

CASE REPORT

Hepatocellular carcinoma in a non-cirrhotic liver with a tumor thrombus

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Abstract

Young adults with HCC tend to have a poor prognosis because of advanced disease despite preserved liver function. Screening and early diagnosis for HCC are needed for young adults to demonstrate an improved prognosis, especially in HBsAg positive patients.

KEYWORDS

alpha-fetoprotein, hepatitis B, hepatocellular carcinoma, non-cirrhotic liver, tumor thrombus, young adult

1 | INTRODUCTION

Hepatocellular carcinoma (HCC) accounts for more than 80% of primary liver cancers. It rarely occurs below the age of 40 years. It is twice more common in males than in females. Liver cancer is the sixth most common cancer and the second leading cause of cancer death in men worldwide.¹ Over 80% of HCC cases occur in low-income

or low/middle-income countries, particularly in Eastern Asia and sub-Saharan Africa.²

The major risk factors for developing HCC are chronic hepatitis B or C infection, nonalcoholic fatty liver disease, and alcohol. HCC usually develops in the setting of cirrhosis or chronic inflammation, but less than 20% of cases may occur in non-cirrhotic livers with hepatitis B.^{3,4} Characteristics of HCC may differ according to the presence or absence of

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cirrhosis, but clinicopathologic data of patients with non-cirrhotic HCC are limited.⁴ We present a young adult with a large liver mass in the absence of liver cirrhosis but in the presence of a tumor thrombus and hepatitis B.

2 | CASE REPORT

A 23-year-old male was admitted with a complaint of progressive right upper quadrant abdominal pain for 3 months. It was associated with abdominal fullness, fever, night sweats, and weight loss of greater than 10 kilograms. He was a university student with no history of excessive alcohol use. Six of his relatives were identified to have liver disease before they passed away. He looked wasted and pale with a hemoglobin of 10.8 g/dl. He was not jaundiced and had no palpable lymph nodes. His abdomen was asymmetrically distended with an irregular hard liver of 12 cm below the right costal margin and no palpable spleen.

His blood workup showed reduced serum albumin of 29 g/L and a normal serum total protein of 70.0 g/L. The total bilirubin was 26.6 mmol/L with a direct bilirubin of 9.6 mmol/L, an international normalized ratio of 2.25, and an elevated aspartate aminotransferase of 235 U/L. He scored 7 points on the Child-Pugh score labeling him as Class B. His alpha-fetoprotein level was 1000 IU/ml (normal 0–6 IU/ml). An abdominal computed tomography (CT) (Figure 1) showed a heterogeneous mass in the right lobe of the liver measuring 17.2 × 18.2 × 12.7 (cm) occupying segments V, VI, VII, and VIII of the liver. There was a presence of tumor thrombus in the main portal vein with dilated periportal collaterals, and free fluid in the peritoneal cavity. Biopsy of the lesion (Figure 2) showed fibrous tissue infiltrated by a tumor in nest pattern with endothelial wrapping, and the diagnosis was HCC.

He tested negative for human immunodeficiency virus and hepatitis C but tested positive for hepatitis B. The hepatitis B surface antibody test was 23.98 mIU/ml (above 12.0 mIU/ml indicates adequate immunity; below 5.0 mIU/ml indicates recovery from hepatitis B or inadequate immunity from the vaccine). The hepatitis B envelope antibody (anti-HBe) was positive.

In the discussion with the surgery and oncology team, due to the unresectable tumor and age, he was initiated on oral sorafenib 400 mg twice daily, though his health insurance did not cover it. The patient and family were counseled on his prognosis and advised for hepatitis B screening in the family. He was discharged with sorafenib, rivaroxaban, oral morphine, and lactulose. Unfortunately, he succumbed to the complications with repeated hypoglycemic episodes and passed away.

3 | DISCUSSION

In Tanzania, an estimated 42,000 new cases of cancer were identified in 2018. The incidence of HCC was 6.8% for males, with a mortality rate of 5.3%.⁵ A retrospective study reported that HCC death occurred twice in males than in females at 11.3% and 5.1% respectively.⁶ Within Northern Tanzania, the rate of cancer death is 7.3%, of that, 9.7% are HCC.⁶ A higher incidence of HCC is seen in Tanzania compared with the United States of America which was 5.5 per 100,000 males in 2018.⁷ An estimated prevalence of hepatitis B among Tanzanians is 6%,⁸ but hepatitis B induced HCC is not known.

