

Atrial Tumor Thrombus Involvement in Hepatocellular Carcinoma: A Case Report

Tarik Addajou^{1*}, Soukaina Rokhsi¹, Fouad Nejjari¹, Yasser Azali¹, Sanaa Berrag¹, Mouna Tamzaourte¹, Aziz Aourarh¹, Jaouad Nguadi², Boutayna Mesmoudi², Meryem Bennani², Ilyasse Asfalou², Aatif Benyass²

¹Department of gastroenterology, Military Hospital Mohammed V, Rabat, Morocco

²Department of cardiology, Military Hospital Mohammed V, Rabat, Morocco

***Correspondence concerning this article should be addressed to:** Addajou Tarik, Hopital Militaire d'Instruction Mohamed V, Hay Riad 10100-Rabat, MAROC. Phone: +212668975027. E-mail : tarikadd89@gmail.com

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Abstract

Background: Hepatocellular carcinoma occasionally results in the formation of a tumor thrombus in the portal and hepatic veins, which infrequently extends through the hepatic veins and inferior vena cava into the right atrium that leads to a secondary Budd-Chiari syndrome.

Case report: We are reporting a case of thrombosis of the inferior vena cava up to the right atrium of an HCC in a patient previously treated for hepatitis B virus, presented with symptoms of dyspnea, ascitic and oedematic syndrom.

Conclusion: This case report showed that intrahepatic HCC can disseminate and invade the heart in a short time. Although aggressive surgical resection is the best therapeutic approach for HCC, it is not always possible and this procedure is highly risky with a high rate of morbidity and mortality. Therefore, echocardiography with hepatic MRI can quickly diagnose the etiology and provide evidence for clinical decision-making.

Keywords: Hepatocellular carcinoma, tumor thrombus, right atrium.

Introduction

Primary liver cancer is the seventh most frequently occurring cancer in the world and the second most common cause of cancer mortality [1]. The highest incidence rates in the world are found in Asia and Africa [2].

Globally, hepatocellular carcinoma (HCC) is the dominant type of liver cancer, accounting for approximately 75% of the total [2].

The lifetime risk of developing HCC among HBV carriers ranges from 10-25% [3]. It is a rapidly progressive tumor with high potential for both direct and distant vascular extension. However, despite the high incidence of venous involvement and proximity to the heart, case reports of intracardiac metastasis are quite rare.

Hepatocellular carcinoma with a tumor thrombus extending through the major hepatic veins and IVC into the right atrium is rare, having been reported in 0.67%–4.1% of autopsies [4,5].

However, this diagnosis is rarely made in premortem. Here, we are reporting a case of thrombosis of the inferior vena cava extending to the right atrium of a patient presenting an HCC and previously treated for hepatitis B virus, which suggests atrial thrombus in HCC patients with signs of right heart decompensation.

Case report

A 63 years old male, chronic smoker, presented with symptoms of dyspnea, ascitic and oedematic syndrom. He had a history of cirrhosis post-HVB diagnosed in 2017.

On physical examination the patient was tachycardic, with ascites of high abundance associated to edema of the lower limbs going up to the groin crease.

A morphological investigation was conducted, including an abdominal ultrasound showing a mass of the left liver, and hepatic magnetic resonance imaging (MRI) showing a dysmorphic liver with a heterogeneous mass occupying segments IV, V, VII, VIII suggesting a hepatocellular carcinoma with thrombosis of the right portal vein and

extensive thrombosis of the inferior vena cava, supra-hepatic veins and right atrium. A complement by Trans-thoracic ultrasound was performed, which confirmed the presence of a mass filling

the OD of about 62 x 54 mm, pushing back the interatrial septum, without obstruction of the tricuspid flow and without impact on the right heart (figure 1A).

