Hepatitis E Virus

A review on an hidden world-wide merging infection

Edited 10/2013 by M.Marchisio

GENTAUR

KEY FACTS (from WHO's report)

- Every year there are 20 million hepatitis E infections, over three million acute cases of hepatitis E, and 57 000 hepatitis E-related deaths.
- Hepatitis E is usually self-limiting and asymptomatic but in certain cases may develop into fulminant hepatitis and death.
- The hepatitis E virus is mostly transmitted via the faecal-oral route, but may also be acquired by eating badly cooked swine meat as more than 50% animals are reported to be infected by HEV.
- HEV can be also transmitted to a recipient by an infected liver in organ transplantation

HEV WORLD-WIDE

DISTRIBUTION

(from WHO's report)

- Hepatitis E is found worldwide and different genotypes of the hepatitis E virus determine differences in epidemiology e severity.
- Genotype 1 is usually seen in developing countries and causes community-level outbreaks while genotype 3 is usually seen in the developed countries (USA and Europe) and does not cause outbreaks.
- Globally, 57 000 deaths and 3.4 million cases of acute hepatitis E are attributable to infection with hepatitis E virus genotypes 1 and 2.
- The highest seroprevalence rates (number of persons in a population who test positive for the disease) are observed in regions where low standards of sanitation increase the risk for transmission of the virus. Over 60% of all hepatitis E infections and 65% of all hepatitis E deaths occur in East and South Asia, where seroprevalence rates of 25% are common in some age groups. In Egypt, half the population aged above five years is serologically positive for the hepatitis E virus.
- In Europe some recent studies have pointed out a relevant presence of antibody positive people in the so called normal population.

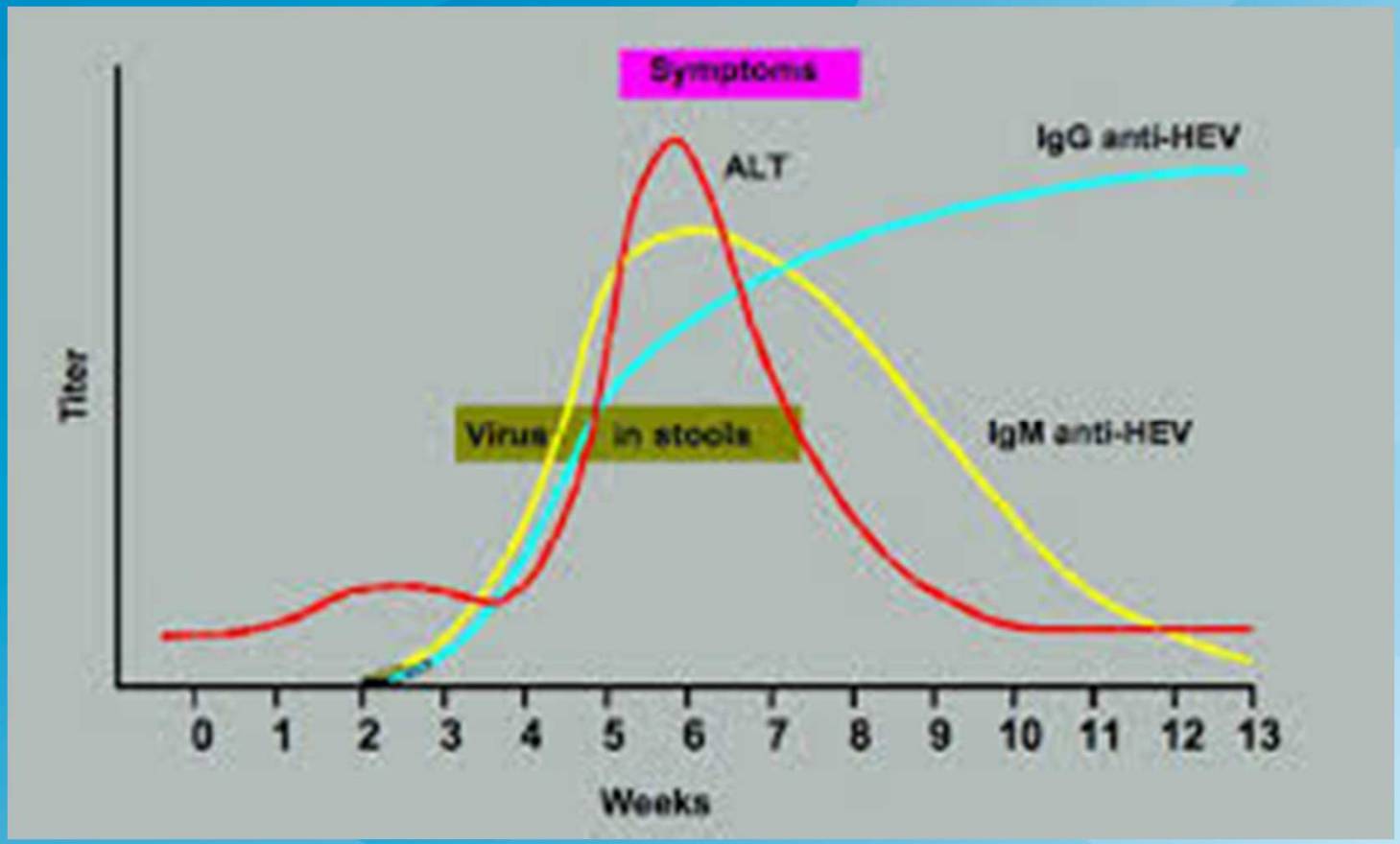
WHY HEV IS GETTING IMPORTANT

- In the countries where HEV is endemic and present together with HBV and HCV, testing for IgM antibodies is necessary to identify it and know which specific therapy has to be undertaken.
- In the countries where vaccination against HEV is promoted, testing for HEV IgG is usefull to follow up its efficiency in protection.
- HEV infection in liver compromised individuals may be quite severe and cause of death.
- In transplantation the donnor should be tested for HEV RNA to avoid a critical infection to the recipient.
- The transmission of HEV from food seems to be underestimated and needs to be further studied

HEV DIAGNOSIS

- Cases of hepatitis E are not clinically distinguishable from other types of acute viral hepatitis.
- Diagnosis of hepatitis E infection is based on the detection of specific antibodies to the virus in the blood.
- Recently HEV RNA can be also diagnosed by RealTime PCR

PATTERNS OF HEV MARKERS



ELISA for HEV

- Most of the common systems of HEV markers detection are based on ELISA
- Depending of the nature and composition of HEV used for testing antibodies pretty different results can be obtained
- By definition the best HEV antigen to be used has to contain epitopes of all the 4 genotypes

HEV IgG - Code EVG.CE

- The kit is CE marked
- The antigen is based on the sandwich method and makes use of highly specific recombinant HEV VLPs that contain epitopes of all the 4 genotypes
- The assay can be easily carried out by automatic ELISA devices for routine applications

HEV IgM - Code EVM.CE

- The kit is CE marked
- The antigen is based on the sandwich method and makes use of highly specific recombinant HEV VLPs that contain epitopes of all the 4 genotypes
- IgG interference is blocked directly in the well by immunoadsorption

HEV tot Ab - Code EVAB.CE

- The kit is CE marked and detects total antibodies to HEV (IgG/IgM/IgA)
- The method is based on double antigen sandwich where both are composed of HEV VLPs bearing epitopes of the 4 genotypes
- The kit is suitable for automated screening in DIA.BLOod and other workstations