

Unusual Metastases of Hepatocellular Carcinoma to the Heart

ANDREE KURNIAWAN, NATA PRATAMA HARDJO LUGITO

Internal Medicine, School of Medicine, Pelita Harapan University

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ABSTRACT

Hepatocellular carcinoma (HCC) is the sixth most prevalent cancer worldwide. Metastasis of HCC to the heart is rare with prevalence on autopsy of less than 6%. There is still limited study evaluated the metastasis of hepatocellular carcinoma to the heart. The aim of this study is to know the prevalence and characteristic of metastasis of HCC to the heart in Indonesia. This retrospective study was conducted in secondary referral hospital in Tangerang county, Indonesia. We evaluated from medical record included baseline characteristic, survival and treatment of HCC and echocardiogram data for diagnosing metastasis to the heart from 2013-2015. There were 5 HCC patients recorded in the last 3 years. All patients were male with median age 56(53-61) years old. Four patients were diagnosed using transthoracic echocardiograph and the rest using multi sliced CT scan. All patients were having continuous thrombus from inferior cava vein until right atrial. For the conclusion Hepatocellular carcinoma were reported as the cause of intra-heart metastases in Indonesia. All patients were in late stage.

Keyword: Hepatocellular carcinoma; Metastases; Heart

ABSTRAK

Karsinoma hepatoselular adalah kanker keenam terbanyak di seluruh dunia. Metastasis karsinoma hepatoselular ke jantung jarang, prevalensi yang ditemukan pada otopsi kurang dari 6 persen. Masih amat jarang studi yang mengevaluasi metastasis karsinoma hepatoselular ke jantung. Tujuan dari studi ini adalah ingin mengetahui prevalensi dan karakteristik metastasis karsinoma hepatoselular ke Jantung di Indonesia. Studi retrospektif ini dilakukan di rumah sakit rujukan tipe B di daerah Tangerang, Indonesia. Kami mengevaluasi dari rekam medis, meliputi karaktersitik dasar, kesintasan, dan terapi karsinoma hepatoselular; serta data ekokardiografi untuk mendiagnosis metastasis ke jantung dari 2013-2015. Terdapat 5 pasien hepatoselular karsinoma pada 3 tahun terakhir. Semua pasien laki-laki dengan usia median 56 (53-61) tahun. Empat pasien terdiagnosis menggunakan ekokardiografi trans torakal dan sisanya menggunakan CT scan. Semua pasien memiliki trombus kontinu dari vena cava inferior hingga atrium kanan. Sebagai simpulan, karsinoma hepatoselular dilaporkan sebagai penyebab metastasis ke jantung di Indonesia. Semua pasien datang pada stadium lanjut.

Kata Kunci: Jantung, karsinoma hepatoselular, metastasis

INTRODUCTION

Hepatocellular carcinoma (HCC) is the sixth most prevalent cancer (749 000 new cases) worldwide.¹ The incidence varies from 3 out of 100 000 in Western countries, to more than 15 out of 100 000 in certain areas of the world.² Most of

KORESPONDENSI:

dr. Andree Kurniawan,
SpPD,
Internal Medicine,
Faculty of Medicine,
University of Pelita Harapan,
Siloam General Hospital,
Jl. Boulevard Jendral
Sudirman
(near Siloam hospital),
Karawaci, Tangerang,
Banten 15811 Indonesia
Phone:
+62-21-54210130
Ext: 3411
Facsimile:
+62- 21- 54210133,
Email:
andree.kurniawan@uph.edu,
a125ee@yahoo.com

the liver with HCC was complicated by cirrhosis. Cirrhosis is the cause of portal hypertension and liver failure. Hepatitis B and C are the most common cause of Liver cirrhosis and HCC in developing countries especially in Indonesia. The prevalence of HCC in future will be increasing linear to the increasing of hepatitis B and C infections.¹

Heart tumors are classified into primary benign or malignant tumors that arise from the heart or into secondary, metastatic tumors that invade the heart. Metastasis of HCC to the heart is rare with prevalence on autopsy of less than 6%. This metastasis is presumed to be caused by tumor thrombi infiltrating the hepatic vein, at which point they are disseminating by hepatic blood flow to the right ventricle of the heart and rarely by direct extension. Portal vein, hepatic vein and the inferior vena cava are often affected. Symptoms such as sudden dyspnoea or resistant lower extremity edema, syncope and palpitations are generally seen in HCC patients with intra-heart involvement.³⁻⁵

Several case reports have been reported metastasis HCC to the heart. There is still limited study evaluated the metastasis of hepatocellular carcinoma to the heart. The aim of this study is to know the prevalence and characteristic of metastasis of HCC to the heart in Indonesia.

MATERIAL AND METHODS

This retrospective study was conducted in secondary referral hospital in Tangerang county, west part of Jakarta, capital city of Indonesia. We evaluated from medical record included baseline characteristic of, survival and treatment of HCC and echocardiogram data for diagnosing metastasis to the heart from 2013-2015. The definition of HCC was from 3 phase abdominal Computed Tomography (CT) scan. The Barcelona Clinical Liver Cancer staging was used to stage the HCC. The presence of cirrhosis, Child T. Pugh grade, characteristic and survival of HCC patients were recorded. Clinical symptoms related to heart problem also recorded to be evaluated. Electrocardiogram (ECG) and echocardiogram data and characteristic were analyzed if there were related to clinical symptoms. The invasion of tumor to right atrial or ventricle was defined as presence of tumor or tumor emboli in right atrial and ventricle.

