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Evaluation of seroprevalence of hepatitis E virus infection in the inhabitants of the Pomeranian District

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Hepatitis E virus (HEV) is a non-enveloped single-stranded RNA virus. Human HEV is classified into eight genotypes, four of them clinically important, each with a distinct geographic distribution. In highly endemic areas, genotypes 1 and 2 are transmitted between humans by the faecal-oral route. By contrast, HEV infections that occur in industrialized countries are suspected to be caused by zoonotic transfer of genotypes 3 and 4.

Hepatitis E is a growing health problem in Europe. It is suspected that infections are acquired during travel to countries of the hot zone and through the transmission of zoonosis associated with the consumption of animal products and professional contact with animals. In addition to the low awareness of the risks associated with infection with this virus, the disease may be mistakenly recognized as toxic or autoimmune hepatitis and incorrectly treated. Acute HEV infection may be a serious clinical problem for people who are immunosuppressed as potential recipients of blood products. There have been reports of acute liver failure and chronic HEV replication in this group of patients. Epidemiological data from Poland regarding the risk of exposure to HEV and the incidence of serological markers demonstrating the exposure are limited. Most of them are blood donors and forestry workers and hunters from western Poland.

The aim of the study was to assess the prevalence of serological markers of HEV infection among the inhabitants of the Pomeranian District taking into account the risk factors for the acquisition of infection such as travel outside Poland, contact with animals, patients infected with HBV, HCV.

The study group consisted of healthy volunteers not leaving Poland and those returning from the hot climate zone, people professionally associated with forestry, as well as patients with chronic viral hepatitis (HBV, HCV) observed at the University Center for Maritime and Tropical Medicine in Gdynia. Subjects who were included to the study had not been diagnosed with acute hepatitis E previously.

Serum samples were tested for the presence of anti-HEV IgG with commercially available enzyme-linked immunosorbent assay (ELISA) Wantai (Biological Pharmacy Enterprise Co., Beijing, China) based on recombinant antigens derived from ORF2 and ORF3, genotypes 1, 2 and 3. All examinations were performed and the results interpreted according to the manufacturer's instruction. Samples with anti-HEV IgG ratio <0.90 were considered negative, those with ratio >= 0.90 but < 1.10 were defined as borderline, and samples with ratio >= 1.10 were considered as positive. In further analysis, borderline results were included in the negative results.

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In total, 370 people were examined. The presence of anti-HEV IgG was found in a total of 215 subjects (58.1%). The highest percentage of seropositive reactions was found in persons employed in forestry (86/125) 68.8%. The percentage of seropositive reactions in the other groups studied was similar: people with chronic hepatitis B and C (27/51) 52.9%, healthy people (102/194) 52.5%, not leaving Poland (59/109) 54.1%, traveling to the hot climate zone (70/136) 51.5% and people after a transfusion of blood products (20/40) 50.0%.

CONCLUSIONS. Surprisingly, the presence of anti-HEV IgG was found in more than half of the surveyed residents of the Pomeranian District. The incidence was similar in the studied groups, the highest percentage was found in the group of forestry workers (68.8%).

In the control group and patients with HBV and HCV chronic infection, anti-HEV IgG were detected with similar frequency, and this frequency was not dependent on the trip to the hot climate zone. In the group of forestry workers, no information about travel was collected.