

Mass in Right Atrium Revealing Liver Cancer: Case Report

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Abstract

Primary liver cancer is a malignant tumor with a high frequency of metastasis, the explanation of which is the purifying function of the liver draining and filtering all the blood in the body. And the heart being the closest organ downstream, this location would expose it to possible metastases in its right chambers.

We report the case of a patient with intracardiac mass of the right atrium with a malignant liver tumor

Keywords: Intracardiac mass in the right atrium - Primary liver cancer - Hepatocellular carcinoma.

Introduction

Malignant cardiac tumors, despite their rarity, pose difficult diagnostic problems, given their poor accessibility to anatomicopathological samples, their frequent localization and intramyocardial, epicardial, pericardial and paracardiac development. In addition, cardiac metastases are found at the autopsy of patients treated for a malignant disease with a frequency varying from 2.3 to 18.3%. These cardiac attacks of malignant diseases are generally associated with a multiorgan dissemination secondary to a primary extra cardiac malignancy 1.

As for primary liver cancer or Hepatocellular Carcinoma (HCC) is a malignant epithelial tumor developed from hepatic parenchymal cells. HCC accounts for 85–90% of all liver tumors (the remainder being represented by secondary liver tumors with male predominance due to the higher frequency of chronic liver disease in males 2.

We report a case of an intracardiac mass in the right atrium in a patient with fortuitous discovery of hepatocellular carcinoma.

Clinical Case

This is a 70-year-old patient with no modifiable cardiovascular risk factors, no history of thromboembolic disease, who had undergone a hysterectomy 30 years ago for contraception; she reported a notion of significant physical asthenia, anorexia and unstated weight loss that had progressed for several months, accompanied by dyspnea on exertion, and edema of the lower

limbs that had progressed for 1 month.

On clinical examination, the eupneic patient, supporting the decubitus, was afebrile (36.4°C), weighing 47 kg, for a height of 166 cm, i.e. a BMI of 17 kg / m², an enophthalmia with protuberance of the eyebrow arches. , normocardium at 75 bpm, respiratory rate at 18 cpm, had blood pressure around 130/66 mmHg, edema in the feet taking the scoop, the remainder of the cardiovascular and pleuropulmonary examination is normal, in the abdomen a median sub-umbilical scar, an important hepatomegaly, very sensitive, of irregular surface, with a blunt edge without hepato-jugular reflux, absence of declining dullness, nor of collateral venous circulation; as for his electrocardiogram, it is unremarkable; to biology: hepatic transaminases elevated to 10 times normal, alkaline phosphatases 5 times normal and gamma glutamyl transferase 30 times normal, prothrombin level 62%, normal leukocytosis with anemia at 10 g / dl normochromic normocytic, and a CRP at 24.5 mg / l, the viral hepatitis B serology of anti-HBs antibodies positive at more than 100 times the normal, as well as tumor markers CA 125 antigen at 3 times the normal and the alpha fetoprotein at 7 times normal. The rest of the assessment was unremarkable, in particular the renal assessment (GFR at 112 ml / min / 1.73m²).

She Benefits:

a) A Trans Thoracic Doppler Echocardiography (TTE) which shows a mass of 39.7x38.9 mm, rounded, with a regular edge, fixed, prohibiting in the Inferior Vena Cava (IVC) and the

hepatic vein (VSH) sub-occlusive with significant stasis upstream. As for the cardiac chambers they are normal dimensions and the ventricles of systolic functions preserved (Figure 1-4).

b) A Thoraco-Abdomino-Pelvic CT (TAP) reveals a liver of normal size, heterogeneous, by the presence of multiple nodu-

