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ORIGINAL ARTICLE

Application of Hepatitis E Virus-Related Markers on Samples from a Developing Country

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SUMMARY

Background: **Nepal is an endemic area for hepatitis E virus (HEV) epidemics. The research on viral hepatitis in Nepal is limited.**
Methods: **Serum samples from 170 patients presenting with symptoms of hepatitis were collected from April to May 2014 in Biratnagar, Nepal, and then transported to Xiamen, China, for further evaluation. All samples were tested for HEV RNA, HEV antigen, anti-HEV IgM, anti-HEV IgG and anti-HBc IgM, anti-HCV IgG, and anti-HAV IgM.**
Results: **Sixteen patients were identified as acute hepatitis E with the presence of ≥ 2 HEV acute phase markers (antigen, RNA, and anti-HEV IgM). HEV infection was the major cause of potential active viral hepatitis (59.2%, 16 of 27), followed by HBV (25.9%, 7 of 27, anti-HBc IgM positive), HAV (18.5%, 5 of 27, anti-HAV IgM positive), and HCV (3.7%, 1 of 27, anti-HCV antibodies). All 16 confirmed HE cases were positive for HEV antigen, while 5 cases were HEV RNA positive, as well as 15 anti-HEV IgM positive. The low positive rate of RNA might be related to the collection and/or the transportation of these samples.**
Conclusions: **This study showed that HEV is a major cause of acute hepatitis in developing countries and regions. Application of immunoassay diagnostic kits, especially the HEV antigen tests, showed great potential for HE detection in these countries and regions.**
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Supplementary Table and Figure

Table 1. All quantitative tests were requested to use the HEV plasmid standard to create a standard curve (testing the neat and by 6 ten-fold dilutions i.e., 5.00E+07 HEV RNA copies/mL (neat) to 5.00E+01 HEV RNA copies/mL) and samples reported directly in HEV RNA copies/mL. CT values for the respective dilutions were reported.

Sample	HEV RNA copies/mL			CT value		
	1	2	3	1	2	3
Plasmid standard Neat	5.00E+07	5.00E+07	5.00E+07	19.13	19.04	19.17
Plasmid standard 1.0 log dilution	5.00E+06	5.00E+06	5.00E+06	23.41	23.13	23.35
Plasmid standard 2.0 log dilution	5.00E+05	5.00E+05	5.00E+05	27.52	26.91	27.45
Plasmid standard 3.0 log dilution	5.00E+04	5.00E+04	5.00E+04	31.71	31.01	31.44
Plasmid standard 4.0 log dilution	5.00E+03	5.00E+03	5.00E+03	35.71	36.01	35.44
Plasmid standard 5.0 log dilution	5.00E+02	5.00E+02	5.00E+02	40.11	39.64	40.22
Plasmid standard 6.0 log dilution	5.00E+01	5.00E+01	5.00E+01	negative	negative	negative

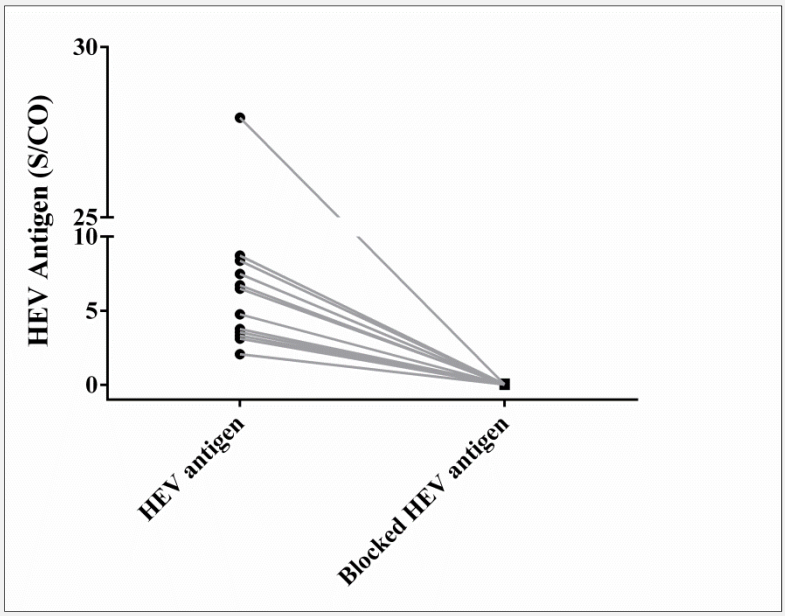

Figure 1. Blocked by anti-HEV monoclonal antibody, HEV antigen could not be detected.

The monoclonal antibody was added and incubated with samples for 30 min at 37°C, and then the following procedure was performed according to the manufacturer's instructions.