

Serologically Detected “New” Tick-borne Zoonoses in Eastern Croatia

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Aim. To establish serologically a contact with causative agents of human monocytic and granulocytic ehrlichiosis, human babesiosis, recently detected rickettsioses, and Lyme disease in individuals with a history of tick bite from three counties in eastern Croatia.

Methods. Seroepidemiologic testing was performed in 102 subjects with a history of tick bite, who either requested examination for a tick bite or were suspected of having tick-borne disease. The study was carried out during the 1998-1999 period in the area of the Vukovar-Srijem, Osijek-Baranya, and Brod-Posavina counties. Serum analysis was performed by indirect immunofluorescence assay for the detection of antibodies to causative agents of human monocytic and granulocytic ehrlichiosis (*Ehrlichia chaffeensis* and human granulocytic ehrlichiosis agent), human babesiosis (*Babesia divergens*), and rickettsiosis. Enzyme-linked immunosorbent assay was used for the detection of antibodies to the spirochete *Borrelia burgdorferi*, the cause of Lyme disease. The assays were performed at the Department of Microbiology, Osijek Public Health Institute in Osijek, and their results were confirmed at the Department of Microbiology and Immunology, School of Medicine in Ljubljana, Slovenia.

Results. *Ehrlichia chaffeensis* antibodies were detected in 5 sera, and antibodies to the causative agent of human granulocytic ehrlichiosis in 7 sera. A low titer of antibodies to the etiologic agent of babesiosis (*Babesia microti*) was detected only in a single serum. Eight sera that were positive for rickettsial antibodies contained rather high titers of antibodies against *Rickettsia conorii*, the agent of Mediterranean fever, and *Rickettsia rickettsii*, the agent of Rocky Mountain spotted fever. In six out of these 8 sera, antibodies to *Rickettsia typhi*, the cause of murine typhus, were detected possibly as a cross-reaction with some “newly detected” rickettsia circulating in this part of Europe, most likely *Rickettsia slovaca*. Positive titer of antibodies to *Borrelia burgdorferi* was detected in 15 sera.

Conclusion. The agents of human monocytic and granulocytic ehrlichiosis and of possibly newly detected rickettsiae were indirectly demonstrated to circulate in eastern parts of Croatia. The results obtained by IFA failed to provide definite evidence for the circulation of the human babesiosis agent, because the IFA used in our study detected *Babesia microti*, which prevails in the USA, but not *Babesia divergens*, which is the predominant cause of the disease in Europe. Serologic evidence for *Borrelia burgdorferi* infection was demonstrated in 80% of the subjects suspected of having the skin manifestation of Lyme disease.

Key words: babesiosis; Croatia; ehrlichiosis; fluorescent antibody technique, indirect; Lyme disease; tick; tick-borne diseases; rickettsia infections; zoonoses