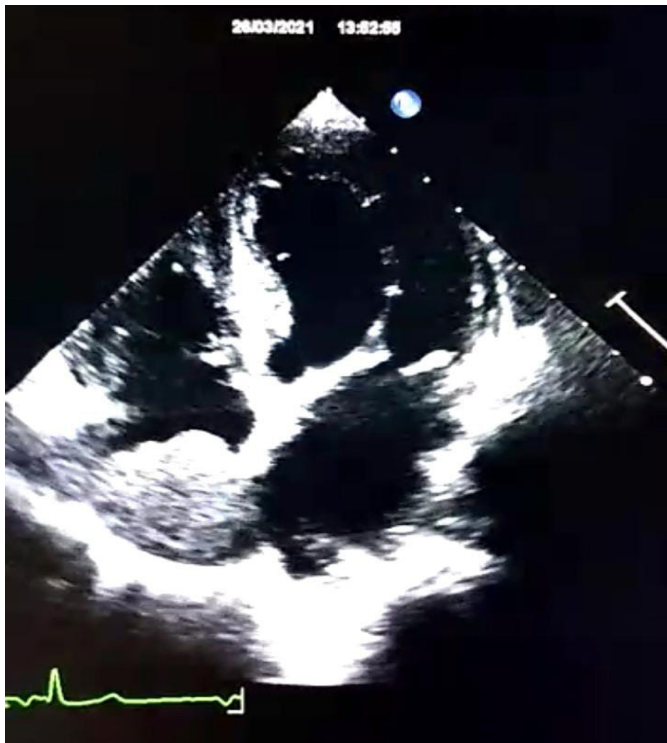


Figure 1: 4-cavity section, Large mass in the right atrium (blue arrow) during diastole. Cardiology B Non-Invasive Exploration Department, Ibn Sina University Hospital.

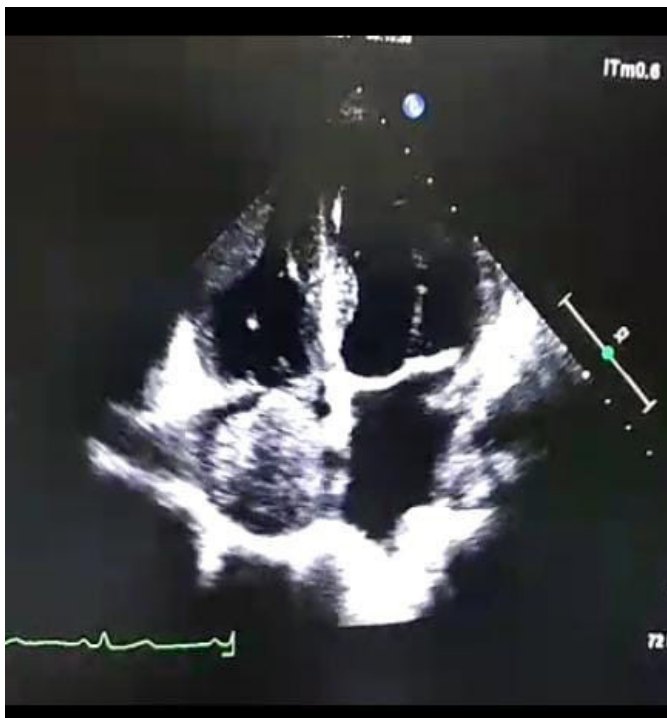


Figure 2: 4-cavity section, Large intracavitary mass (blue arrow) occupying the entire right atrium in systole. Cardiology B Non-Invasive Exploration Department, Ibn Sina University Hospital.

