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ePoster Viewing

Virology non-HIV/non-hepatitis

Co-infections accompanying tick-borne encephalitis

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Objectives

The most common pathogens transmitted by *Ixodes ricinus* ticks are tick-borne encephalitis virus (TBEV) and *Borrelia burgdorferi* sensu lato (*B. burgdorferi* sl) spirochoetes. Other tick-borne pathogens, such as *Anaplasma phagocytophilum* (*A. phagocytophilum*), *Babesia* species (*Babesia* spp.), *Bartonella* species, *Francisella tularensis* or *Candidatus Neoerlichia mikurensis* are rare.

Tick-borne encephalitis (TBE) caused by TBEV manifestats 4 to 28 days after contact with a vector. In the first phase non-specific flu-like symptoms appear, while in the second – neurological phase, away from meningeal signs and neck-stiffness, non-characteristic symptoms, such as: fever, headaches, verigo, nausea and muscle pain dominate.

Co-infections after tick bite often lead to more severe clinical course of TBE and multiple complications which might appear, because of an accumulation of symptoms.

Material and methods

172 patients (72 women and 100 men) in mean age 47.47+/-16.26, hospitalized in The Department of Infectious Diseases and Neuroinfections of Medical University in Bialystok with TBE, admitted during 4 weeks after tick bite, were involved to the study. Research were performed in group of patients diagnosed from 2010 to 2013. Whole blood was used for MGG smears for *A. phagocytophilum* and *Babesia* spp. detection. After DNA extraction, whole blood was also used for molecular detection by PCR of *B. burgdorferi* sl, *A. phagocytophilum* and *Babesia* spp. Patients serum was used for immunoserological diagnostic (ELISA, Western blot) of *B. burgdorferi* sl or TBEV infection. Cerebrospinal fluid (CSF) was collected from all of patients because of neuroinfection caused by TBEV. It was used for detection of specific-anti TBEV by ELISA, for *B. burgdorferi* sl DNA detection by PCR, and for general diagnostic of CSF (cytosis, biochemical parameters).

Results

Among 172 patients with TBE 95.35% (164/172) complained about headache, 27.91% (48/172) vertigo, 37.79% (65/172) nausea, 29.65% (51/172) vomits, 20.93% (36/172) muscle pain, 87.79% (151/172) fever, 70.93% (122/172) presented meningeal signs.

In group of 172 patients with TBE, 36.63% (63/172) was infected with more than one tick-borne pathogen. The most common co-infection was TBEV – *B. burgdorferi* sl, which was observed in 27.17% (45/172) of patients. TBEV – *A. phagocytophilum* co-infection (5/118; 4.24%) was detected in 6.98% (12/172) of hospitalized people. In one case (1/172; 0.58%) TBEV – *Babesia* spp. coinfection was occured. In 2.9% (5/172) of patients triple co-infection with TBEV – *B. burgdorferi* sl – *A. phagocytophilum* was presented.

Conclusions

Co-infections after tick-bite often accompany to TBE. Because of various non-specific symptoms after tick bite, which appeared in TBE and may be present in other tick-borne infections, infection caused by less common tick-borne pathogens are often missdiagnosed. Confirmation of TBE should not excluded a need of other tick-borne pathogens detection in diagnostic process.