ISSN: 0976-3031

Available Online at http://www.recentscientific.com

International Journal of Recent Scientific Research
Vol. 6, Issue, 8, pp.5980-5982, August, 2015

International Journal of Recent Scientific Research

RESEARCH ARTICLE

Isolated right ventricular metastasis of hepatocellular carcinoma

R.V. Taksande[1], Bhushan M. Warpe[2] and Prashant Mane[3]

[1,2,3,]Department of Pathology Grant Govt. Medical College, Mumbai

ARTICLE INFO

Article History:

Received 2nd, July, 2015
Received in revised form 10th, July, 2015
Accepted 4th, August, 2015
Published online 28th, August, 2015

Key words:

Hepatocellular carcinoma (HCC), Intracardiac involvement (ICI), Right ventricle (RV)

ABSTRACT

Hepatocellular carcinoma (HCC) is a well-known complication of chronic hepatitis-B and is associated with chronic alcoholism. Most cases of HCC are diagnosed at an advanced stage and the tumor spreads most frequently to the lungs, peritoneum, adrenal glands, and bones. The aim of this study was to clarify the clinical features of patients with isolated rare HCC metastases to the heart. A 65-year-old male was hospitalized with the history of palpitations and exertional dyspnea since eight days. He also had four syncopal attacks since last two weeks. USG-abdomen revealed a tumor of right lobe of liver. Cardiac magnetic resonance imaging (MRI) and echocardiography revealed a round metastatic tumor in the right ventricle (RV) with liver tumor as the primary. The patient succumbed to death before CT-guided biopsy on eight day of admission. A pathological autopsy revealed HCC without portal tumor thrombi and without metastases to the lungs, inferior vena cava (IVC) and RA. The metastases were only noted in RV which was not continuous with the intrahepatic tumor and were histologically attached to endocardium of RV. Such cases have poor prognosis. Prompt diagnosis and faster therapy is only way to avoid HCC related deaths.

INTRODUCTION

Intracardiac involvement rarely occurs in patients with hepatocellular carcinoma. Symptoms such as sudden dyspnea or resistant lower extremity edema are generally seen in HCC patients with ICI (Lei MH *et al* 1992). We present a case of HCC with intracardiac metastasis in which cardiac symptoms of syncope, exertional dyspnea and palpitations were present with a large mass completely occupying the right ventricle on imaging studies.

Case details

A 65-year-old male patient, shepherd by occupation presented with history of palpitations and exertional dyspnea since eight days. He also had four syncopal attacks since last two weeks. He had no history of breathlessness, headache, altered sensorium or vomiting. He had no history of tuberculosis contact, diabetes mellitus, bronchial asthma or epilepsy. He had no smoking or tobacco addiction but was a chronic alcoholic since last 30 years. He was found to be Hepatitis-B positive and HIV, HCV non-reactive.

On general examination, his blood pressure and pulse rate on admission was within normal limits but fingers showed clubbing. His cardiovascular examination showed a systolic murmur. He was co-operative in examination with equal air entry on both sides of the lung. He had no bleeding tendencies or orthopnea.

The patient on work-up had Hb-14.2 g/dl, TLC-9300/cu mm, platelet count of 1.8lakh/cu mm. He had raised aspartate aminotransferase level (500 IU/L), alanine aminotransferase level (654 IU/L), lactate dehydrogenase level (654 IU/L), LDH and CRP. His Chest X-ray was normal (Fig. 1). On ECG, he showed a diffuse T-wave inversion in V_2-V_6 leads, incomplete RBBB. The patient's blood pH and serum electrolytes were within normal limits. The coronary angiography report showed normal flow in coronaries without any plaques. Echocardiography was suggestive of Right ventricular mass-?Rhabdomyosarcoma (Fig. 1) with LV ejection fraction of 60%. USG diagnosis revealed a well-defined hypoechoic lesion of size 3.5x4x3cm in right lobe of liver with increased vascularity on Doppler studies which was suggestive of metastasis. Due to dilemma of the actual origin of the tumor, the patient was subjected to cardiac MRI which showed a tumor in right ventricle of size 8.6x4.2cm extending upto the pulmonary valve but not crossing the valve and was suggestive of angiosarcoma of heart. So he was advised CT-guided core biopsy from liver mass but patient succumbed to his illness before that could happen.