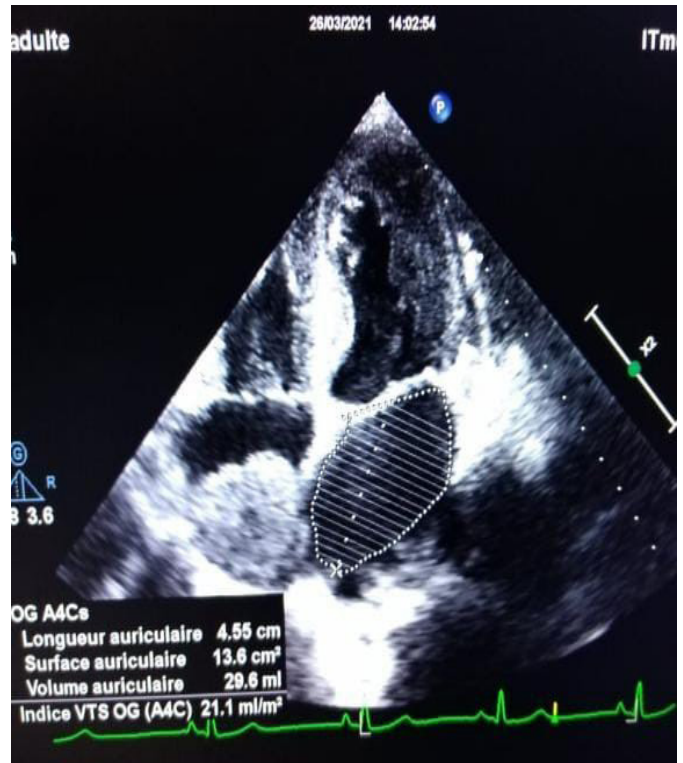


Figure 3: cross section of 4 cavities, atria of normal volume, with the presence of a mass in the DO (blue arrow). Cardiology B Non-Invasive Exploration Department, Ibn Sina University Hospital.



Figure 4: Subcostal caval cut, showing the subocclusive IVC and HSV (red arrows) by the presence of masses (blue arrows) of the same structure as the mass in the DO. Cardiology B Non-Invasive Exploration Department, Ibn Sina University Hospital.

lar formations, occupying almost the entire right liver, some of which presents with central necrosis, gradually enhancing in the arterial phase and which does not wash out in the portal phase; as well as capsular penetration in places. Large partial tumor thrombus of the right HSV, and total of the IVC extended to the level of the right atrium in which the mass measures



Figure 5: Thoracic CT, objectifying the intra-OD mass and liver nodule of the same density (blue arrows). Imaging Service CHU Ibn Sina.

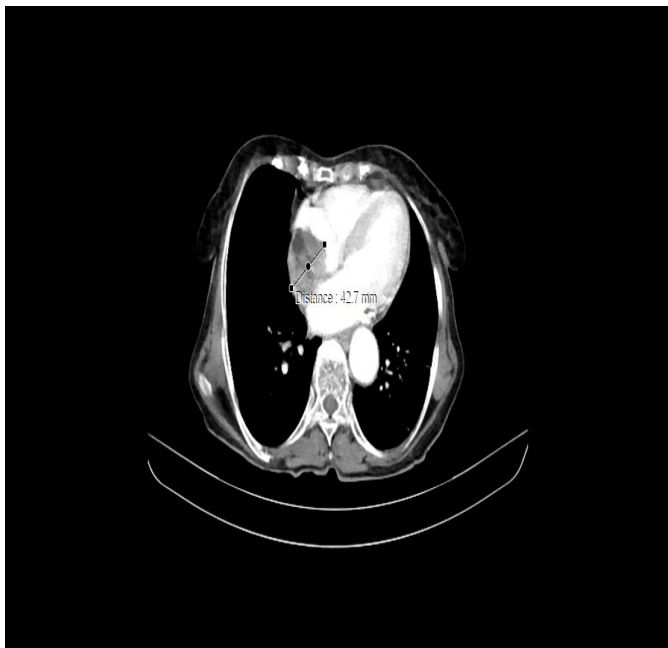


Figure 6: Thoracic CT, objectifying the intra OD mass of 42.7 mm (blue arrow). Imaging Service CHU Ibn Sina.

42.7x41mm, and extending to the ostium of the left renal vein. Bilateral pulmonary, lobar and segmental embolism. Bilateral pulmonary secondary localizations. (Figure 5-7).