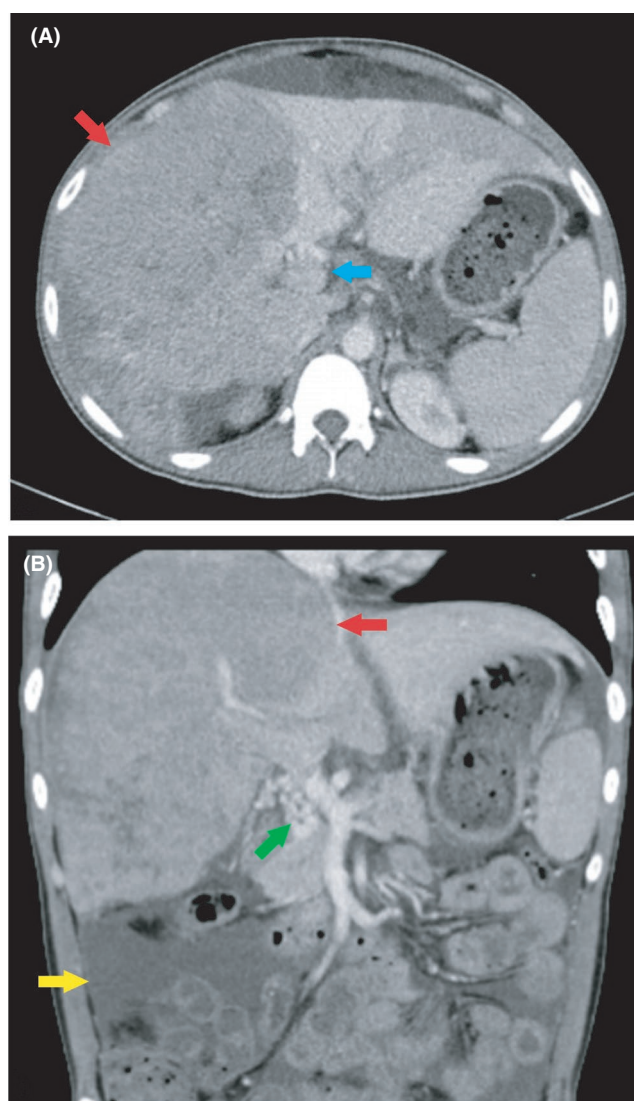


FIGURE 1 CT axial (a) and coronal (b) view shows a hypodense mass (red arrow) occupying segments V, VI, VII, and VIII of the liver with tumor thrombus (blue arrow) in the main portal vein and dilated periportal collaterals (green arrow). Free fluid in the peritoneal cavity (yellow arrow)

Sub-Saharan Africa develops HCC at a younger median age of 45. The age range for hepatitis B induced HCC diagnosis was 32.5–37.5 years, with 15% and 43% occurring before the ages of 30 and 40 years respectively.⁹ Countries outside of Africa reported the mean age of HCC diagnosis ranging from 52 to 69 years.¹⁰

Hepatitis B-induced HCC may occur in young patients with no cirrhosis and are positive for anti-HBe suggesting a non-replicative state of hepatitis B.¹¹ On CT scan, despite the absence of cirrhosis, non-cirrhotic HCC may show a heterogeneous area of necrosis within the tumor similar to cirrhotic HCC. The non-cirrhotic HCC also invades the portal vein or hepatic vein at the time of diagnosis causing thrombus formation.¹²

