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Genotypes of hepatitis A virus in Turkey: First report and clinical profile of children infected with sub-genotypes IA and IIIA

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Hepatitis A virus (HAV) is a food and water-borne virus causing clinical (mainly hepatitis) and subclinical disease in humans. It is important to characterize circulating strains of HAV to prevent HAV infections using efficacious vaccines. The aim of this study was the detection and characterization of the circulating strains of HAV in Turkey by performing serology, RT-PCR, sequencing and phylogenetic analysis. In this study, 355 HAV suspected cases were analyzed by ELISA for the presence of antibodies to HAV. RNA was extracted from 54 HAV IgM positive human sera. None of the suspect cases were vaccinated against HAV and they never received blood transfusions. Samples found positive by RT-PCR using primers targeting the VP1/VP2A junction and VP1/VP3 capsid region of HAV, were subjected to sequencing and phylogenetic analyses. IgM type antibodies to HAV were detected in 54 patients. Out of which, 21 of them were students. The age of IgM positive cases was between 3 and 60 years. IgM positivity differed in age groups and was higher in the age group 3 to 10 years. Phylogenetic analysis showed that the majority of HAV strains detected in this study belong to the HAV 1B cluster. In addition, the HAV sub-genotypes IA (KT874461.1) and IIIA (KT222963.1) were found in 2 children. These sub-genotypes were not previously reported in Turkey. The child who carried sub-genotype IIIA travelled to Afghanistan and presented with abdominal pain, icterus and vomitus. He was positive for anti-HAV IgM and IgG but negative for hepatitis B and C. Liver enzymes like aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase, gamma-glutamyl transferase and lactate dehydrogenase were severely elevated. Bilirubin levels were also increased. White blood cells, neutrophils and hemoglobin were decreased while lymphocytes and monocytes were increased. Similar clinical signs and laboratory findings were reported for the child infected with sub-genotype IA but aspartate aminotransferase and alanine aminotransferase were not severely elevated. The results indicate that molecular studies determining the HAV genotype variation in Turkey are timely and warranted. The majority of IgM positive cases in 3-10-year old patients indicate that childhood vaccination is important. Sub-genotype IB is the most prevalent genotype in Turkey. Surprisingly, sub-genotype IA and IIIA are also present in Turkey, future diagnostic efforts need to include diagnostic methods which can identify this emerging HAV genotypes. Our results also show that one important risk factor for contracting hepatitis A virus is international travel since genotype IIIA was detected in a child who had travelled to Afghanistan.

Biography

Nuri Turan is currently working as a Professor at the Department of Virology, Faculty of Veterinary Medicine, Istanbul University, Turkey. He has obtained his MSc degree in Veterinary Medicine and PhD in Veterinary Microbiology in Turkey. Later, he has been for few months at University of Bristol to study some immunological techniques. He has been working as Research Scientist and Senior Lecturer of viral diseases at Istanbul University. He has taken part in many research projects and has had about 40 publications in peer reviewed international journals on bacterial and viral infectious diseases with particular interest in zoonotic and vector-borne diseases.

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