On eighth day after admission, his general condition deteriorated with unrecordable BP and heart sounds on auscultation. He also had reduced air entry in lungs, so was

Corresponding author:* **R.V. Taksande
Department of Pathology Grant Govt. Medical College, Mumbai

intubated under all aseptic precautions but his condition worsened even with use of inotropics. He was thus declared dead due to cardiorespiratory arrest in case of cardiogenic shock with isolated right ventricular metastasis and primary hepatocellular carcinoma.

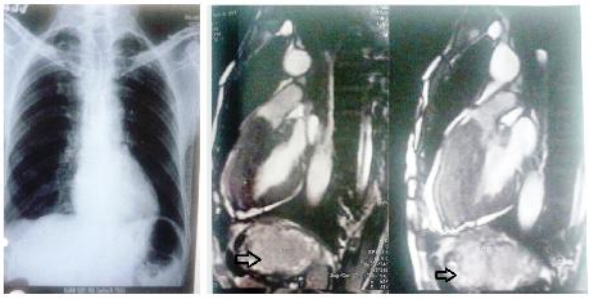

Fig.1 (Left)-Unremarkable chest X-ray PA view. (Right)-Echocardiography showing right ventricular intra-cavitary mass (arrows).

Fig 2 Gross photograph-Cut surface through right ventricular (RV) wall shows intra-cavitary right ventricular mass occluding the cavity. On the right is a section from the mass with RV wall.

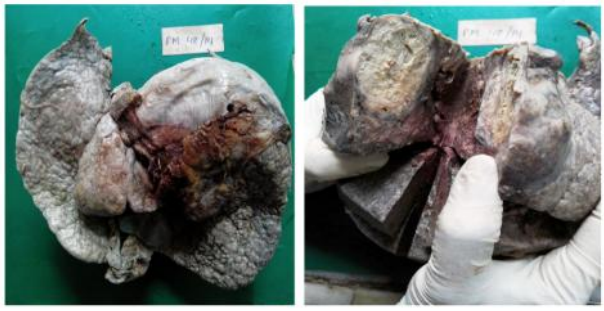

Fig.3 Gross photograph- Posterior aspect of enlarged liver showing micro and macronodules (left). Cut surface from left lobe of liver showing a well-circumscribed, white, hard mass (right).

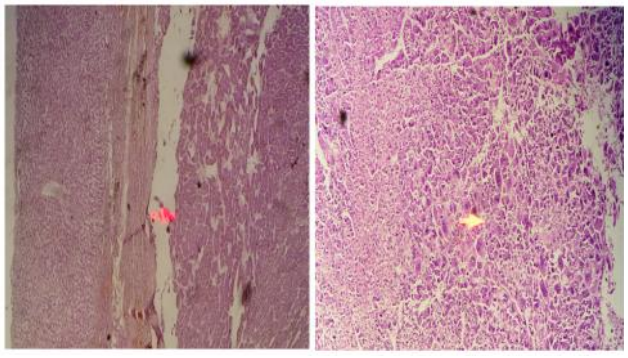

Fig. 4 Microphotograph- Well circumscribed tumor mass (arrow) within a pseudo-encapsulation compressing the surrounding cirrhotic liver (H&E, X 100; left). Tumor is composed of sheets, trabeculae, chords of tumor cells with necrosis, atypical mitoses (arrow) and prominent nucleoli (H&E, X **400;right)**

