

A Case of Chronic Viral Hepatitis Caused by HEV Genotype 1F

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Abstract

Background: An acute hepatitis caused by Hepatitis E Virus (HEV) is a significant global health concern, especially in developing countries like Bangladesh. HEV has 1 serotype and 8 genotypes, which are further divided into subtypes. Despite the availability of sporadic cases and outbreak data from Bangladesh no case was reported regarding its chronicity and identification of genotype in our context. So the objective of the case report is to provide a data of a HEV induced chronic hepatitis with its genotype result.

Case Presentation: Present case is a 38 years male presented with features chronic hepatitis for more than four months. After clinical evaluation and different biochemical and serological tests he was diagnosed as a case of HEV induced chronic viral hepatitis. Genotype of the virus was also done from USA based research lab where HEV genotype 1F was found as the culprit. It is the commonest genotype found in the South East Asia region found in different epidemiological data.

Conclusion: It is well known that HEV can cause acute and fulminant viral hepatitis but rarely it can also cause chronic hepatitis as in the present case.

Key words: Chronic Viral hepatitis; Genotype, HEV.

Introduction

Hepatitis E virus (HEV) infection is a public health burden and it is responsible for large outbreaks of acute hepatitis in Bangladesh and also in different parts of the world but developing countries are more vulnerable. It accounts for around 20 million infections and over 3 million acute cases worldwide with an approximate 56,600 deaths per year.¹ Bangladesh is considered an endemic zone for HEV. Sporadic cases are detected throughout the year here but a big outbreaks and high positivity of HEV occurred in the year 2018 where more than 2000 cases were found in Chittagong city, Bangladesh.²

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HEV, a member of the family Hepeviridae within the genus Hepevirus, is a non-enveloped, spherical virus of about 27–34 nm in size with positive-sense RNA.³ There are 8 genotypes found in human and animals where genotypes 1 and 2 have exclusively been found in humans, whereas genotype 3 and 4 are zoonotic. Genotypes 5–8 are detected in wild boar and camel and limited sequences of these genotypes are available.⁴

Chronic Liver Disease (CLD) caused by HEV infection is a rare condition. But during the outbreak of HEV in the year 2018 in Chittagong, Bangladesh we noticed this case as CLD, induced by HEV genotype 1F. Symptoms and signs of the patient persisted more than 4 months and clinical, biochemical, serological and other indirect evidence revealed it was a case of CLD induced by HEV genotype 1F.

Case Presentation

Mr 'X' age 38 years, farmer normotensive, nondiabetic hailing from Sandwip, Chattogram and temporarily residing in Halishahar, Chattogram got himself admitted to Chattogram Maa-Shishu O General Hospital on 2/10/18 with the complaints of yellowish discoloration of eye for last 4 months and also abdominal pain, loss of appetite nausea, vomiting and generalized weakness for the same duration. He suffered from a 5-6 days of fever before the onset of those general symptoms. According to his statement he developed malaise and gradual weakness with yellow eye and urine 4 months back. It was associated with loss of appetite nausea and abdominal pain. His malaise and weakness subsided gradually but abdominal pain, yellow eye and urine persisted. His pain was dull, aching and constant in nature, involving the upper right quadrant mainly without any radiation. It had no aggravating or relieving factors. He also noticed a painful lump in the right upper part of his abdomen after 3 months of his symptoms. He had serum bilirubin 10.2 mg/dl and raised SGPT and SGOT when he was tested one month of his symptoms aroused. With those problem he first consulted with a traditional healer who prescribed him some herbal medicine and after taking those

his condition deteriorated further. He denied history of passage of clay colored stool, itching, extramarital sexual exposure, IV drug abuse or blood transfusion or previous history of Jaundice, HBsAg or Anti HCV positivity. His bowel and bladder habit is normal. He used to take home cooked food and water from tubewell. He noticed that few of his neighbors were suffering from jaundice. He got himself admitted in our hospital as jaundice persists. After admission he was examined and found that he had jaundice and leuconychia, no anemia or clubbing. His vitals were normal and had no flapping tremor. Few spider was seen on his chest wall and in the neck. Mild gynaecomastia was seen. No caput or visible vein was seen over the abdomen. Testis was normal size and shape but found soft. His liver was palpable smooth surface with sharp margin, 3 cm from costal margin and upper border of liver dullness was at 4th intercostals space right side. Spleen was just palpable. His investigation profile are as such serum bilirubin was 20.1 mg/dl, PT-21, INR-1.91, serum albumin-2.6gm/L, SGPT-203 IU/L, SGOT 77 IU/L ALP-258IU/L HBs Ag-Negative, Anti HCV-negative, Anti HAV-negative, IgM Anti HEV-positive. RBS-8.4 mmol/L, Hb- 11.1gm/dl, TC-7,700/cmm, USG HBS suggested echogenic liver with moderate hepatomegaly with moderate splenomegaly. Endoscopy of upper GIT reveled grade 1 esophageal varices. Liver biopsy was not done due to lack of facilities. Six ml of separated plasma with dry ice was sent to a research lab situated in Texas, USA as a part of research collaboration and viral load and genotype was analyzed there. Genotype was found 1F and viral load was 56000IU/L. Finally patient was diagnosed as a case of CLD induced by hepatitis E virus genotype 1F. Necessary permission was taken from the proper authorities before start the study.

Discussion

Clinical features of acute hepatitis E follow a common history most of the times. Mass people in the communities are usually affected what was found in the HEV outbreak in Chittagong City in the year 2018.² In other times most cases are found sporadic, and large outbreaks do not occur. Although there have been a number of well-documented small clusters of cases from a point-

source food outbreak. However, in most cases, the source of infection remains uncertain.⁵ Jaundice occurs in about 75% of patients. Other common symptoms include nausea, fever, malaise, arthralgia, vomiting, diarrhea, and abdominal pain. The Alanine Aminotransferase (ALT) level is usually 1,000 to 3,000 IU/liter, but the range is wide. Some patients have a much more modest transaminitis, and, rarely, the ALT level is normal in blood samples taken at the time of viremia.⁶ In the majority of patients, the disease is self-limiting, with symptomatic and biochemical recovery within 4 to 6 weeks. In two groups of patients, the natural history and prognosis are different: patients who have underlying chronic liver disease have a poor prognosis and individuals who are immunosuppressed often develop chronic infection.⁷ A minority of patients present with neurological symptoms and when this occurs, the diagnosis may easily be overlooked because the neurological illness dominates the clinical picture. An increasing number of recent studies have shown that HEV can cause chronic infection that can rapidly result in cirrhosis.⁸ Although the majority of chronic HEV cases are diagnosed in the transplant populates, several chronic cases have also been observed in patients co infected by HIV and in hematological patients treated with anticancer chemotherapy. All chronic HEV cases were observed in patients infected by HEV genotype 3. No case of chronic HEV genotype 1, 2, or 4 infection has been described. But the present case was suffering from hepatitis with HEV genotype 1F and his duration of disease was more than 3 months. But due to lack of biopsy facility tissue diagnosis could not be done though there was a strong evidence of chronicity clinically and biochemically. All chronic cases have been autochthonous and have not been associated with travel. A diagnosis of chronic hepatitis used to be considered when persisting HEV replication lasted for at least 6 months. However, very recently, in the setting of organ transplantation, it was observed that no spontaneous clearance of HEV occurs between 3 and 6 months after an acute infection. This suggests that chronic HEV infection should be considered when HEV replication persists for more than 3 months.

During the last 20 years, it has become evident that hepatitis E is not a disease of developing countries only or the disease of the travelers returning from such countries. Many studies showed that autochthonous (Locally acquired) hepatitis E is a problem across Europe, North America, New Zealand and Japan.⁷ In contrast to the case in developing countries, autochthonous hepatitis E is a zoonotic infection caused by HEV genotypes 3 and 4, and an important route of infection is by consumption of uncooked or poorly cooked pork or game meat.⁸ But in our setting in South East Asia and Bangladesh genotype 1 is predominant and like the present case it was genotype 1F.

The genotype and subtype of an infecting virus are known to play a role in determining the severity of disease. Moreover, the mode of transmission, zoonosis, high-risk age groups, chronicity of infection, and outbreak-causing abilities also vary among the genotypes. Therefore, the molecular characterization of HEV is important. The genotype and subtype of an HEV virus can be determined by studying the regions under ORF1 and ORF2 or based on full genome sequences. The ORF 1 contains the most hyper variable region of the HEV genome, thereby it is preferred for genotyping and subtyping. Genotypes 1a and 1c were reported to have been circulating in south, north, and west India. Moreover, the circulation of genotype 4 among pigs was also documented in southern and western Indian states. However, information regarding epidemiology and circulating HEV genotypes from Bangladesh is lacking. This case is an unique in this regard as the case is evaluated genotypically.

Limitation

Liver biopsy could not be done to confirm the chronicity histologically due to lack of expert hand and infrastructure.

Conclusion

Finally we can say that Bangladesh is an endemic zone of HEV infection and genotype 1F is present in this region. It is also one of the rare cause of Chronic Liver Disease in this country induced by HEV genotype 1F. This study will provide baseline information for future studies. An unremitting molecular surveillance along with serological and tissue diagnosis will help in understanding the intricacies of HEV epidemiology.

Recommendation

Needs more cases are to be reported in suspected chronicity induced by HEV infection from different parts of Bangladesh.

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Contribution of authors

RSRB- Conception, citing references, drafting, critical revision & final approval.

SS- Design, drafting & final approval.

Disclosure

Both the authors declared no competing interest.

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