

Asymptomatic right atrium extension of a hepatocellular carcinoma detected by echocardiography

Danielle Zaugg^a, Salah Dine Qanadli^b, Andres Jaussi^a

^a Division of Cardiology, and ^b Radiodiagnosis Service and Interventional Radiology, University Hospital CHUV, Lausanne, Switzerland

Summary

This report describes a case of involvement of inferior vena cava and the right atrium (RA) by a hepatocellular carcinoma (HCC), incidentally discovered during a transthoracic echocardiography in a patient with segmental left ventricular dysfunction, 18 years after a myocardial infarction and with a moderate calcified aortic valvular stenosis.

Key words: hepatocellular carcinoma; right atrium extension; risk factors; paraneoplastic syndromes

Case report

A 55-year-old smoker with a past medical history of diabetes type II, hypertension, hypercholesterolaemia, who had a myocardial infarction at the age of 40, underwent a cardiological control examination to evaluate the progression of a moderately severe calcified valvular aortic stenosis and the global and segmental left ventricular function. He described a general fatigue and a slightly reduced exercise tolerance.

On physical examination, the general state was slightly diminished. A subicterus was visible on the sclera and the skin. The epigastrium and the right hypochondrium palpation were slightly sore.

A transthoracic echocardiography (TTE) revealed a mild segmental left ventricular dysfunction, there was infero-basal akinesia and the ejection fraction was at the lower limit of normal (50%). The calcified valvular aortic stenosis was quite severe with a maximal gradient of 58 mm Hg, a mean gradient of 38 mm Hg and an opening area of 1.1 cm² (0.5 cm²/m²).

The examination unexpectedly revealed a mobile mass in the right atrium (RA) seeming to grow out of the inferior vena cava (IVC) (fig. 1 A–C) and a large hepatic mass (fig. 1 D).

Erythropoietin (EPO) was elevated to 41 U/l (nor-

Figure 1

TTE.

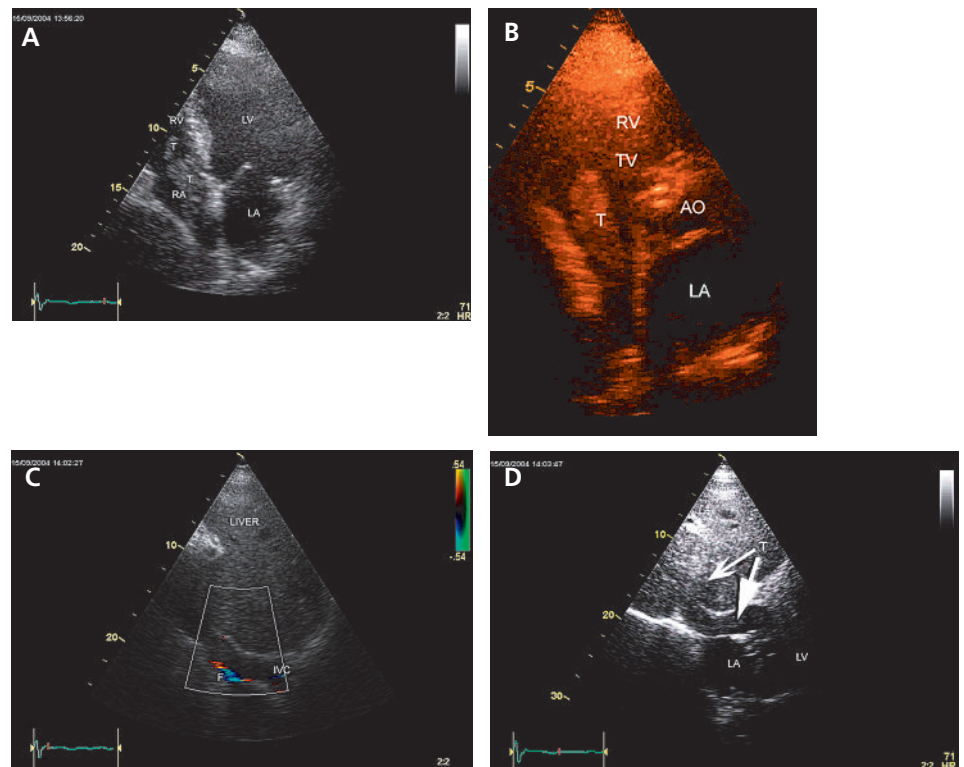
A Apical 4-chamber-view: mobile right atrial mass (T) growing from the inferior vena cava (IVC) and prolating into the right ventricle.