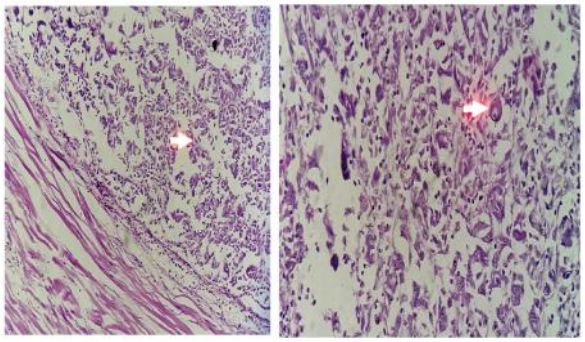

Fig. 5 Microphotograph-HCC tumor metastases (arrow) within the myocardial fibers of right ventricle (H&E, X 100; left).Tumor is composed of sheets, chords & singly dispersed HCC tumor cells with round to polygonal cells with moderately eosinophilic cytoplasm, round to oval nucleus, atypical mitoses and prominent nucleoli (arrow) within the RV intracavitary tumor (H&E, X 400;right).

Postmortem conducted on the patient in our department confirmed a right ventricular intra-cavitary cardiac mass of 7x5x4 cm size (Fig. 2). Also the enlarged liver with surface macro-nodules confirmed on cut section a large circumscribed white, hard tumor mass in right lobe of liver of size 8x5x4 cm (Fig. 3). Also the 'gold standard' histological study of the liver and heart masses revealed hepatocellular carcinoma metastases to the right ventricle of heart (Figs. 4 & 5). Sections studied from Inferior vena cava and other heart walls, valves revealed no tumor infiltration. Also other systemic organs revealed no tumor based on both gross and microscopic findings. Immuno-histochemistry was not done as the relatives were unwilling and non-affording for the same. On the basis of pathological autopsy findings, a diagnosis of hepatocellular carcinoma of the liver was made with metastasis to right ventricle of heart.

DISCUSSION

Intracardiac involvement rarely occurs in patients with HCC and its frequency was found around 2% in various series (Jeong DS *et al* 2010, Ohwada S *et al* 1994, Tse HF *et al* 1996, Mukei K *et al* 1988)

The prognosis of HCC with ICI is poor, with a median survival range of one to four months (Chang JY *et al* 2004). The risk for cardiopulmonary collapse is high in such patients. Possible cardiopulmonary complications include heart failure, tricuspid stenosis or insufficiency, ventricular outflow tract obstruction, sudden cardiac death, secondary Budd-Chiari syndrome, pulmonary embolism, and pulmonary metastasis (Sung AD *et al* 2008).

Previous studies by Natsuizaka M *et al* 2005 and Katyal S *et al* 2000, showed that the majority of metastatic sites of HCC are the lungs (18%–55%), lymph nodes (26.7%–53%), bones (5.8%–38%), and adrenal glands (8.4%–15.4%). Cardiac metastasis of HCC is rare, with a rate of 1.2% in autopsy. Majority of cardiac metastases are direct and continuous extensions of intrahepatic HCC, and isolated cardiac metastases that are discontinuous with intrahepatic HCC are exceedingly rare.

Kawakami M *et al* 2013 reported 17 cases of isolated cardiac metastases that were located in the right ventricle, right atrium,

and left ventricle in ten (58.8%), 5 (29.4%) and 2 (11.8%) patients, respectively, and 15 patients (88.2%) had symptoms including 13 patients (76.5%) who had dyspnea. Electrocardiographic changes due to cardiac metastases have been reported as diffuse T wave inversion, segmental T wave inversion, or ST elevation (Cates CU *et al* 1986).

Various cardiac symptoms such as sudden dyspnea, massive lower extremity edema, palpitations, syncope, sudden death or dilatation of the jugular veins are generally seen in HCC patients with ICI (Jeong DS *et al* 2010 Sung AD *et al* 2008, Baba HA *et al* 1995). However, no or few findings may be present in some patients, and the diagnosis may be made by imaging techniques such as computed tomography or echocardiography (Sung AD *et al* 2008, Baba HA *et al* 1995). Aggressive treatment including surgical excision in such patients may result in prolonged survival and a lower incidence of heart failure compared with palliative care (Jeong DS *et al* 2010, Sung AD *et al* 2008, Lin YS *et al* 2007).

