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Case Report

A Case Study-Chronic Hepatitis B Virus (HBV) Infection in a High-Risk Demographic Group for Hepatocellular Carcinoma with Monitoring Only Management

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Abstract

In a high-risk demographic group for Hepatocellular carcinoma among chronically active HBV patients, this is an example case study of an optimal outcome with conservative management including patient monitoring, regular follow-ups, and 6 monthly HCC screening together with patient education and family involvement. While antiviral oral treatment can play a major role in reducing the incidence of HCC in higher-risk groups with chronic active HBV infection, some cases with no other co-morbidity, low Hepatitis viral load (HBVL), borderline liver enzyme level, and no radiological evidence of hepatitis fibrosis can be successfully managed by monitoring only. According to a study conducted by WHO vaccination, diagnostic tests, medicines, and education campaigns for hepatitis can prevent premature death by an estimated 4.5 million in low- and middle-income countries by 2030 [1].

From those countries, patients from Subsaharan Africa [2] or East Asian origins are considered among the highest risk for HCC [3].

Keywords: Hepatitis B Virus; Hepatocellular Carcinoma; West Africa; Viral Load; Liver Enzymes; High-Risk Group; Monitoring; Antiviral.

Abbreviations: HB Core Ab: Hepatitis B core antibodies; HBs A: Hepatitis B surface Antigen; HBVL: Hepatitis B Viral Load; ALT: Alanine Transaminase; INR: The international normalized ratio; AFP: Alpha Fetoprotein; HB Core Ab: Hepatitis B core antibodies; AST: Aspartate Aminotransferase; Bil: Bilirubin Level; ALP: Alkaline Phosphatase; SGGT: Gamma Glutamyl Transferase; HCV Ab: Hepatitis C Virus Antibodies; HIV: Human Immunodeficiency Virus; S: serum; TL: total; OTC: Over The Counter; LFT: Liver Function Test; BBV: Blood Borne Viruses, HCC: Hepatocellular Carcinoma.

Case Presentation

SM is a 31-year-old male originally from Central-West Africa, who migrated to Australia 5 years ago. He is married and lives with his wife and three children, all of whom were born in Australia and are up-to-date vaccinated according to age. However, his wife has no history of immunization in adult life. The patient is a disability support worker, with no history suggesting needle-stick injury incidents or Blood blood-borne disease (BBD). He was asymptomatic, with no significant past medical history, regular medications, smoking history nor history of alcohol consumption. There was no family history of HBV or cancer within first-degree family members, though his mother's sister has a history of hepatitis B. Clinical examination demonstrated no signs of chronic liver disease, his Body Mass Index (BMI) was 24, and there was no abnormality detected on abdominal examination. SM was diagnosed with HBV (Table 1) after a follow-up on abnormal Liver Function Tests (LFT) - with minimally elevated Alanine Transaminase Test (ALT)-on initial blood check that led to an opportunistic screen, confirming Chronic HBV infection status [4]

(Table 2) and negative results for HCV and HIV (Table 3).

Initial HBV screening blood analysis results revealed the following:

- Positive HB core Ab
- Positive surface Ag (HBsAg)
- negative eAg (HBeAg)
- F/U analyses confirmed a low viral load of 471 IU/mL (Table 5)
- ALT 46, INR 1, Platelet count of 156 x109/L, AFP 2.5.

Upon further assessment, an elastogram was performed for liver fibro-scan, which highlighted low-to-nil liver scarring (score < 6 kilopascal).

Screenshots are depicted below, reflecting the patient's initial results:

Test	Result	Range	Comments
** Hepatitis B Surface antigen [HBsAg]	DETECTED		
Hepatitis B Surface antibody [HBsAb]	< 10 IU/L		
Hepatitis B Core antibody (IgM) [HBcIgM]	Not Detected		
Hepatitis B Core antibody (Total) [HBcT]	DETECTED		

Table 1: Hepatitis Serology

Hepatitis B Interpretation: Hepatitis B surface antigen confirmed Positive. Consistent with chronic Hepatitis B virus infection.

Test	**Result**	**Range**	**Comments**
S T-BIL	6 umol/L	(4-20)	
S ALP	109 U/L	(35-110)	
S GGT	11 U/L	(5-50)	
S ALT	46 U/L	(5-40)	High
S AST	38 U/L	(10-40)	
S T-PROTEIN	78 g/L	(66-83)	
S ALBUMIN	43 g/L	(36-47)	
S GLOBULIN	35 g/L	(23-41)	

Table 2: SE-Chemistry. MULTIPLE BIOCHEMICAL ANALYSIS – Serum

Requested: 26/03/2022; Collected: 28/03/2022; Reported: 29/03/2022

Test	Result	Range	Comments
HIV 1/2 Antigen/Antibody	Negative		
Hep CAb	Negative		

Table 3: HIV & HCV Serology

Test	Result	Range	Comments
HepBsAg	Detected Confirmed Yes *		
HBcAb (Tot)	Detected		
Hep B eAg	Negative		
HepA-Total	Detected		

Table 4: SE Hepatitis Virtual

Requested: 26/03/2022; Collected: 28/03/2022; Reported: 30/03/2022

Test	Result	Range	Comments
Spec HBVL	Serum		
HBVL DNA	Detected		
HBVL	451 IU/mL		
Log HBVL	2.7		

Table 5: Se-Hep B Viral Load.

Requested: 26/03/2022; Collected: 28/03/2022; Reported: 01/04/2022

Testing performed on Roche™ COBAS® 6800. The range of qualifications was 10 IU/mL to 1,000,000,000 IU/mL (Log 1.0 to Log 9.0) with a lower limit of detec6on at 3.5 IU/mL.

Discussion

The patient was initially reluctant to accept HBV positive, having no h/o sexually transmitted condition/blood transfusion with no family history of HBV or personal history of blood-borne diseases, therefore he requested a repeat of investigations in the following month, which only confirmed the initial results but rather helped in building stronger rapport and facilitating further better care and management. After reviewing the results and performing a thorough discussion with the patient, he was highly willing to further manage his condition and to involve his family as well (wife and children) in screening. The ALT level remained unchanged during patient management and initial follow-up tests, at 46 U/L, being slightly abnormal. Nonetheless, this could be attributed to other factors, including fatty liver, use of OTC medications, among other probable causes. Therefore, after

careful physical examination revealed nonsignificant findings, a plan was agreed upon to repeat LFT and lipids profile analyses, together with arrangements for HCC screening that were set for the 6-month follow-up session.

Even though the patient was highly motivated to commence oral treatment, being aware of his high-risk demographic group for HCC among chronic active hepatitis patients, a management plan was agreed upon for monitoring only, with no oral treatment to be initiated at this stage. Moreover, arrangements were placed to vaccinate his wife, as her initial screening results demonstrated a negative status for HBV, with no adequate immunity.

Results

A 6-month follow-up revealed an optimal outcome with improvement in ALT level to within normal range, with hepatic ultrasound scan demonstrating no change or abnormality, while patient AFP level remained within the normal range. The patient was happy to continue follow-up sessions, given his high-risk group category for HCC (being from West Africa), with preventive measures being undertaken at home, combined with supportive tools and educational materials provided-including further clarification regarding possible routes of HBV acquisition and common myths tackled and explained (e.g. HBV is not transmitted through casual contact, sharing of meals, water etc).

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