Discussion

The presence of a mass in the right heart chambers poses a major problem both in diagnosis and in the risk of embolism distally. Its presence gives rise to investigations both on the nature and the cause mainly attributed to primary cardiac malignancies, on the thrombi which can form locally in the right atrium or migrate from the venous circulation: they are more present in the atrium. right than in the right ventricle. However, the medical context of our patient orients from the

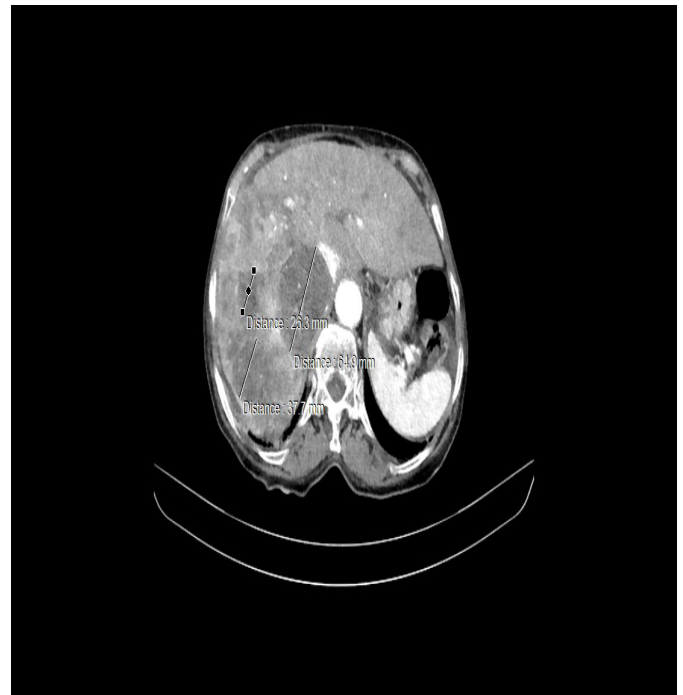


Figure 7: Thoracic CT, showing a heterogeneous liver with multiple nodules of more than 20 mm, the largest of which is 64.9 mm (blue arrows). Imaging Service CHU Ibn Sina.

| Table 1: Causes of the spread of metastases |
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| The risk of a primary cancer developing into a metastatic cancer depends on several factors including : |
| -The type of cancer ; |
| -The size and location of the primary cancer ; |
| -The speed with which the primary cancer develops ; |
| -The likelihood of it spreading ; |
| -The evolutionary time of the primary tumor in the body. |

outset, taking into account the clinical semiology of HCC, a cardiac mass which is very probably of a metastatic malignancy 3. The most probable etiology of a cardiac mass is certainly thrombus or vegetation, however the clinical setting provides diagnostic clues. Thus, if a cardiac mass represents a tumor, its etiology can often be determined by considering four factors: a) likelihood based on histology; b) the patient's age at the time of presentation; c) the location of the tumor; and d) non-invasive tissue characterization. Using this approach, and integrating clinical data, a precise diagnostic strategy is generally possible without the need for percutaneous or surgical biopsy 4.

This leads us, taking into account the clinical examination, biochemical biological results, serological, tumor markers, imaging of our patient, to suggest primary liver cancer. As for metastasis, it would be due to the contributing factors reported in Table 1. The very proximity of the liver to the right cardiac chambers via the inferior vena cava is an important element of predilection of the cardiac site.

In comparison, kidney tumors have the particularity of having in 5 to 10% of cases a venous tumor extension with in particular an involvement of the inferior vena cava that can go up into the right atrium 5; and thrombus tumors in the chambers of the heart are discovered incidentally through radiological and ultrasound examinations performed for a variety of reasons.6

Table 2: Classification of cardiac masses

| Neoplastic, Primitive | | Neoplastic, Secondary (Metastasis) | Non-neoplastic | Other |
|---|----------------------------------|--|---|---|
| Benigne - Myxome - PFE* - Lipome | Smart - Sarcoma - Lymphoma | Direct extension - Breast - Lung - Esophagus - Mediastinal tumor Hematogenous - melanoma - Lung - Breast - Genitourinary - Gastrointestinal Venous - Renal - Adrenal gland - Thyroid - Lung - Hepatic Lymphatic - Lymphoma - Leukemia | Hamartome - Rhabdomyoma - Fibroma - PFE* Age-related growth - Lipomatous hypertrophy Reactive proliferation - Llambl outgrowth - PFEy | Thrombus Vegetation TAC Normal structure Artifact image |

TAC: Calcified Amorphous Tumor

There is a classification of cardiac masses according to their cause, which includes primary and secondary neoplastic masses. In the latter, we classify the metastatic masses by direct extension, by hematogenous route, by lymphatic route and by venous route among which cancers of renal, adrenal, thyroid, pulmonary and hepatic origin (Table 2) 4, like of our patient.

