Diagnosis of Clostridium difficile–Associated Diarrhea and Odor

To the Editor—Burdette and Bernstein [1] recently reported the accuracy of nurses in making a diagnosis of Clostridium difficile–associated diarrhea (CDAD) according to the odor of patients’ stools. They stated that the “urban legend” concerning this ability “has never been scientifically tested.” In fact, a British study was published in 2002 that addressed this issue. Johansen et al. [2] found that nurses were able to predict correctly the presence of CDAD in 31 of 37 cases (sensitivity, 84%; specificity, 77%), using a mixture of patient signs, symptoms, and history, including stool odor. The positive and negative predictive values of the characteristic odor for CDAD were 77% and 82%, respectively. Burdette and Bernstein found a high negative predictive value (92%) but a much lower positive predictive value (35%) [1].

Part of the problem in reconciling the results of these 2 studies is separating the effect, conscious or unconscious, of other patient signs, symptoms, and history on nurses’ assessments of whether stool odor is characteristic of CDAD. Johansen et al. [2] used logistic-regression analysis to show that both recent receipt of antibiotics and characteristic odor were significant independent predictors of CDAD. This strengthens the hypothesis that a characteristic odor can be used to determine the likelihood of CDAD. However, in reality, nurses will inevitably use a combination of factors in making a judgment about the cause of diarrhea, including the appearance of stools, as mentioned by Burdette and Bernstein [1]. Thus, the only way to test the odor theory robustly would be with the aid of a blindfold! Also, it is likely that experience in treating patients with CDAD will correlate with being able to recognize a characteristic odor, not necessarily the length of (general) nursing experience, as considered by Burdette and Bernstein [1].

In some health care settings, there is a shortfall of isolation capacity [3]. It is commonplace to prioritize limited single-room capacity for patients who have diarrhea and vomiting, because of the risk of airborne spread of norovirus. In addition to the points raised by Burdette and Bernstein [1], the relatively high negative predictive value of odor assessment of the likelihood of CDAD could potentially be valuable when assessing risk of patients with diarrhea to determine priority for isolation, particularly if rapid laboratory diagnosis is not available. Isolation of patients with CDAD should be a priority, to control the endemic spread of virulent C. difficile strains.

Acknowledgments

Potential conflicts of interest. M.H.W.: no conflicts.

Mark H. Wilcox
Department of Microbiology, Leeds Teaching Hospitals National Health Service Trust and Institute of Molecular and Cellular Biology, University of Leeds, Leeds, United Kingdom

References


Reprints or correspondence: Dr. Mark H. Wilcox, Microbiology, Old Medical School, Leeds General Infirmary and University of Leeds, Leeds LS1 3EX, United Kingdom (mark.wilcox@leedsth.nhs.uk)

Clinical Infectious Diseases 2007;45;1110–19
© 2007 by the Infectious Diseases Society of America. All rights reserved. 1058-4838/2007/4508-0031$15.00
DOI: 10.1086/523592

Leptospirosis in Egypt: Is It the Tip of an Iceberg?

To the Editor—The description by D. J. Larrey, in 1812, of the jaundice that affected Napoleon’s troops during the French campaign in Egypt prompted subsequent writers to postulate that it was probably Weil disease [1].

To date, all studies of leptospirosis in Egypt have been conducted by the US Naval Medical Research Unit, Number 3 (NAMRU-3), because the microscopic agglutination test (MAT; the gold-standard serologic test) had never been available in Egyptian governmental laboratories. For example, in 1972, a multicenter serological survey revealed Leptospira antibodies in 5.6% of abattoir workers and patients with different diseases and in 4%–44% of live-
stock [2]. However, a wide survey in the Nile Delta with use of tests other than MAT revealed Leptospira antibodies seroprevalences of 0.5% among humans and of 0.0%–14% among livestock [1].

Recently, NAMRU-3 conducted a study to determine the proportion of Leptospira antibodies in fever hospitals in Egypt. With use of ELISA IgM (PanBio) as a screening test and MAT for confirmation, Leptospira antibodies were positive in 16% of 886 patients with acute febrile illness of unknown etiology and in 16% of 392 patients with non–A–C hepatitis. Lower Egypt had the highest proportion (24%) among patients with hepatitis in whom Leptospira icterohemorrhagiae was the main serotype detected.

Those authors concluded that leptospirosis had almost never been diagnosed in Egypt; therefore, leptospirosis had not been recognized as an important public health problem. Eventually, they emphasized the importance of increasing awareness of leptospirosis among physicians, establishing laboratory facilities in fever hospitals for proper diagnosis and conducting prospective studies [3].

With proper assessment of clinical presentation, a cross-sectional study including 350 patients was conducted in Tanta fever hospital in 1997, to determine the incidence of leptospirosis. Dark-field microscopic examination revealed Leptospira species in urine samples of 0.8%, 8%, and 0.0%, and ELISA IgM antibodies (ICN Diagnostics) were positive (titer $\geq 1:160$) in 58%, 50%, and 69% of patients with hepatitis, aseptic meningitis, and other febrile illness, respectively. This cutoff titer was adopted, in accordance with findings of a previous report [4]. No significant association was found between the clinical data considered indicative of suspected leptospirosis and IgM titers (A.E.S., M. Abed, the late M. Sabbour, S. El Taeib, and S. Mostafa, unpublished data).

The major shortcoming of this study was the lack of MAT data to confirm definite cases in which the tests gave highly variable results. Cross-reaction of IgM antibodies with those associated with other acute infections was described in the manufacturer’s leaflet. However, this study increased physicians’ awareness of leptospirosis, particularly when associated with acute renal failure.

Although these studies document a highly endemic state of leptospirosis in Egypt, they did not assess risk factors and morbidity and mortality rates among the confirmed cases in which Leptospira icterohemorrhagiae was predominant (the major serotype associated with fatal human leptospirosis). Thus, we are left wondering whether these data constitute the tip of an iceberg.

Certainly, physicians in fever hospitals are the only health care workers in close contact with patients who have infectious diseases. Therefore, the Ministry of Health and Population has to support research units in some fever hospitals in Egypt. For leptospirosis, nationwide community-based and case-control studies should be conducted through these units, in conjunction with epidemiologists and veterinarians.

A successful example of such collaboration was established for brucellosis through personal efforts in our community [5]. There is a need to set up reference laboratories for leptospirosis in fever hospitals provided with high-quality MAT and PCR amplification, which has proved to be sensitive for early diagnosis of leptospirosis [4].

In conclusion, an integrated, multidisciplinary system for zoonoses should be supported in Egypt. Leptospirosis is the best area to start, because it is an officially nonreported infection, even though it has been found to be endemic. Attempts to clarify its epidemiology could be made by research units in fever hospitals and thereby lead to implementation of a national control program.

Acknowledgments

I thank Prof. Hubert Blum and Dr. Rudolf Hartseker, for revision of the manuscript, and all my friends in NAMRU-3, for their unlimited support.

Potential conflicts of interest. A.E.S.: no conflicts.

Azza El Sherbini
Hepatology and Infectious Diseases, Research Unit, Tanta Fever Hospital, Tanta, Egypt

References


Reprints or correspondence: Dr. Azza El Sherbini, Tanta Fever Hospital, Tahab El Hakim Street, Tanta 3111, Egypt (azza_el_sherbini@hotmail.com).

Clinical Infectious Diseases 2007;45:1110–1
© 2007 by the Infectious Diseases Society of America. All rights reserved. 1058-4838/2007/4508-0033$15.00
DOI: 10.1086/523592