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ePoster Viewing

Molecular bacteriology

Co-infections in patients with non-specific symptoms after tick bite

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Objectives

Ixodes ricinus tick transmitts various pathogens such as: *Borrelia burgdorferi* sensu lato (*B. burgdorferi* sl) spirochoetes, tick-borne encephalitis virus, *Anaplasma phagocytophilum* (*A. phagocytophilum*), *Babesia* species (*Babesia* spp.), *Bartonella* species, *Francisella tularensis* or *Candidatus* Neoerlichia mikurensis, and others.

Nonspecific symptoms, such as: headaches, muscle pain, vertigo, fever, nausea, vomits, which appear in short time after tick-bite, might indicate on infection with pathogens other than *B. burgdorferi* sl spirochoetes and suggest the risk of co-infection transmitted by the vector. Diversity and multiplicity of symptoms during mixed infections in one hand may lead to more severe clinical course and numerous complications, on the other hand might complicate diagnostic process. It also may indicate on infections with new, less known pathogens.

Methods

118 patients (53 women and 65 men) in mean age 42.11+/-16.73, hospitalized in The Department of Infectious Diseases and Neuroinfections of Medical University in Bialystok with non-specific symptoms, admitted in first 6-8 weeks after tick bite, were involved to the study. Research were performed in 2010 - 2013. Whole blood was used for MGG smears for *A. phagocytophilum* and *Babesia* spp. detection. Whole blood was used also for molecular detection by PCR of *B. burgdorferi* sl, *A. phagocytophilum* and *Babesia* spp. Serum was used for immunoserological diagnostic (ELISA, Western blot) of *B. burgdorferi* sl or TBEV infection. Cerebrospinal fluid was collected from patients with suspicion of neiroinfection, and it was used for detection of specific-anti TBEV by ELISA and for *B. burgdorferi* sl DNA detection by PCR.

Results

Among 118 patients 72% (85/118) complained about headache, 12.7% (15/118) vertigo, 27.12% (32/118) nausea, 14.41% (17/118) vomits, 31.36% (37/118) muscle pain, 68.05% (73/118) fever and 22.03% (26/118) presented meningeal signs.

In group of 118 patients with non-specific symptoms appearing after tick bite, 47.46% (56/118) was infected with at least one tick-borne pathogen. *B. burgdorferi* sl infection by using immunoserological (ELISA, Western blot) and/or molecular biology (PCR; *fla* gene) methods was confirmed in 29.66% (35/118) cases. In blood of 11.86% (14/175) patients *A. phagocytophilum* DNA (*16S rRNA* gene) was detected, and in 1 (1/175; 0.85%) case *Babesia* spp. DNA (*18S rRNA* gene) was detected. Coinfections were observed in 5.09% (6/118) of patients with non-specific symptoms. *B. burgdorferi* sl – *A. phagocytophilum* coinfections (5/118; 4.24%) was observed the most often. In one case *A. phagocytophilum* – *Babesia* spp. coinfection was detected by PCR.

Conclusions

Non-specific symptoms after tick bite may indicate on infections with rarely detected pathogens transmitted by ticks, co-infections with various microorganisms or possibility of infections with new, uncommon pathogens. This situation need to be taken into consideration in the diagnostic process after tick bite, especially when lack of specific, clear and noticeable symptoms take place.