clear differences between the classic pathogenic YE bio/serotypes and YE biotype 1A), and speculate less on the pathogenic potential of YE biotype 1A.

Minor revisions:

Background. To clarify, please mention that YE-like species are defined as selected non-enterocolitica species within the genus Yersinia. Otherwise this remains unclear until the reader reach page 7 where the YE-like species are mentioned.

Methods. How many patients do the 41,848 stool specimens represent? Did the authors analyse the semi-quantitative data by exposures and clinical picture? There were 27 isolates (how many patients?) with another gastrointestinal pathogen. What were the types of Yersinia identified on those polymicrobial patients?

A two week exposure period seems long; the incubation period < 10 days, usually 2-3 days.

Definition of reactive arthritis: Was it defined how long after YE infection the signs
of reactive arthritis might occur? What was the case definition of “probable reactive arthritis” as used in the results section.

Results. Consider to move the two first sentences to Methods.

There were cases and controls that were lost because the matching in the analysis was maintained. In particular, only 758 controls of the 1002 who returned their questionnaire were used for the analysis. To preserve statistical power, did the authors consider to break the matching (and adjust for the matching variables in the analysis)? If yes, did it affect the results?

Symptoms. Almost all cases…. Better to provide the number.

At page 10, second line, a % is missing

Discussion.

As mentioned above, the limitations of the study need to be addressed, and the authors should be more cautious when they address the potential pathogenicity of YE biotype 1A. There seems to be some indications that the patients with YE biotype 1A had more unspecific complaints and may suffer from a more ill defined gastrointestinal illness. Less severe symptoms may also result in a delayed contact with health care, which may explain some of the observations. In addition, vomiting was common among patients with biotype 1A which the authors ascribe to either enterotoxin YstB or to undiagnosed viral gastroenteritis. I assume that it is not possible to confirm the latter hypothesis by testing of preserved specimens. But were there any seasonality of the vomiting among YE biotype 1A patients? Did the patients fulfil the Kaplan criteria for suspected norovirus infection? This may give some clues.

At page 13, the authors discuss different frequencies of low-lactose diet. I assume that they refer to soybean and soybean products that were a common exposures among YE biotype 1A cases. Please elaborate.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests.