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An Interesting Case Of Hepatitis B: Cure Or Carrier: Case Report.

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ABSTRACT

Hepatitis B is a liver infection caused by hepatitis B virus. It can cause acute or chronic infection. Some of the chronic infected cases will be cured overtime and some will become carriers (chronic inactive hepatitis). It is important to differentiate cure and carrier as the latter can develop disease related complications. HBsAg is one important viral marker which helps in differentiating the two. Tests with good sensitivity should be used for the detection of HBsAg and other viral markers. Here we discuss a chronic case of hepatitis B positive pregnant woman. She was tested for HBsAg by rapid test (ICT) and ELISA as a part of routine antenatal testing. Results were indeterminate by both of these tests. Later she was tested for HBV quantitative PCR which was negative and total anti-HBc antibody, which was positive. Hence, she was preliminarily diagnosed as cured. But when the HBsAg test was repeated by ECLIA, it was positive and the diagnosis was changed to carrier, what we now call chronic inactive hepatitis. Hepatitis B carriers can develop complications and hence they should be differentiated from cured cases. HBsAg can be used to differentiate cure and carriers. HBsAg detection by ECLIA is more sensitive compared to ICT and ELISA. Other tests like HBV PCR and anti-HBc antibody can also be tested simultaneously to know the disease status of a patient. Test with good sensitivity like ECLIA should be used for the detection of HBsAg whenever feasible. When in doubt, other viral markers like HBV PCR and total anti-HBc antibody should be tested to accurately diagnose the hepatitis B status of a patient.

Keywords: Hepatitis B, HBsAg, ECLIA, Carrier.

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INTRODUCTION

Hepatitis B is a liver infection caused by hepatitis B virus. It can cause acute or chronic infection. Chronic infection can lead to development of complications such as liver cirrhosis and liver cancer [1].

Around 90-95% of the adults will recover (cured) after acute infection. 5-10% of the healthy adults who are infected with hepatitis B will develop chronic infection [2]. Some of the chronic infected cases will remain as asymptomatic carriers (also known as chronic inactive hepatitis) and may develop complications as mentioned above during their lifetime [3].

Different serological and virological markers like antigens, antibodies, DNA are used for the diagnosis of hepatitis B infection. These markers are used to diagnose the disease status, to know infectivity, response to the treatment and recovery (cure), to know if the person is protected or to identify asymptomatic carriers and to classify the disease into acute or chronic and present or past infection. HBsAg is one important viral marker. Tests with good sensitivity should be used for the detection of HBsAg and other viral markers.

Here we discuss an interesting case of hepatitis B that was first diagnosed as to be cured and later was confirmed to be a carrier (chronic inactive hepatitis).

CASE REPORT

Here is a 25year old pregnant woman admitted for routine obstetric care of her 2nd pregnancy. Her blood sample was sent for routine antenatal lab testing. Her blood sample was tested for blood borne viruses (HIV, Hepatitis B and Hepatitis C virus) by rapid card method such as ICT (Immunochromatography). She was Non-reactive for HIV and Hepatitis C. Result of HBsAg (Hepatitis B surface antigen) was indeterminate. Following this she was tested for HBsAg ELISA (Enzyme-linked immunosorbent assay), which was also indeterminate. Her liver function test and other routine blood test reports were within normal limits. HBsAg ELISA was repeated after 4 weeks and it was once again indeterminate.

She is a known case of hepatitis B from past 5 years which was first detected during her first pregnancy in 2019. Later on, she never took any treatment for hepatitis B. At present, since her HBsAg test results were indeterminate, she was advised to take up tests for other viral markers to know her current hepatitis B status.

She was referred to another lab for HBV quantitative PCR (Polymerase chain reaction) and total anti-HBc antibody (Hepatitis B core antibody) tests. Lab report was as follows: HBV quantitative PCR: Not detected. Total anti-HBc antibody by ELFA (Enzyme-Linked Fluorescence Assay) method: Positive. After analyzing these reports, the patient was preliminarily diagnosed as cured.

Later, the treating clinician asked the patient to repeat HBsAg by a different method as it was indeterminate earlier by ICT and ELISA. HBsAg was repeated by ECLIA (Electrochemiluminescence Immunoassay) method and it was Reactive (Positive). Hence the diagnosis was changed from CURE to CARRIER what we now call chronic inactive hepatitis.

Later patient was attended by a gastroenterologist. He advised to give the newborn, active and passive immunization against Hepatitis B within 12 hours of birth. Also, he advised the patient to follow up every 6 months to look for complications like chronic hepatitis/cirrhosis/hepatocellular carcinoma.

DISCUSSION

It is important to accurately diagnose a case of hepatitis B as cure (HBsAg negative and Total anti-HBc antibody positive) or a carrier (HBsAg positive and Total anti-HBc antibody positive) as the latter is associated with complications such as chronic hepatitis/cirrhosis/hepatocellular carcinoma [4]. Though rapid tests (ICT) and ELISA have good sensitivity and specificity and are routinely used for diagnostic purposes, ECLIA has better sensitivity compared to the earlier two [5]. Study by Dipmala Das et al., also concluded that ECLIA should be used for the diagnosis of Hepatitis B compared to rapid tests and it is even more user friendly compared to ELISA [6]. Study done by Y Wu et al., also concluded that HBsAg detection

by ECLIA was better than HBsAg detection by ELISA [7]. And whenever HBsAg detection alone doesn't help, other viral markers like HBV PCR and total anti-HBc antibody can be tested. In the present case, where the hepatitis B status of a woman was indeterminate, test with higher sensitivity like ECLIA was used along with HBV PCR and total anti-HBc antibody and her diagnosis was changed from cure to carrier (chronic inactive hepatitis).

CONCLUSION

HBsAg is a very important viral marker which helps to differentiate cure and carrier. Hence a test with good sensitivity like ECLIA should be used for the detection of HBsAg whenever feasible. When in doubt, other viral markers like HBV PCR and total anti-HBc antibody should be tested to accurately diagnose the disease status of hepatitis B.

Abbreviations

- HBsAg: Hepatitis B surface antigen
- ICT: Immunochromatography
- ELISA: Enzyme-linked immunosorbent assay
- ECLIA: Electrochemiluminescence Immunoassay
- ELFA: Enzyme-Linked Fluorescence Assay
- Anti-HBc antibody: Hepatitis B core antibody

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