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CASE REPORT

Epstein Barr Virus Induced Hepatitis

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ABSTRACT

Infectious mononucleosis, most often caused by the Epstein-Barr virus (EBV), is a frequently encountered illness in emergency medical settings across the globe. One of the common findings associated with EBV infection is a temporary and usually mild elevation in liver enzymes, particularly transaminases. These abnormalities are typically subclinical and resolve on their own. However, a much less frequent but clinically significant complication is acute cholestatic hepatitis, presenting with signs of biliary flow obstruction. In such cases, patients may exhibit liver function test results that mimic those seen in obstructive jaundice. Notably, advanced imaging techniques, including ultrasound or MRI, often fail to reveal any mechanical obstruction within the biliary system. In this case report, we discuss an interesting case of hepatitis following EBV infection, the prompt emergency diagnosis and management and final outcome.

KEYWORDS

• EBV • Epstein Barr Virus • Hepatitis • Jaundice • Cholestatic hepatitis

INTRODUCTION

Epstein-Barr virus (EBV) is a double-stranded DNA virus that belongs to the herpesvirus family and is recognized as the primary cause of infectious mononucleosis. EBV infections are widespread globally, with most individuals exposed at some point in their lives. Infections during early childhood often go unnoticed, as they tend to be asymptomatic or present with only mild, nonspecific symptoms. In contrast, adolescents and young adults are more likely to

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develop the classic clinical picture of infectious mononucleosis, which typically includes fever, sore throat (often due to tonsillar inflammation), and enlarged lymph nodes (classical triad.[1,2] These hallmark symptoms commonly lead patients to seek evaluation in emergency departments. Liver involvement is frequently observed during EBV infection, particularly mild elevations in liver enzymes such as AST and ALT. These changes are usually short-lived and resolve without intervention.[2] Serious liver complications are rare, with acute liver failure being an unusual outcome. Cholestatic hepatitis, characterized by bile flow impairment and jaundice, represents an uncommon manifestation of EBV infection, occurring in fewer than 5% of patients.[3,4] Despite its rarity, clinicians should remain aware of this potential complication, especially when evaluating patients with abnormal liver function tests in the absence of obvious biliary obstruction on imaging studies.[4,5]

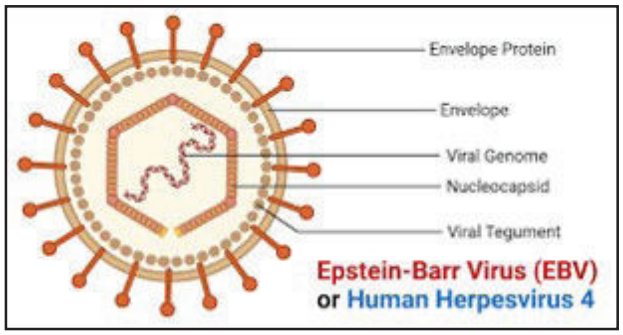


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CASE

A 34-year-old male patient was brought to the emergency department (ED) of our hospital with complaints of headache and giddiness. His initial vitals in the ED (pulse rate – 146/min, BP – 100/70 mmHg, RR – 16/min, Spo2 – 98% on room air, Temperature – 101*F, RBS – 157mg/dL). He was found to be febrile and primary management was done the ED and was discharged home with oral medications with diagnosis of viral flu illness. After 5 days of his first ED encounter, the patient again visited the ED with similar complaints. His headache was continuous even after taking medications. His vitals in the ED (pulse rate – 134/min, BP – 90/50 mmHg, RR – 18/min, Spo2 – 99% on room air, Temperature – 100.9*F, RBS – 186 mg/dL). On physical examination, the patient now had icterus ++ and obvious jaundice was seen. Per abdomen examination had tenderness in the right hypochondrium. On further history taking, the patient revealed he had sore throat around 3 days back, which got settled now. The patient had loss of appetite with generalised weakness.

His blood workup was done and showed a deranged liver profile {elevated liver total bilirubin of 10.93 milligrams per decilitre (mg/dL) (reference 0.15–1.00), direct bilirubin of 5.9 mg/dL (reference range <0.2–0.3), alkaline phosphatase of 208 U/L (reference range 40–129), ALT of 788 U/L (reference range 17–63), and AST 710 U/L (reference range 12–39)}. The routine blood count showed raised white blood cells of 16.8 $\times 10^3$ cells per microliter (reference 4.0–10.5) with lymphocytic predominance of 34% and thrombocytopenia of 88$\times 10^3$ cells/microlitre (reference range 150–450). Urgent acetaminophen level was done (with a differential of paracetamol poisoning) which came out negative at <1.5 micrograms per millilitre (reference range 10–30). Hepatitis serologies were notable for a reactive hepatitis B virus core antibody, non-reactive hepatitis B core antibody IgM, positive hepatitis B surface antibody, and negative hepatitis B surface antigen consistent with immunity due to natural infection. Hepatitis C antibody was non-reactive. Hepatitis A and E antibodies were also negative. Human immunodeficiency virus testing was negative. Blood cultures were also negative. The whole abdomen ultrasound showed mildly enlarged liver with no calculi. Further investigations on heterophile antibody were done which was positive for Epstein Barr Virus (EBV).

