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Case Report

Hepatocellular Carcinoma in a 55-Year-Old with Chronic Hepatitis B: A Case Report on Diagnosis and Management

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Abstract: Hepatocellular carcinoma (HCC) is a leading cause of cancer-related mortality, particularly in regions with a high prevalence of chronic hepatitis B virus (HBV) infection. This case report details the clinical presentation, diagnosis, and management of a 55-year-old male with chronic HBV infection who developed advanced HCC. The patient presented with right upper quadrant pain, weight loss, and jaundice. Diagnostic imaging and biopsy confirmed HCC with portal vein invasion. The patient underwent transarterial chemoembolization (TACE) and was treated with sorafenib. Despite initial response, the disease progressed, and the patient ultimately succumbed to hepatic failure. This case underscores the challenges of managing advanced HCC in patients with cirrhosis and highlights the importance of early detection through regular surveillance in high-risk populations. It also emphasizes the need for a multidisciplinary approach in optimizing outcomes for HCC patients in resource-limited settings like Bangladesh.

Keywords: Hepatocellular Carcinoma (HCC), Chronic Hepatitis B Virus (HBV), Liver Cancer.

Significance: This case highlights the critical need for early HCC detection and comprehensive management in chronic hepatitis B patients, particularly in resource-limited settings.

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INTRODUCTION

Hepatocellular carcinoma (HCC) is the most prevalent form of primary liver cancer, accounting for approximately 75% of all liver cancers globally [1]. It stands as one of the leading causes of cancer-related deaths worldwide, with an increasing incidence rate, particularly in regions where chronic liver diseases are endemic. Chronic hepatitis B virus (HBV) infection is one of the most significant risk factors for the development of HCC. HBV is highly endemic in parts of Southeast Asia and sub-Saharan Africa, where the majority of HCC cases are reported [2]. In these regions, chronic HBV infection often leads to liver cirrhosis, which subsequently predisposes patients to the development of HCC. The pathogenesis of HCC in the context of HBV infection involves the integration of the viral genome into the host's liver cells, leading to genetic mutations and the promotion of oncogenic pathways. This chronic infection causes persistent liver inflammation and necrosis, which, over time, can lead to fibrosis,

cirrhosis, and ultimately HCC [3]. Despite advances in antiviral therapies that can suppress HBV replication and reduce the incidence of HCC, many patients still present with advanced disease due to the asymptomatic nature of early-stage HCC and the lack of effective surveillance programs in resource-limited settings [4].

In Bangladesh, where HBV infection is a significant public health concern, HCC remains a major cause of morbidity and mortality. The diagnosis and management of HCC are challenging, particularly in advanced stages where curative treatment options are limited. This case report details the clinical journey of a 55-year-old male with chronic HBV infection who was diagnosed with HCC at the Ibn Sina Diagnostic and Imaging Center in Dhaka, Bangladesh. The report covers the patient's clinical presentation, diagnostic process, therapeutic interventions, and outcomes over one year, from October 2022 to November 2023. This case underscores the critical need for early detection, appropriate therapeutic strategies, and comprehensive care in managing HCC, particularly in regions where chronic HBV infection is prevalent and healthcare resources are limited [6].

CASE PRESENTATION

A 55-year-old male, a resident of Dhaka, Bangladesh, presented to Ibn Sina Diagnostic and Imaging Center in October 2022 with complaints of right upper quadrant abdominal pain, significant weight loss, and fatigue over the past three months. The patient had a history of chronic hepatitis B, diagnosed 15 years ago, for which he had received intermittent antiviral treatment. He denied any history of alcohol consumption or intravenous drug use. There was no family history of liver diseases or malignancy.

Clinical Findings

On physical examination, the patient appeared cachectic with evident jaundice. Palpation revealed hepatomegaly with a firm, irregular liver edge. There were also mild ascites, but no splenomegaly was noted. The patient's vital signs were stable, with a blood pressure of 120/80 mmHg, a pulse rate of 85 beats per minute, and a temperature of 37°C. Laboratory tests showed elevated liver enzymes (ALT: 156 U/L, AST: 195 U/L), elevated alpha-fetoprotein (AFP) levels at 1,200 ng/mL (normal <20 ng/mL), and a positive hepatitis B surface antigen (HBsAg). The patient's platelet count was low (95 x 10^9/L), and serum bilirubin levels were elevated (total bilirubin: 3.2 mg/dL, direct bilirubin: 1.8 mg/dL).

Diagnostic Assessment

Given the patient's history of chronic hepatitis B and elevated AFP levels, an imaging study was conducted to evaluate the liver. Abdominal ultrasound revealed a hypoechoic mass in the right lobe of the liver measuring 6.5 cm in diameter. Contrast-enhanced computed tomography (CT) of the abdomen confirmed the presence of a large mass in the right hepatic lobe with arterial phase enhancement and venous washout, consistent with hepatocellular carcinoma. A percutaneous liver biopsy was performed under ultrasound guidance, which confirmed the diagnosis of moderately differentiated HCC. The tumor was classified as stage III according to the Barcelona Clinic Liver Cancer (BCLC) staging system due to portal vein invasion and the absence of distant metastasis [7]. The patient was also found to have underlying cirrhosis, classified as Child-Pugh class B.

