Analyzing Travel History to Identify Locally-Acquired Human Monocytic Ehrlichiosis in the Lower Hudson River Valley

Russell Rockwell1, Jennifer Hallisey2, Melissa Prusinski2, Gary Lukacik2, Rohit Garg1, Nieves Madrid1

1New York State Department of Health, New Rochelle, NY, 2New York State Department of Health, Albany, NY

Background

Human monocytic ehrlichiosis (HME), the causative agent of which is *Ehrlichia chaffeensis*, is transmitted by *Amblyomma americanum*, the Lone Star Tick (LST). HME has possible serious or fatal outcomes if left undetected and/or untreated, such as meningitis, adult respiratory distress syndrome, and toxic shock-like illness.

The LST, though concentrated in the south-central and southeastern U.S., has also been recorded in the Northeast, particularly along the Atlantic coastal plain. In NYS the LST is known to be established on Long Island (LI), but the geographic range of this tick may be increasing northward in New York State (NY), thus widening the potential geographic distribution of HME.

In the decade following the year HME became notifiable (1998), cases in persons residing in the Lower Hudson River Valley (LHRV), south of and inland from LI, increased from 53 in the first half of the decade (1998-2002) to 192 in the second half (2003-2007) (262%).

Because the incubation period of HME can be several weeks, patient travel history may be more important than state/county of residence for assessing risk for HME. Patient travel history is requested as part of case investigations, but is often unknown, incomplete, or not supplied.

Methods

Confirmed and probable HME cases in the LHRV and on LI for case years 2006-2007 were reviewed. To determine whether or not LHRV HME cases were locally-acquired, case reports were examined to assess patient travel history.

For those patients with missing travel information, physicians were contacted via written letter to facilitate retrospective completion of missing travel history information for patients residing in the LHRV.

HME among patients who were residents of the LHRV and had traveled to an HME-endemic area in the six weeks prior to disease onset was not classified as locally-acquired. Travel histories of LI cases were not determined.

Results

There were 47 HME case reports from LI and 115 from the LHRV. Travel history was provided in initial case reports for 58 (50%) of the LHRV cases. Fifty-five patients did not travel, three patients travelled, one to an HME-endemic area, two to non-HME-endemic areas.

Of the 57 letters sent to physicians for the remaining cases, 32 letters were returned, 26 included travel information. 18 did not travel, eight travelled (three to an HME-endemic area, five to a non-HME-endemic area (Figure 1). 2)

Locally-acquired LST specimens from the LHRV

- increased from 14 in 2000-04 to 41 in 2005-09 (193%).
- increased from 54 in 2000-2004 to 245 in 2005-09 (354%) (Figures 3 and 4).

Conclusions

Most cases of HME in the LHRV are locally-acquired. However, travel histories were not available for one-half of all reported cases from the LHRV. Retrospective investigation was able to identify travel histories for nearly one-half of these cases. Though travel histories were thus completed for approximately three-quarters of all 2006-2007 reported cases in the LHRV, the investigation was resource intensive. The geographic range of the LST in NY has expanded northward and inland from LI to include many of the counties in the LHRV. Based on NYSVDOH passive surveillance, LST populations may now have experienced recent growth on LI, thus potentially expanding the geographic area of risk for HME. Surveillance of HME, an important emerging tick-borne disease, might be greatly enhanced by improving collection and reporting of travel history at time of diagnosis. Such enhanced surveillance can generate better data on the geographic spread of HME and help target educational efforts for the public and providers in areas where HME is emergent. It is crucial to obtain early diagnoses of diseases such as HME, when antibiotic therapy is most effective.

Acknowledgments

Thanks to Dennis J. White for guidance in the earliest stages of this research, Brett Bachmann for commenting on earlier drafts of this poster, the LHRV local health departments’ communicable disease staffs, and local physicians, for their assistance in researching patients’ travel history, and to HRI for travel assistance.

For further information

Please contact roc22j@health.state.ny.us. You can access an online, PDF-version of this poster as well by contacting Russell Rockwell at this email address.