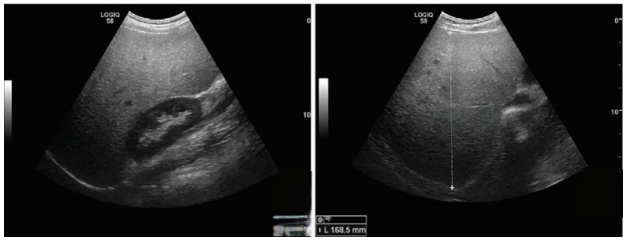


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The patient was admitted in the ICU and conservative treatment was planned with antipyretics, general wide cover antibiotics and IV fluids for rehydration. A strict liver profile monitoring was made. The patient recovered slowly over 4 days of hospitalization. All symptomatic management was done. His

fever resolved; he was discharged home symptoms-free in stable condition on the 7th day of hospitalization. The follow-ups were uneventful and patient continued to be in stable condition.

DISCUSSION

Epstein-Barr virus (EBV), a double-stranded DNA virus from the herpesvirus family, is one of the most widespread human viruses, with a global seroprevalence estimated between 90–95%.[6] While EBV infection can occur at any age, infectious mononucleosis is most frequently seen in adolescents and young adults. In younger children, the infection often remains silent or causes only mild, nonspecific symptoms. However, older individuals tend to exhibit more pronounced clinical features. The classic symptom triad includes fever, sore throat (often due to tonsillitis), and swollen lymph nodes.[5-7] These symptoms typically appear after a prolonged incubation period of four to seven weeks. The virus is primarily transmitted via saliva and initially infects epithelial cells and resting B cells, allowing it to spread throughout the body. The immune response is largely driven by activation of cytotoxic T lymphocytes and natural killer cells.[6,7] In most cases, the illness is self-limiting and resolves without long-term consequences.

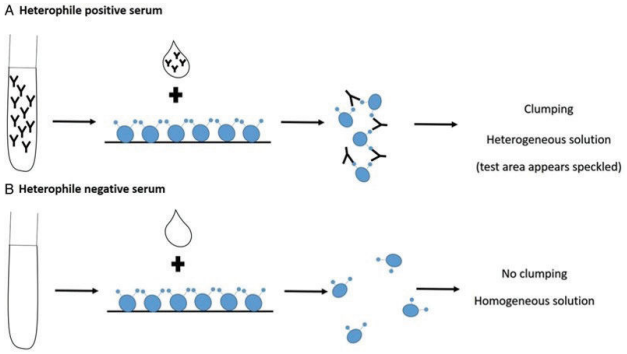


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Although EBV infection is typically mild, it can lead to various clinical manifestations beyond the classic symptoms. Additional signs may include tonsillar exudates, petechiae on the palate, hepatosplenomegaly, and mild hepatitis.[7,8] Approximately 5–10% of patients may also develop jaundice. Laboratory evaluation often reveals elevated liver enzymes, particularly aminotransferases, although values rarely exceed five times the upper limit of normal. In most cases, these elevations are transient and resolve without intervention. Hematologic findings often show an increased number of atypical lymphocytes, with over 10% of the white blood cell count being atypical in many cases.[9] Diagnosis can be confirmed through heterophile antibody testing, but these tests may yield false-negative results early in the illness. If this occurs, EBV-specific serological markers such as viral capsid antigen (VCA) IgM and IgG or EBV nuclear antigen antibodies may assist in confirming the diagnosis, especially when the heterophile test is inconclusive or negative.[10,11]

Liver involvement is frequently seen in EBV infections, with about 75% of patients exhibiting some degree of transaminase elevation.[9,10] However, significant liver injury is uncommon, and severe complications such as cholestatic hepatitis or acute liver failure are rare. Cholestatic hepatitis in the setting of EBV occurs more often in individuals over the age of 35, although it still remains an infrequent finding.[10] Jaundice, when present, may result from several underlying causes, including autoimmune haemolytic anaemia, inflammation from acalculous cholecystitis, mechanical obstruction due to enlarged abdominal lymph nodes, or direct liver involvement.[11] The exact mechanism by which EBV contributes to cholestasis is not fully understood. Current theories suggest that rather than direct infection of liver cells or bile ducts, liver injury may stem from oxidative stress mechanisms like lipid peroxidation and free radical formation.[11,12] This indirect pathway may contribute to hepatocellular and cholestatic damage observed in certain patients.

Once a diagnosis of EBV is established based on clinical features and supporting laboratory data, further diagnostic investigations are rarely necessary in uncomplicated cases.[4,12] Treatment is mainly supportive, involving rest, adequate hydration, and antipyretics for symptom relief.[12] Patients may complain of abdominal discomfort, often related to liver enlargement or splenomegaly.[11,13] If the spleen is enlarged, patients should be advised to avoid contact sports or strenuous physical activity to reduce the risk of splenic rupture, a rare but serious complication with an estimated incidence of 0.1–0.2%.[12] Though most patients recover without complications, EBV can occasionally lead to more severe outcomes such as upper airway obstruction, peritonsillar

abscess, myocarditis, encephalitis, or pleural effusions. These rare complications highlight the importance of careful monitoring in symptomatic patients.[13] In the case presented, the individual recovered well without the need for aggressive intervention, consistent with the generally favourable prognosis of infectious mononucleosis.

CONCLUSION

Our case report highlights a rare complication of Epstein Barr Virus infection leading to cholestatic jaundice in a young adult. Though self-limiting, the complications arising from EBV infections can turn fatal. Immediate diagnosis is after ruling out all other possible cause of jaundice in patients along with supporting diagnosis of EBV. Recent advances show diagnosis by PCR studies of detection of EBV but heterophile antibodies testing remain gold standard. Symptomatic management along with rehydration therapy, close monitoring of liver profile should be done in patients with EBV with complications (like cholestatic jaundice) is the mainstay in management of patients with EBV infection.

Abbreviations:

Epstein Barr Virus: EBV

Emergency Department: ED

Intensive care unit: ICU

Polymerase chain reaction: PCR

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