The current diagnosis of HCC is based on the following criteria: HCC proven by cytology or histology or diagnostic according to the following characteristics: if nodule less than 1 cm, increase in size during follow-up by ultrasound every three months; if nodule greater than 1 cm, diagnosis of HCC in the presence of a typical image (hypervascularized nodule in the arterial phase with wash-out in the portal or late phase); in other cases, do a liver biopsy 7. And the development of multi-strip CT allows the acquisition of increasingly precise images. The sensitivity and specificity of multi-strip CT are identical to that of magnetic resonance imaging (MRI) 8.

Thanks to CT, we were able to study the different masses (cardiac, IVC and HSV) on their possible nature and measure their size, thus making the link with the primary cancer of the liver of our patient.

According to the author F. Aboukhoudir et al, in 2017, I quote "the finding of a right atrial mass coming from the inferior vena cava must always make us think of renal or adrenal carcinoma" 9; this thesis would now be called into question according to the case of our patient whose HCC is now one of the carcinomas to be evoked in front of a right atrial mass from IVC (and especially VSH).

The biopsy of this tumor being able to be essential to specify the type of primary cancer of the liver and for the continuation

of the therapeutic management of our patient, we had referred the patient in a department of Gastroenterology, with a follow-up in collusion on the cardiac plane.

Considering the causes of the spread, we recommend that a non-invasive cardiac assessment be performed like TTE in any elderly person with the triad of anorexia, wasting and asthenia.

Conclusion

The fortuitous discovery of a possible mass in the right heart chambers and in the inferior vena cava or hepatic subterranean should lead to a search for primary liver cancer; or any patient followed for primary liver cancer should have non-invasive cardiac exploration to look for metastases. And multiple examinations must not delay the multidisciplinary medical management of the patient.

References

1. Monsuez JJ, Peloso C, et al. Complications cardiaques des maladies malignes et de leurs traitements. Edition 2014, Elsevier Masson SAS.
2. Boulin M. Cancer primitif du foie (Carcinome hépatocellulaire). Pharmacie clinique pratique en oncologie, 2016, Elsevier Masson SAS.
3. Hibbouchea R, et al. Tumeur carinoïde révélée par une insuffisance cardiaque droite, 2011, Elsevier Masson SAS.
4. Bruce CJ. Cardiac tumours: diagnosis and management, 2014, Heart | A leading international cardiology journal from BMJ and BCS.
5. Bretheau D, Koutani A, Lechevallier E, Coulange C. A French national epidemiologic survey on renal cell carcinoma. Oncology Committee of the Association Francaise d’Urologie. Cancer 1998; 82: 538–544.
6. Chen DY, Uzzo RG. Evaluation and management of the

-
- renal mass. *Med Clin North Am* 2011; 95(1): 179–189.
7. Forner A, Llovet JM, Bruix J. Hepatocellular carcinoma. *Lancet* 2012 ; 379: 1245–1255.
 8. Hallscheidt PJ, Fink C, Haferkamp A, Bock M, Luburic A, Zuna I, et al. Preoperative staging of renal cell carcinoma with inferior vena cava thrombus using multidetector CT and MRI: prospective study with histopathological correlation. *J Comput Assist Tomogr* 2005; 29: 64–68.
 9. F. Aboukhouir et al. Envahissement tumoral extensif des cavités droites et de la veine cave inférieure par un cancer rénal, 2017, Elsevier Masson SAS.
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