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INTERESTING MEDICAL IMAGE

Hepatocellular Carcinoma Migrating to the Right Atrium through the Inferior *Vena Cava*

*Ayman Z. Azzam[1,2] and Kareem A. Azzam[3]

سرطانة كبدية الخلايا مهاجرة إلى الأذين الأيمن عبر الوريد الأجوف السفلي

أيمن زكي عزام و كريم أيمن عزام

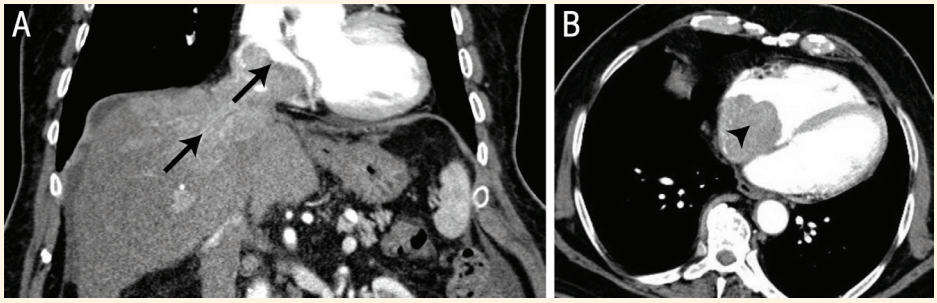

Figure 1: A: Computed tomography (CT) scan of the abdomen and chest of an 82-year-old man in the coronal view showing a hepatocellular carcinoma migrating through the inferior *vena cava* to the right atrium (arrows). **B:** Chest CT scan showing a tumour *thrombus* in the right atrium (arrowhead).

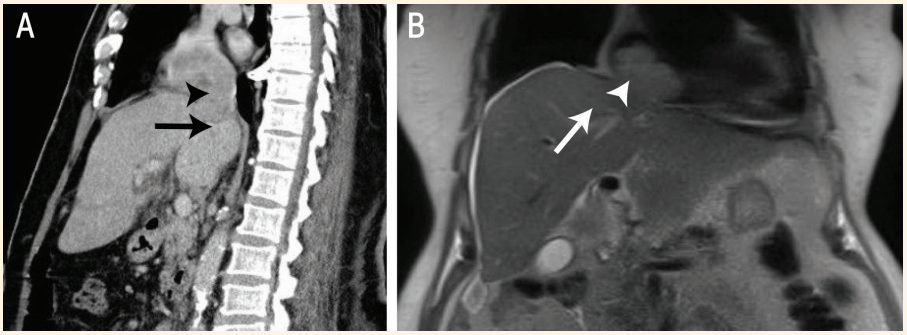

Figure 2: A: Computed tomography scan of the abdomen and chest of an 82-year-old man in the sagittal view showing a hepatocellular carcinoma (HCC) migrating through the hepatic veins and inferior *vena cava* to the right atrium (arrow), with a tumour *thrombus* located in the right atrium (arrowhead). **B:** Magnetic resonance imaging of the chest and abdomen in the coronal view showing the HCC migrating to the right atrium (arrow) and the tumour *thrombus* in the right atrium (arrowhead).

An 82-year-old man presented to the emergency department of the King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia, in 2013 with jaundice, bilateral lower limb oedema and dyspnoea. His laboratory test results were normal, except for elevated α-fetoprotein levels (258.3 ug/L). An ultrasound showed a right hepatic lobe hepatocellular carcinoma (HCC) in segments 6 and 7 of the liver, with tumour extension into the inferior *vena cava* (IVC) and a right atrial mass lesion. An urgent computed tomography (CT) scan of the abdomen indicated that the HCC was located in the liver segments 6 and 7 and invading the right hepatic vein; in addition, the confluence of the IVC extended into the right atrium where a tumour *thrombus* was present [Figure 1]. An ultrasound-guided fine needle aspiration cytology biopsy also revealed the presence of an HCC. An echocardiogram showed sinus rhythm and a large mass in the right atrium occupying most of the cavity and extending into the IVC, causing

[1]*Department of General Surgery, Faculty of Medicine, Alexandria University, Alexandria, Egypt;* [2]*Department of Surgical Oncology, King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia;* [3]*Cheeloo College of Medicine, Shandong University, Jinan, Shandong, China*
**Corresponding Author's e-mail: aazzam70@yahoo.com*

flow obstruction. A CT scan and magnetic resonance imaging of the abdomen and chest showed the HCC migrating through the hepatic veins and the IVC to the right atrium, with a tumour *thrombus* in the right atrium [Figure 2]. After the diagnosis was made, the patient did not respond to treatment and died due to cardiopulmonary failure during the admission period.

Comment

The heart is affected in up to 20% of metastatic HCC cases.[1] Although HCC has a tendency to spread into the venous system, intracardiac involvement is extremely rare and has a very poor prognosis.[2] Metastasis to the heart can occur via the blood stream, the lymphatic system or direct invasion through the IVC to the right atrium, with the latter occurring in 6.5–44% of HCC patients.[3,4] Such patients often exhibit symptoms of heart failure due to flow obstruction or a thromboembolism.[4,5] Survival usually does not exceed four months, regardless of the type of treatment offered.[4]

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References

1. Hanfling SM. Metastatic cancer to the heart: Review of the literature and report of 127 cases. Circulation 1960; 22:474–83. doi: 10.1161/01.CIR.22.3.474.
2. Luo X, Zhang B, Dong S, Zhang B, Chen X. Hepatocellular carcinoma with tumor thrombus occupying the right atrium and portal vein: A case report and literature review. Medicine (Baltimore) 2015; 94:e1049. doi: 10.1097/MD.0000000000001049.
3. Kamal MW, Farshidpour M, Long AW, Farooqui S, Cunningham SC. Hepatocellular carcinoma with intra-atrial extension responding to transarterial chemoembolization via the right hepatic and right inferior phrenic arteries. Gastrointest Cancer Res 2014; 7:111–16.
4. Barrett M, Viglianti BL, Hanson CA, Schildhouse RJ. A case of right atrial obliteration caused by intracardiac extension of hepatocellular carcinoma. Case Rep Oncol 2017; 10:8–14. doi: 10.1159/000455092.
5. Bussani R, De-Giorgio F, Abbate A, Silvestri F. Cardiac metastases. J Clin Pathol 2007; 60:27–34. doi: 10.1136/jcp.2005.035105.