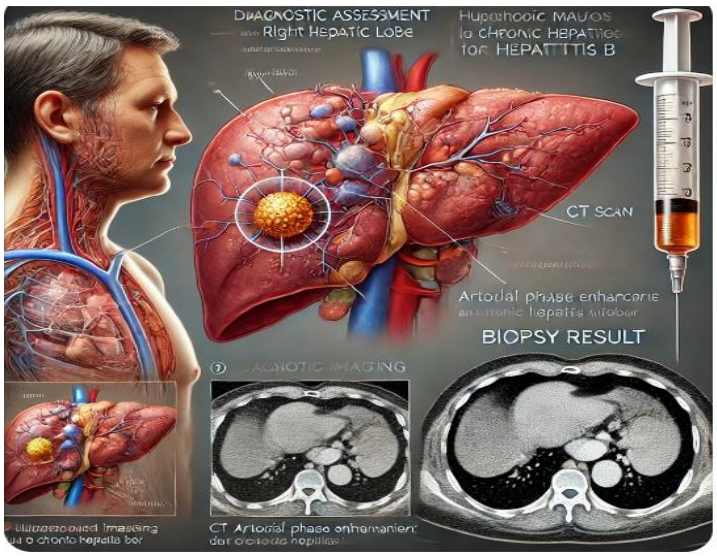

Figure 1: Diagnostic Assessment of Hepatocellular Carcinoma in a 55-Year-Old Male

Treatment and Management

The management of HCC is complex and requires a multidisciplinary approach. For this patient, the therapeutic strategy was guided by the tumor stage, liver function, and performance status. Surgical resection was not considered due to the extent of the tumor and the patient's cirrhotic liver, making him a poor candidate for hepatectomy. Given the BCLC stage III classification and portal vein invasion, the patient was evaluated for transarterial chemoembolization (TACE) as a locoregional therapy. TACE was performed in November 2022, where doxorubicin-loaded drug-eluting beads were delivered selectively to the tumor via the hepatic artery, followed by embolization to restrict the tumor's blood supply [8]. The procedure was well-tolerated, and the patient was discharged with instructions for close follow-up. In addition to TACE, the patient was started on antiviral therapy with tenofovir to control the underlying HBV infection and reduce the risk of further hepatic decompensation. He was also commenced on sorafenib, an oral multichines inhibitor, as systemic therapy to target the residual tumor cells and prevent disease progression [9]. The patient was monitored for adverse effects, particularly hand-foot syndrome, and gastrointestinal disturbances, which are common with sorafenib.

Follow-Up and Outcomes

The patient was closely monitored with monthly follow-ups, including liver function tests, AFP levels, and imaging studies. Six months post-TACE, in May 2023, a follow-up CT scan showed a partial response to therapy, with a reduction in tumor size to 4.2 cm and no new lesions. However, AFP levels remained elevated at 800 ng/mL, indicating residual tumor activity. Despite this, the patient reported improved symptoms, with reduced abdominal pain and stable weight. In August 2023, the patient developed worsening jaundice and ascites, indicating progressive liver dysfunction. A repeat CT scan revealed tumor progression with the development of new intrahepatic lesions and further invasion of the portal vein. Given the deterioration of liver function (Child-Pugh class C) and poor performance status, the patient was deemed ineligible for further TACE or systemic therapy. Palliative care was initiated in September 2023, focusing on symptom management and quality of life. The patient received diuretics for ascites, lactulose for hepatic encephalopathy, and analgesics for pain control. He was also referred to a hospice care program. The patient passed away in November 2023, approximately 13 months after the initial diagnosis of HCC. The cause of death was hepatic failure secondary to tumor progression and underlying cirrhosis.

DISCUSSION

This case highlights the challenges in managing HCC in patients with chronic HBV infection, particularly in resource-limited settings like Bangladesh. Chronic HBV infection is a leading cause of HCC in Southeast Asia, and early detection is crucial for improving outcomes [4]. However,

many patients present with advanced disease, as seen in this case, limiting the treatment options. TACE is a widely used treatment for intermediate-stage HCC, providing localized tumor control while preserving liver function [5,8]. In this case, TACE was initially effective in reducing tumor size, but the patient's underlying cirrhosis and portal vein invasion limited the overall efficacy. The addition of sorafenib, although standard for advanced HCC, offered limited benefit due to the patient's declining liver function and inability to tolerate prolonged therapy. The outcome of this case underscores the importance of regular surveillance for HCC in patients with chronic HBV infection, especially in regions with high disease prevalence. Early detection through regular imaging and AFP monitoring could have potentially allowed for curative treatments such as surgical resection or liver transplantation in this patient [10]. Furthermore, controlling HBV replication with antiviral therapy is critical in preventing hepatic decompensation and improving long-term survival.

CONCLUSION

Hepatocellular carcinoma in the context of chronic hepatitis B remains a significant clinical challenge, particularly in regions like Bangladesh, where access to advanced therapies is limited. This case demonstrates the complexity of managing HCC in patients with underlying liver disease and highlights the need for early detection and a multidisciplinary approach to optimize outcomes. Despite aggressive locoregional and systemic therapies, the prognosis for advanced HCC remains poor, emphasizing the importance of preventive measures, including HBV vaccination and antiviral treatment.

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