In our case, cardiac symptoms or findings were present as the mass completely filled the RV and it was detected by screening methods. Surgical excision was not performed as the patient died of heart failure before therapeutic intervention after proper diagnoses.

In conclusion, rare cardiac involvement may be present in HCC patients with an isolated large intra-cardiac RV mass. The possibility of cardiac metastasis should be kept in mind if an ECG abnormality is found in a patient with HCC. To prevent fatal cardiopulmonary complications, early diagnosis and appropriate aggressive treatment are more important in such patients. In this regard, a high index of suspicion is required to demonstrate ICI by routine screening methods including echocardiography.

References

1. Lei MH, Ko YL, Kuan P, *et al*. Metastasis of hepatocellular carcinoma to the heart: unusual patterns in three cases with antemortem diagnosis. J Formos Med Assoc 1992;91:457–61.
2. Jeong DS, Sung Kim J, Kim KH, Ahn H. Left atrial metastasis from hepatocellular carcinoma with liver cirrhosis. Interact Cardiovasc Thorac Surg 2010;11:703-5.
3. Ohwada S, Tanahashi Y, Kawashima Y, Satoh Y, Nakamura S, Kobayashi I, *et al*. Surgery for tumor thrombi in the right atrium and inferior vena cava of patients with recurrent hepatocellular carcinoma. Hepatogastroenterology 1994;41:154-7.
4. Tse HF, Lau CP, Lau YK, Lai CL. Transesophageal echocardiography in the detection of inferior vena cava and cardiac metastasis in hepatocellular carcinoma. Clin Cardiol 1996;19:211-3.
5. Mukei K, Shinkai T, Tominaga K, Shimosato Y. The incidence of secondary tumors of the heart and pericardium: a 10-year study. Jpn J Clin Oncol 1988;18:195-201.
6. Chang JY, Ka WS, Chao TY, Liu TW, Chuang TR, Chen LT. Hepatocellular carcinoma with intra-atrial tumor thrombi. A report of three cases responsive to thalidomide treatment and literature review. Oncology 2004;67:320-6.
7. Sung AD, Cheng S, Moslehi J, Scully EP, Prior JM, Loscalzo J. Hepatocellular carcinoma with intracavitary cardiac involvement: a case report and review of the literature. Am J Cardiol 2008;102:643-5.
8. Natsuizaka M, Omura T, Akaike T, *et al*. Clinical features of hepatocellular carcinoma with extrahepatic metastases. JGastroenterol Hepatol 2005;20:1781–7.
9. Katyal S, Oliver JH, Peterson MS, *et al*. Extrahepatic metastases of hepatocellular carcinoma. Radiology 2000;216:698–703.
10. Kawakami M, Koda M, Mandai M, *et al*. Isolated metastases of hepatocellular carcinoma in the right atrium: case report and review of the literature. Oncol Lett 2013;5:1505–8.
11. Cates CU, Virmani R, Vaughn WK, *et al*. Electrocardiographic markers of cardiac metastasis. Am Heart J 1986;112:1297–1303.
12. Baba HA, Engers R, Heintzen MP. Right atrial metastasis as primary clinical manifestation of hepatocellular carcinoma. Int J Cardiol 1995;47:281-4
13. Mansour Z, Gerelli S, Kindo MJ, Billaud PJ, Eisenmann B, Mazzucotelli JP. Right atrial metastasis from hepatocellular carcinoma. J Card Surg 2007;22:231-3.
14. Lin YS, Jung SM, Tsai FC, Yeh CN, Shiu TF, Wu HH, *et al*. Hepatoma with cardiac metastasis: an advanced cancer requiring advanced treatment. World J Gastroenterol 2007;13:3513-6.

How to cite this article:

R.V. Taksande *et al*., Isolated Right Ventricular Metastasis Of Hepatocellular Carcinoma. *International Journal of Recent Scientific Research Vol. 6, Issue, 8, pp.5980-5982, August, 2015*

****