B Slight oblique parasternal short axis showing the prolating right atrial mass (T).

C Color Doppler of IVC in a subcostal view showing a narrowed venous flow (F).

D Large hepatic mass visible in the subcostal view (arrows).

AO = aorta; IVC = inferior vena cava; LA = left atrium; LV = left ventricle; RV = right ventricle; RA = right atrium; TV = tricuspid valve.



mal value 5–25 U/l), Interleukin-6 (IL-6) to 48.9 pg/ml (normal value <0.3 pg/ml), and alpha-fetoprotein (AFP) was elevated to more than 12 000 kU/l (normal value <0.5 kU/l). The blood counts showed a polycythaemia with elevation of

The authors certify that there is no actual or potential conflict of interest in relation to this article.

Correspondence:
Danielle Zaugg
Division of Cardiology
Department of Internal Medicine
CHUV
CH-1011 Lausanne
Danielle.Zaugg@chuv.ch

Figure 2

Abdominal CT.

A huge hepatic mass involving almost the whole right liver (arrows).

**Figure 3**

Abdominal CT.

Intracardiac mass into the right atrium with extension into the vena cava (arrow).



haemoglobin to 200 g/l and a haematocrit to 59%. White blood cells were normal and platelets were slightly diminished to 120 G/l. The patient was not known to have a pre-existing renal or hepatic disease.

A thoraco-abdominal computed tomography (CT) scan showed the presence of a huge right hepatic mass with extension into the IVC and the RA (fig. 2 and 3).

The clinical and radiological presentation, associated with a high level of AFP and EPO clarified the diagnosis of hepatocellular carcinoma (HCC) and no biopsy was performed. Indeed, the extension of the tumour precluded any surgical treatment and was considered as chemoresistant by the oncology consultant. A symptomatic palliative treatment was performed and the patient died three weeks after the diagnostic examination. An autopsy has not been performed due to the absence of family consent.

Discussion

Diagnosis of an IVC and RA mass by routine TTE, along with the biological results, initially pointed to a renal cell carcinoma. A CT scan showing a huge hepatic mass, also objectivated at abdominal ultrasound examination, before the diagnosis of HCC was established.

The most frequent tumour involving IVC and RA is the renal cell tumour (about 4–10% cases) [1] followed by carcinoma of the thyroid, testicular tumours and then HCC [2].

HCC is the fifth most common tumour worldwide. Its annual incidence ranges between 3% and 9%. The

highest annual incidence rates are found in countries which are endemic for viral hepatitis. In contrast, in western countries alcoholic cirrhosis is predominant [3, 4].

Most cases of HCC are discovered at an advanced stage and the tumour most frequently spreads to the lungs, peritoneum, adrenal glands and bones. Extra-hepatic extension or metastasis of HCC is an unusual form of secondary cardiac malignancy [2].

HCC extension to IVC and the RA have a poor prognosis [5, 6]. In fact, this patient died 3 weeks after the diagnostic examination. In addition, this case highlights the importance of a comprehensive echocardiographic examination even in straight forward follow-up conditions, such as controls of a known valvulopathy.

References

- 1 Laurent Zini, Stéphan Haulon, Christophe Decoene, et al. Renal Cell Carcinoma Associated with tumor Thrombus in The Inferior Vena Cava: Surgical Strategies. *Ann Vasc Surg.* 2005;19:522–8.
- 2 Giovanna Masci, Massimo Magagnoli, Andrea Grimaldi, et al. Metastasis of Hepatocellular Carcinoma to The Heart: a Case Report and Review of The Literature. *Tumori.* 2004;90:345–7.
- 3 Laura M. Kulik. Advancements in Hepatocellular Carcinoma. *Curr Opin Gastroenterol.* 2007;23:268–74.
- 4 Rosario F. Velazquez, Manuel Rodriguez, Carmen A. Navascués, et al. Prospective analysis of Risk Factors for Hepatocellular Carcinoma in Patients with Liver Cirrhosis. *Hepatology.* 2003;37:520–7.
- 5 Jorge A. Marrero: Hepatocellular carcinoma. *Curr Opin Gastroenterol.* 2006;22:248–53.
- 6 Ziad Mansour, Jean-Philippe Mazzucotelli. Right Atrium Metastasis of Hepatocellular Carcinoma. *J Card Surg.* 2007;22:224–39.