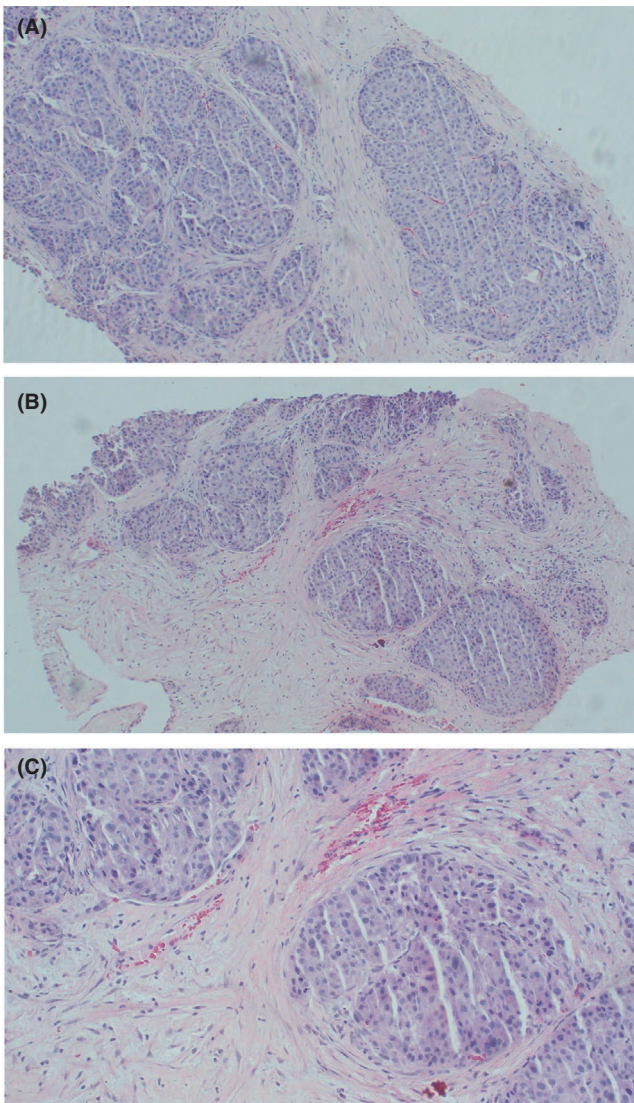


FIGURE 2 Section of the liver using hematoxylin and eosin stain showing lobules and clusters of atypical hepatocytes with endothelial wrapping. The tumor clusters are separated by thick fibrous bands

Portal vein tumor thrombosis involves the main portal vein in less than 30% of cases at diagnosis.¹³ The presence of a tumor thrombus is considered a poor prognostic factor, due to the increased risk of cancer cell bloodstream release leading to a high risk of recurrence.¹⁴

Surgical resection is the best treatment option in non-cirrhotic HCC. Overall survival after surgery and recurrence-free survival in non-cirrhotic HCC is better than in cirrhotic HCC.¹² Radiofrequency ablation can provide a similar overall survival outcome for small tumors, but this option is not available in our setting. Trans-arterial chemoembolization can be considered as palliative therapy for advanced HCC but in patients with a well-preserved liver function,¹⁴ and such was not the case with our patient. Sorafenib, an oral multikinase inhibitor, antagonizes tumor cell proliferation and neoangiogenesis may be used in unresectable tumors.¹²

Independent poor prognostic factors of HCC include alpha-fetoprotein levels of ≥ 20 ng/ml, serum albumin of < 3.5 g/dl, creatinine of ≥ 1 mg/dl, total bilirubin of ≥ 1 mg/dl, alkaline phosphatase of ≥ 200 IU/L, presence of ascites, maximal tumor size > 5 cm, multiple tumor nodules on the liver, presence of tumor thrombus, presence of extrahepatic metastasis, and poor performance status.¹⁵ We observed our case to have a poor prognosis based on a high alpha-fetoprotein, low serum albumin, elevated total bilirubin, and a high-grade tumor with the presence of portal vein tumor thrombus.

Although the hepatitis B vaccine was introduced in 1982, it was introduced into the pediatric vaccination program in 2002 in Tanzania. High-risk groups such as healthcare workers are recommended to get vaccinated, but routine testing and vaccination are not offered within the country.¹⁶ Vaccination of healthcare workers across some regions of Tanzania range between 11%–67% based on education and awareness of the vaccine.^{8,16}

Children and young adults undergoing cancer treatment have expressed physical and financial concerns regarding care and treatment in Tanzanian hospitals.¹⁷ In this case, sorafenib was not covered by his health insurance and ended up buying it. Some medications are not available in the country and need to be ordered from outside the country. There is a need for improved cancer care and treatment, as well as the need for community support and awareness, financial aid, and cancer education. The rate of cancer is gradually increasing in Tanzania, and this suggests improvements to meet the concerns and needs of young adults and children receiving cancer treatment, to prevent a fatal outcome.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

AUTHOR CONTRIBUTIONS

AMS, TJM, LGM, AMS, and GZN involved with patient management; AMS, TJM, and LGM reviewed the essential literature; AMS prepared the manuscript; AMS, LGM, and GZN edited the manuscript; all authors approved the final version of the manuscript.

ETHICAL APPROVAL

The need for ethics approval for this case report was waived.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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