

# Brain Metastases From Hepatocellular Carcinoma: A Rare Case Report

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**Abstract-** Intrahepatic lesions of hepatocellular carcinoma (HCC) have been controlled by significant advances in treatment, including chemotherapy, surgery, and ablative therapy. Consequently, the number of patients with extrahepatic metastatic lesions has increased, including lung, regional lymph nodes, peritoneum, and adrenal glands, but rarely to the brain. The prognosis of brain metastasis remains poor, with approximately <1 y of survival from the time of diagnosis. Although no guidelines for the brain metastasis of HCC have been developed to date due to the lack of the experiences and pieces of evidence, a molecularly targeted drug, sorafenib, have been used to treat extrahepatic lesions and shown the prolonged survival time. Therefore, the development of standard therapy for brain metastasis following the early diagnosis is essential by accumulating the information of clinical courses and pieces of evidence.

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## Introduction

Cancers are the main cause of mortality and health problem worldwide, and Hepatocellular carcinoma (HCC) is recognized as one of the most frequent malignancies in the world (1,2). It is considered as the fifth most common cancer and the second leading cause of cancer deaths around the world. Hepatitis B infection is the greatest risk factor for HCC in most geographic areas, with the highest rates in China, Taiwan, and Korea (3,4). Extrahepatic metastasis is also common, and the most frequently affected sites are the lungs, regional lymph nodes, kidney, bone marrow, and adrenals (5,6).

Brain metastasis from hepatocellular carcinoma (BMHCC) is relatively rare, with an approximate rate of 1-6% (7,8). Although the interval between diagnosis of primary cancer and detection of brain metastasis ranged from 2 to 54 months (1,9), the prognosis of these patients is poor with a survival period of a few weeks with low quality of life. However, no standard therapeutic strategy has been reported to date to increase survival in patients with unresectable tumors; early diagnosis could improve the chance of curative surgical resection (8).

The present study describes a rare case of HCC

presenting with the initial manifestations of an intracranial mass lesion. The diagnosis could not be made until she was admitted to the hospital with a loss of consciences and hypertension (3,10). Eventually, the lesion was diagnosed as a brain metastasis of hepatocellular carcinoma from pathological results (11).

## Case Report

A 74-year-old female was admitted to our hospital due to abdominal pain on his right side as a chief complaint. The patient's medical history was negative for chronic HBV-related hepatitis. The patient was oriented and did not have pathologic reflexes. His initial laboratory examination revealed blood cell counts and blood glucose were within normal limits, Coagulation factors were also within normal limits, and his coagulability was as follows: prothrombin time (PT): 11.5 seconds, international normalized ratio (INR): 1.42, activated partial thromboplastin time (PTT): 28 seconds, Hepatic-related factors were as follows: glutamic oxaloacetic transaminase (AST): 28 IU/L, glutamic pyruvic transaminase (ALT): 45 IU/L, alkaline phosphatase (ALP): 290 U/L, alpha-fetoprotein: 352 ng/mL. Bilirubin, Serum electrolyte levels (Mg, Na, and Phosphorous), urinalysis was within the normal range as

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well.

Thorax-abdomen-pelvic CT revealed a hyperdense mass lesion with irregular margins and 42×47×8 mm in size in the right lobe of the liver (7th & 8th segments) with extension near the radial margin, moderate portal inflammation and mild to moderate steatosis and no evidence of cirrhosis, but no other organs were involved, and there was no symptom of metastasis (Figure 1).

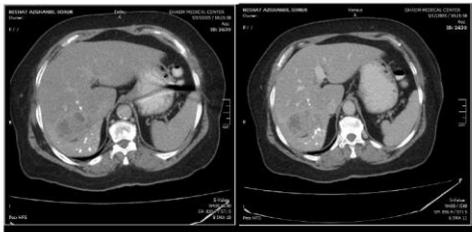


Figure 1. CT image of the lesion in the liver

A core needle biopsy was also done, and finally, hepatocellular carcinoma had been diagnosed based on computed tomography (CT images), high AFP level (alpha-fetoprotein), and biopsy.

The patient underwent sorafenib for treatment, and she had experienced a stable condition. 3 years after that, the patient was admitted to the emergency department due to hypertension and loss of consciousness (GCS<5). However, she had been well previously, and no history of head trauma, the patient was hospitalized due to loss of consciousness.

Computed tomography (CT) and MRI of the patient's head revealed multiple intracranial masses and homogenous enhancement by post-contrast CT that confirmed brain metastasis of hepatocellular carcinoma (Figure 2). The interval between diagnosis of primary cancer and detection of brain metastasis was 36 months. She was referred to the ICU department, and she was taken no treatment and received supportive care and died after 15 days because of intracranial hemorrhage and loss of consciousness (Figure 2).

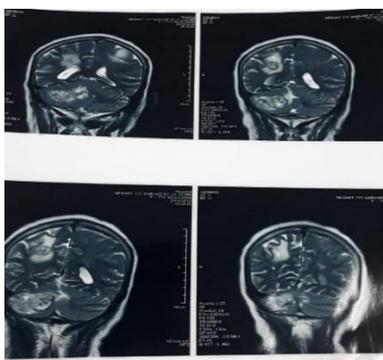


Figure 2. CT image of the metastatic lesions in the brain.

## Discussion

Hepatocellular carcinoma (HCC) is possibly curable if discovered in its initial stages. HCC is one of the most frequently occurring malignancies in Asia (12). The number of new HCC patients is approximately 500,000 to 1 million per year and is increasing (2). HCC shows both intrahepatic and extrahepatic metastasis. The most common extrahepatic metastases are the lung, regional lymph nodes, peritoneum, and adrenal glands, but rarely to brain with an approximate rate of 1-6% that is associated with an extremely poor prognosis (13,14). Although the brain is not the most common site for metastatic disease for HCC, some investigators have predicted that the incidence of brain metastases will increase in the future as more patients survive longer (15,16).

The interval between diagnosis of primary cancer and detection of brain metastasis ranged from 2 to 54 months. The mean survival period was only 3mo after diagnosis of brain metastasis. The patients with HCC metastasized to brain died of neurologic causes rather than hepatic failure. The present study revealed a 74-year-old female had hyperdense mass lesion 42×47×8 mm in size by contrast and non-contrast computed tomography scan. Her bilirubin and liver enzymes level was normal. She had neither ascites nor a history of hepatic encephalopathy. She had no symptoms of fatty liver, and eventually, she was died because of intracranial hemorrhage (2,17).

In conclusion, the rarity of this type of case gives the clinician the suspicion of such associations when confronted with a patient with liver dysfunction, and neurologic findings, and further studies are needed to elucidate the impact of the presence of extrahepatic metastases on survival in patients with brain metastasis from HCC.

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