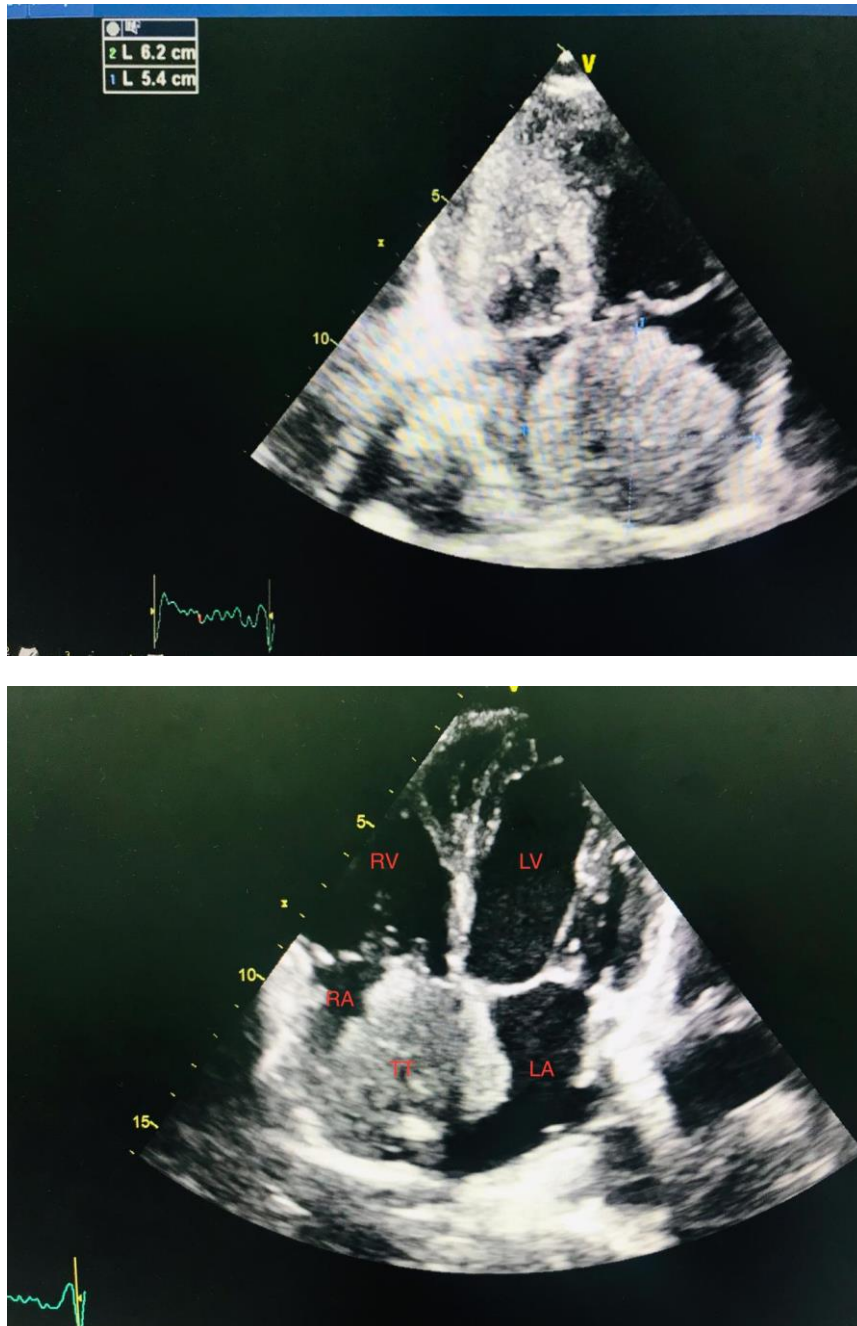


Figure 1A : Trans-thoracic ultrasound in apical four chamber view objectifying a mass filling the OD of about 62 x 54 mm, pushing back the interatrial septum, without obstruction of the tricuspid flow and without impact on the right heart. RV : right ventricle, LV : left ventricle; LA : left atrium; RA : right atrium, TT : tumor thrombus.

An Eosogastroduodenoscopy was carried out which found grade 3 esophageal varices, contraindicating the performance of an transesophageal echocardiography.

Our patient received anticoagulant treatment with curative doses. Unfortunately, no specific treatment has been proposed as our patient died within 4 days of admission due to a sudden cardiac arrest.

Discussion

Hepatocellular carcinoma (HCC) occasionally results in the formation of a tumor thrombus (TT) in the portal and hepatic veins, which infrequently extends through the hepatic veins and inferior vena cava (IVC) into the right atrium that leads to a secondary Budd-Chiari syndrome which is usually manifested by lower extremity and/or

abdominal edema, hepatomegaly, orthopnea, and renal insufficiency [6].

HCC is usually asymptomatic until late. Cardiac involvement in HCC rarely occurs and usually develops in advanced stages of HCC. The main mechanism of metastasis in the cardiac cavity is through a direct vascular extension of the tumor to the right side via the hepatic vein and IVC [7].

In such patients, echocardiography has been shown to be a useful diagnostic step for detection of cardiac metastasis [8]. Echocardiography provides information about the mobility of tumor thrombus and the relation of valve and cardiac muscle with the thrombus [9].

Transesophageal echocardiography (TEE) provides more accurate information not only about the location of the mass in relation to atrial wall or tricuspid valve but also the position with respect to superior and inferior vena cava [9]. Furthermore TEE may detect involvement of inferior vena cava or right atrium which may be missed by TTE [9].

However it may be difficult to perform TEE in patients with hepatic carcinoma who may have esophageal varices [9,10]. In our patient, the diagnosis is that of diffuse hepatocellular carcinoma of the entire right liver, associated with thrombosis of the portal vein, the right and median suprahepatic veins and a thrombus filling the retrohepatic inferior vena cava and extending up to the right atrium, initially suggested by an abdominal ultrasound, then confirmed by a hepatic MRI and a transthoracic cardiac ultrasound.

Right atrial extension can sometimes lead to cardiopulmonary complications that include heart failure, tricuspid stenosis or insufficiency, right ventricular outflow tract obstruction, pulmonary embolism, or even sudden cardiac death [11].

The reported median survival time for patients with HCC with right atrial spread was between 1 to 4 months [12]. Aggressive surgical procedures could be performed in such patients, but the procedure is highly risky with reported post operative 4 week mortality of 15%. But even those patients, who survive, die within 1 year due to tumor recurrence [13]. In some cases, debulking of atrial tumors without primary tumor removal was performed on cardiopulmonary bypass to prevent sudden death [12]. Non surgical procedures like radio frequency ablation and intra-arterial chemoembolization have been shown to be effective for relieving symptoms and prolonging life in few patients. But application of these procedures may be limited as a result of severe hepatic disease and presence of metastasis [13].

Thalidomide, an inhibitor of angiogenesis, was used in patients with unresectable tumors. Prompt response to thalidomide with tumor regression and prolonged survival in responsive patients was reported [13].

In Sharp trial, it was demonstrated that Sorafenib increases median survival of patients with advanced HCC by 3 months [14].

Conclusion

This case report showed that intrahepatic HCC can extend into the vena cava and/or into the right atrium leading to secondary Budd-Chiari syndrome.

Echocardiography with hepatic MRI can quickly diagnose the etiology and provide evidence for clinical decision-making.

Although aggressive surgical resection is the best therapeutic approach for HCC, it is not always possible and in such cases, the combination of different therapeutic approaches such as chemotherapeutic agents, radiotherapy and chemoembolisation can improve survival.

Conflict of interests

The authors declare that they have no conflict of interest.

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