

Right Atrial Mass as First and Single Site for HCC Metastases in A Non-Cirrhotic Patient

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ABSTRACT

Cardiac metastases are found in around 25% of patients died of some distant primary malignancy. Metastasis of Hepatocellular Carcinoma (HCC) is an uncommon form of cardiac malignancy. Also the incidence of cardiac metastases is increasing now due to the widespread use of advanced radiological imaging and increased survival rate. Metastases to the heart were found, mostly in patients who were already known cases of HCC. Some of them had widespread metastases to other parts of the body. We report a 34 year old female, non-cirrhotic, without any previous history of chronic liver disease, presenting with right atrial mass as first and single site for HCC metastases.

KEYWORDS: HCC; Cardiac metastases; Cardiac tumors; Liver cancer; Metastases

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INTRODUCTION

Cardiac tumors are rare entity and are classified into primary and secondary. Primary tumors of the heart occur with a low incidence and most of them turn out to be benign, cardiac myxomas being the commonest.^[1] It is estimated that secondary tumors are a hundred times more common than primary cardiac tumors.^[2] The most common primary tumors which may metastasize to the heart are carcinomas of the breast and esophagus, malignant lymphomas, leukemia and malignant melanomas,^[3] but metastasis of Hepatocellular Carcinoma (HCC) is an uncommon form of cardiac malignancy.^[4] HCC ranks as the eighth most common cancer and is one of the leading causes of cancer mortality in the world.^[5] The usual organs for hepatic metastasis are lung, bone and lymph nodes, while its cardiac metastasis is rare.^[2] The HCC metastasis into the cardiac cavity mostly occurs by direct tumor invasion of Inferior Vena Cava (IVC) with extension into the right atrium.^[6] It may occur by hematogenous spread also, called as

isolated cardiac metastasis and is extremely rare.^[4] The patient may remain asymptomatic or develop chest pain, dyspnea or right side heart failure.^[5]

The present study describes a case where the patient presented with symptoms due to right atrial mass that appeared benign, however, in later investigations was found to be HCC metastasis.

CASE REPORT

A 34 year old lady presented with history of palpitations and breathlessness on exertion. The patient had no pallor or icterus. ECHO showed right atrial mass measuring 3.5 cm × 3.9 cm with a stalk attached to atrial septum, suggesting it to be myxoma. Her pre-operative investigations including Liver Function Tests (LFT) were normal, Hepatitis B surface antigen was non-reactive, Hepatitis C virus antibodies were negative and chest x ray was within normal limits. Clinical diagnosis of myxoma was thought. The patient underwent median sternotomy. The right atrium was opened and revealed a large, globular, friable mass measuring 5 cm × 5 cm with stalk attached near Inferior Vena Cava (IVC) rim. The mass was excised along with the stalk. Histopathological examination showed nests of large polygonal cells with abundant eosinophilic cytoplasm, large pleomorphic nuclei without prominent mitosis. The sinusoidal pattern was evident [Figure 1a]. The morphology was suggestive of a tumor with epithelioid morphology. The histological features of myxoma were not identified. Due to large size of cells with anisokaryosis and intranuclear cytoplasmic inclusions, a possibility of paraganglioma was considered. As, there was no past history of any malignancy elsewhere, possibility of metastases was kept down in the list. The patient was advised Immunohistochemistry (IHC) but due to financial constraints could not be performed.

After few months, patient came with abdominal pain, weight loss and anorexia. Her LFT was deranged. Ultrasound abdomen showed large heterogeneous mass lesion measuring 3.3 cm × 7.7 cm in the left lobe of liver with mild bulge of the mass in the IVC. Portal vein was normal. The patient underwent Computed Tomography (CT) guided FNAC which showed cohesive sheets of polygonal cells with abundant cytoplasm, vesicular nuclei, large nucleoli and focal multinucleation [Figure 1b]. The diagnosis of Hepatocellular Carcinoma (HCC) was rendered. There after, PET- CT (Positron emission tomography and computed tomography) highlighted a large, enhancing, lobulated mass lesion in the left lobe of liver, infiltrating the intrahepatic IVC and its left division, with thrombus in the IVC which is extending into the suprahepatic IVC up to the right atrium. No other significant FDG avid lesion was seen. Serum Alpha-Feto Protein (AFP) was within normal range. To confirm the diagnosis, IHC was performed on the previously excised atrial mass. The cells were strongly positive for CK and Hep-par1 [Figure 1c] and weakly positive for epithelial membrane antigen (EMA). The cells were negative for S-100 and chromogranin A, which ruled out paraganglioma. The final diagnosis of hepatocellular carcinoma with cardiac metastases was made.

