

Board 212. Lyme Disease in New York City - Is It Locally Acquired?

A. J. Abdool¹, R. Fernandez², C. Addei-Maanu¹, S. Slavinski¹, A. Fine¹;

¹New York City Department of Health and Mental Hygiene, New York, NY, ²Lincoln Medical and Mental Health Center, Bronx, NY.

Background: Little evidence has been found of local transmission of Lyme Disease (LD) in New York City (NYC). Incidence rates of LD are much lower in NYC than in surrounding highly endemic regions. Tick surveillance has rarely detected the vector, *Ixodes scapularis*, in NYC and few deer are present to host adult ticks. An investigation was conducted among NYC residents reported with early LD to determine where infections were likely acquired and to characterize the population at risk. **Methods:** The NYC Health Department attempted to phone all patients reported with onset of physician-diagnosed erythema migrans (EM) between April and November of both 2005 and 2006 (n=349). EM is the characteristic sign of early LD and the only sign or symptom with a relatively well-defined incubation period. Case patients were asked about travel outside NYC during the 30 days prior to EM onset. Incidence rates and median annual income for zip code of residence were calculated. **Results:** Of 196 (55%) subjects interviewed, most (61%) were aged 31-60 years, and 88% were Caucasian. Nearly all cases (95%) reported travel outside NYC during the incubation period, most frequently to the Hudson Valley region (28%) of NY or Long Island (20%), followed by CT, NJ, and MA. There was no clustering among locally-acquired cases. Cases with travel history appeared to cluster geographically. 59% resided in the borough of Manhattan. Incidence rates were highest in 17 zip codes which comprised five neighborhoods, four in Manhattan and one in Brooklyn (14.9/100,000 compared to 1.3/100,000 in the remainder of NYC). These zip codes also had an average median annual income twice that of the rest of the City (\$71,994 vs. \$35,822). **Conclusions:** Most NYC residents diagnosed with early LD likely acquired their infection while traveling to known endemic areas outside NYC. Demographic and residential characteristics, and travel history indicate that the population at risk likely has higher socioeconomic status. Prevention efforts should be targeted to neighborhoods with higher LD incidence. Although local transmission is likely to occur rarely if at all, further tick surveillance is needed to evaluate this possibility, particularly in areas of NYC which may have more suitable *I. scapularis* habitats.

Board 213. Etiology of Fever of Unknown Origin in a Selected Group of Sri Lankan Patients with Prompt Responses to Doxycycline

G. A. Dasch¹, R. Premaratna², R. P. Rajapakse³, T. G. Chandrasena², M. E. Ereemeeva¹, H. J. de Silva²;

¹Centers for Disease Control, Atlanta, GA, ²University of Kelaniya, Ragama, SRI LANKA, ³University of Peradeniya, Peradeniya, SRI LANKA.

Background: Most patients with long duration of fever go undiagnosed in settings where diagnostic facilities are inadequate. Untreated rickettsial infections cause extended fevers; while both scrub typhus and tick typhus are re-emerging diseases in Sri Lanka, laboratory facilities to specifically diagnose rickettsial infections in Sri Lanka are not available. **Methods:** We collected 2 ml venous blood from febrile patients who had no etiological diagnosis after 7 days of hospital admission, but who showed rapid clinical response to doxycycline, to verify whether they had experienced a rickettsial infection. Acute serum samples were analysed using IFA for rickettsial infections caused by *Orientia tsutsugamushi*, *Rickettsia conorii* and *Rickettsia typhi*. A positive IgG IFA titer $\geq 1:128$ was used to define a probable case of rickettsial infection.

Results: 28 patients [15 males, mean age 32.5 (SD 9.2 yrs)] were studied. Mean duration of fever at admission was 6.1 days (SD 3.1). Two patients had features suggestive of encephalitis and two had erythema nodosum. Others had no specific clinical features. Routine investigations were inconclusive and blood cultures were negative. IgG-IFA titer of ≥ 128 was found in 10 for *R. conorii*, 6 for *O. tsutsugamushi* and 6 for both *R. conorii* and *O. tsutsugamushi*. None were positive for *R. typhi*. Six were negative for all tests. One patient with encephalitis and one with erythema nodosum had high titers for *R. conorii*. **Conclusions:** The majority of Sri Lankan patients with undiagnosed fever responding promptly to doxycycline had a rickettsial etiology. Patients with rickettsioses exhibit varied clinical presentations so greater use of doxycycline for patients with extended fevers in rickettsial-endemic settings with inadequate diagnostic facilities appears warranted. The high proportion of patients with tick typhus and antibodies against both spotted fever and scrub typhus rickettsiae was unexpected based on previous studies of patients from the same region who were confirmed to have scrub typhus by serology and by the presence of the classic eschar. It is unknown whether the etiology of tick typhus and vector(s) transmitting this agent on the Western lowland region of Sri Lanka are the same as those responsible for spotted fevers in the central hill country of Sri Lanka.

Board 214. Dengue Virus Infections in Patients suspected of Malaria/Typhoid fever in Nigeria

M. M. Baba¹, M. Saron², A. V. Vorndam³, J. A. Adeniji⁴;

¹University of Maiduguri, Maiduguri, NIGERIA, ²Institut Pasteur, Dakar, SENEGAL, ³CDC, San Juan, PUERTO RICO, ⁴University of Ibadan, Ibadan, NIGERIA.

Introduction: Dengue viruses (DENS) are etiologic agents of Dengue fever and hemorrhagic fever/shock syndrome. Since the prodromal phase of these diseases mimics malaria/typhoid which are highly endemic in Nigeria, this study was designed to determine the significance of these viruses in febrile illnesses. **Materials:** About 1948 serum samples from suspected cases of malaria and typhoid were collected in June 2001 to July 2002 from six ecological zones. In addition, 973 sera were collected from the same group of patients at different seasons from Sahel savanna zone. 295 *Aedes Spp* from Rain forest were identified and pooled by species. MAC-ELISA was used to test all the sera for IgM and IgG while Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) was used to analyze each mosquito pool and IgM positive sera. Each mosquito pool was also tested for virus isolation. **Results:** Thirteen (0.67%) of the 1948 sera were positive for DEN 1 and 2 IgM from 4 zones. Six (33.3%) of 18 of the IgM positive sera had detectable RNA to DENS. Two (0.2%) of the 973 patients had mixed infections of DEN and WNV. DEN IgM was significantly higher during the rainy season (1.3%) than harmattan (0.3%). No DEN IgM was detected in the hot dry season. A high proportion (>59%) of the study population in four ecological zones had IgG to DENS but was slightly lower in Sudan (32.6%) and Grass savanna (38.1%). No virus was isolated from mosquitoes after two passages in AP61. However, DENS RNA was detected in *Aedes species* from the rain forest. **Conclusion:** The prodromal phase of DEN infection could be mistaken for malaria/typhoid. There is need to include DENS and probably other endemic arboviruses routinely in the differential diagnosis of febrile illness in Nigeria.