RESULTS

There were 5 HCC patients recorded in the last 3 years. All patients were male with median age 56 (53-61) years old. Three patients had tumor in right atrial and the others 2 patients had tumor in right ventricle. Four patients were diagnosed using transthoracic echocardiograph and the rest using multi sliced CT scan. All patients were having continuous thrombus from inferior cava vein until right atrial. All patients were recorded died just several weeks after diagnosed. Four patients with tumor in right ventricle had heart failure symptoms. All patients did not have ECG abnormalities. No arrhythmias symptoms and sign were reported. All patients had liver cirrhosis as the background of HCC. Three patients had B classifications of CTP. And the others had C classifications of CTP. All patients identified had chronic hepatitis B infections as the cause of liver cirrhosis. Two patients had portal vein thrombosis involvement.

DISCUSSION

Despite being the sixth most prevalent cancer worldwide, HCC seldom metastasizes to the heart. Such events are rare with a prevalence of less than 6% in one case series of autopsied patients with known HCC. It is estimated that 5-10% of patients with HCC will develop some form of heart metastasis. Metastasis of HCC into heart cavity is mainly caused by direct invasion of the Inferior Vena Cava (IVC) and extension into the right atria. Right ventricle metastasis without IVC and RA metastasis is rarely reported and may be caused by hematogenous spread of cancer cells.⁶

In our study there were 5 HCC patients with heart metastasis identified in the last 3 years retrospective study. Two patients found having tumor in inferior cava vein. These suggest the metastases reach the heart via the hemato-genous route or trans-venous extension. Extra heart tumors may also reach the atria and even the chambers of the heart by trans-venous extension. Futhermore, HCC has been observed to extend through the inferior cava vein.⁶

Four of 5 patients had heart failure symptoms and were diagnosed having metastasis to right atria and ventricle using transthoracic echocardiography. Heart metastases usually remain clinically silent

particularly as the vast majority of heart metastases are small. In retrospective studies, only about one-tenth of patients who died of tumor disease and showed heart spread as identified at post mortem examination presented with symptoms indicating of heart involvement.⁷

Usually metastases to the heart are detected during initial tumor staging. On the other hand, they may not become clinically seen until many years after cancer diagnosis. Heralds of metastases to the heart are a rapid increase in heart size by pericardial effusion, new signs of heart failure or valve disease, conduction defects, and atrial or ventricular heart rhythm disturbances. Symptoms such as dyspnoe or tachypneu, and clinical findings such as systolic heart murmur, peripheral edema, plural or pericardial effusion, or ascites are usually reported.⁸⁻¹¹

The electrocardiographic (ECG) recordings are usually unspecific but many document possible ventricular or supraventricular arrhythmias or conduction defects. All of our patients did not show ECG abnormalities. Pericardial effusion can cause low voltage and electrical alternans. Q-waves can be found as residues of tumor-related myocardial infarction; an ECG view of infarction can also result from infiltration of myocardium by the metastases.⁸⁻¹¹

Chest radiography abnormalities found in metastases to the heart are an increase in heartsilhouette through pericardial effusion or peri and/or paracardial tumor growth, as well as a pleural effusion resulting from heart failure. In the cases of larger size, intra-cavitary may appear as filling defects under radionuclide or contrast medium angiography. Method of choice to detect heart metastases and their complications is two-dimensional echocardiography. Echocardiography can show dense pericardial bands reflecting the pericardium being thickening by inflammation or tumor infiltration.^{8,11}

In cases of larger myocardial metastases, regional wall motion abnormalities can be revealed by ultrasound. Intra-cavitary lesions can also be detected by high sensitivity. In the case of pericardial lesion the transesophageal approach is superior to the transthoracic approach. Four of five our patients were visualized using transthoracic echocardiographic approach. The others diagnostic imaging methods are computer tomography (CT) and magnetic resonance imaging. Size and extension of paracardial tumor growth can be determined more precisely

than by sonography. One patient found accidentally by CT when he was evaluated for staging of HCC. That patient found tumor infiltration from inferior cava vein into right atria.¹¹

In the most cases heart metastases manifest in patients with advanced tumor disease with the heart being involved in the generalized tumor spread. At this stage of disease, many patients will already have undergone surgical treatment for the tumor of origin or radio- or chemotherapy. In our cases mostly HCC patients were diagnosed in inoperable cases. Most of cases in Indonesia were undergone trans-arterial chemo-embolization or radiotherapy. In our cases all patients were in inoperable cases and only supportive care could be done because of bad performances status. In the cases of pericardial involvement may be diminished by local radiotherapy or systemic chemotherapy. Heart tamponade makes percutaneous pericardiocentesis should be done as soon as possible.¹¹

CONCLUSION

Hepatocellular carcinoma were reported as the cause of intra-heart metastasis in our county. All patients were in late stage.

DISCLOSURE

This abstract has been presented in Annual Scientific Meeting of Indonesian Heart Association 2016 as poster presentation.

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