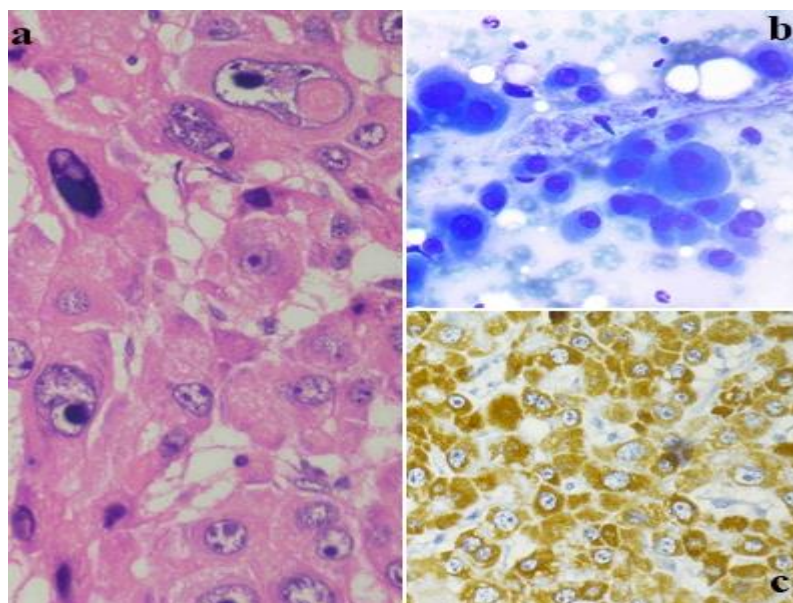


Figure 1A: Large polygonal cells with abundant eosinophilic cytoplasm, round pleomorphic nuclei, prominent nucleoli and intranuclear cytoplasmic inclusion arranged in sinusoidal pattern. (H&E 40X).

Figure1B: Cohesive sheets of polygonal cells with abundant cytoplasm, anisokaryosis, prominent nucleoli and binucleation (MGG 40X).

Figure1C: The tumor cells from cardiac mass show strong cytoplasmic positivity for Hep-par 1(DAB 40X).

DISCUSSION

Primary cardiac tumors are quite rare with a reported incidence of < 0.1% of all the autopsies. Cardiac metastases are found in around 25% of patients died of some distant primary malignancy. Also the incidence of cardiac metastases is increasing now due to the widespread use of advanced radiological imaging and increased survival rate.

HCC is the most common primary tumor of liver and is one of the leading causes of cancer related deaths all over the world. Most of the cases are associated with cirrhosis and are caused by alcohol abuse or viral hepatitis. HCC in non-cirrhotic patients is symptomatic and seen in elderly age group, whereas cirrhotic patients may remain asymptomatic. The tumor frequently metastasizes via lymphatics, intrahepatic blood vessels or direct infiltration. HCC has a strong tendency towards venous invasion and involvement of portal system is quite common. However, metastasis of HCC into the right atrium by direct extension into IVC without involving portal system is very rare (only 0.5%).^[7]

Katyal, et al studied 403 patients with extra hepatic metastasis of HCC where lung was found to be the most common site for metastasis followed by abdominal lymph nodes and bone.^[8] None of the patients were identified with metastasis to the heart. We have come across few studies wherein metastases to the heart were found, but most of them were already known cases of HCC.^[9] Some of these studies had widespread metastases to other parts of the body.^[10]

To our knowledge, this is an unusual case of HCC, where the patient presented without any clinical or biochemical evidence of underlying malignancy. The case is also unique as there was no significant background of HCC, neither cirrhosis nor viral hepatitis. Thirdly, patient had single cardiac metastatic mass with no evidence of metastasis to any other site. Fourthly, patient had involvement of right atrium and inferior vena cava without invasion into the portal veins and its boundaries.

To conclude, a high index of suspicion is needed by the surgeon, pathologists and radiologists to identify such cases and investigate them further so that early diagnosis can be made hence avoiding delay in the treatment.

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