International Journal of Advanced Medical and Clinical Therapeutics
Volume 2, Issue 1, Year 2025

Hepatocellular Carcinoma with Widespread Metastasis: A Case Report

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Received: 22-04-2025, Manuscript No. JQR/IJAMCT/7; Editor Assigned: 05-04-2025, Manuscript No. JQR/IJAMCT/7; Reviewed: 30-04-2025, Manuscript No. JQR/IJAMCT/7; Published: 31-08-2025

Abstract:

Background: Hepatocellular carcinoma (HCC) is a leading cause of cancer-related mortality globally, especially in geographic locations where hepatitis B virus (HBV) infection is endemic. The disease can progress from chronic HBV infection to liver cirrhosis, and eventually HCC. In this case series demonstrates the biological aggressiveness of HCC and difficulty in the treatment of patients with systemic metastases [1,2].

Case Presentation: A 46-year-old man with a history of chronic HBV infection presented with generalized abdominal distension gradually progressing over 1-year and bilateral leg swelling for 3 months associated with respiratory distress syndrome (RDS) and jaundice. Imaging studies showed liver cirrhosis and confirmed HCC with metastases to lung, heart, and skull. With the patient having huge ascites one also had substantially raised AFP (alpha-fetoprotein). All multidisciplinary consultations were to no avail; the neurosurgery team refused surgery given extensive disease and dismal prognosis. The patients were treated by palliative care aimed symptom management [3], palliative interventions [4].

Conclusion: Extrahepatic metastases add significantly to the diagnostic and therapeutic difficulties for late-stage HCC. Timely detection and early intervention are important to prevent progression towards advanced disease. As curative treatments are generally not accessible in resource-limited settings, palliative care remains the main treatment approach [5,6].

Keywords: Hepatocellular Carcinoma, Hepatitis B Virus, Liver Cirrhosis, Metastasis, Palliative Care

1. Case Presentation

A 46-year-old male with a past medical history of chronic HBV infection for 15 years presented to our facility complaining of: increasing epigastric fullness, bilateral leg edema, jaundice and progressive shortness of breath. The patient lost significant weight over the last 3 months and could not take full meals, because meals triggered fullness and nausea. Physical examination: icteric appearance, ascites and hepatomegaly [7] with palpable liver edge sub xiphoid. Investigations revealed serum liver enzymes were markedly elevated, alpha-feteneprotein (AFP) >450 ng/mL (normal range: l-10ng/mL) and an abnormal albumin. Ultrasound and CT scan were positive for cirrhotic changes in the liver as well a large mass lesion which was consistent with HCC. Additional studies revealed lung, heart and skull metastases. The patient rapidly developed profound respiratory distress that required supplemental oxygen. Means of diagnosis was explained to family and they were told the likely bad prognosis. No neurosurgical consultation was performed as patient was found to have metastatic disease heavily throughout the surgeon surgery was not considered. The patient was frail and therefore chemotherapy was not an option. This started our caring for the symptoms such as ascites drainage and pain control support of Respiratory system [8,9].

2. Discussion

The case series outlined here provide delineation of the natural history of liver disease from HBV infection eventually leading to HCC and its organ metastases [10]. Hepatocellular carcinoma is invariably advanced by the time it is diagnosed in resource-

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limited settings where patient screening and timely interventions are limited [11, 12]. From the 7-step process of how ALL chronic HBV infection → liver cirrhosis and leads to HCC, it shows doubly why watching patients with risk factors is essential. While AFP is the marker of choice to assist in the diagnosis, it is not always specific for HCC and can be raised during other liver diseases [13] So early detection Screening in at-risk populations is critical to timely intervention [14, 15].

2.1. Pathophysiology of Hepatocellular Carcinoma

As is the case for HCC, chronic liver disease is typically the pre-existing condition leading to the development of hepatocellular carcinoma which is primarily caused by alcoholic hepatitis infections (HBV and HCV) as well as metabolic disorders. A Persistent inflammatory state in the liver is induced by the chronic HBV, leading to the development of hepatocytes mutations over a period through genetic evolution [16]. These mutations may lead to dysplasia of liver tissue and ultimately cirrhosis and on to HCC [17].
In our case, it was that the patient harboring a chronic HBV infection resulted in cirrhosis, setting up the pathogenesis of later HCC. Genetic alterations of chronic inflammatory process is believed to promote hepatocyte tumor development [18]. Furthermore, exacerbated production of secreted pro-inflammatory cytokines [IL-6, tumor necrosis factor alpha (TNF-α)] also accelerates cancer cell expansion and dissemination by activating multiple signals and proliferative pathways in cells [19].

2.2. Metastasis in Hepatocellular Carcinoma

Metastasis is a common feature of advanced HCC, most often involving the lungs, bones and lymph nodes [20]. In this case, metastatic lesions in the lungs, heart and skull. It is currently unknown through which mechanism HCC leads to disease outside the liver where both hematogenous and lymphatic routes are thought to play a role in the progression of HCC. Tumor cells often compromise the systemic circulation (due to portal vascularity) or directly invade axillar lymph node. The tumor cells are disseminated through these routes and can then seed and grow into secondary organs distant from primary site where tertiary metastases can occur [21].

In particular, metastasis to the lungs is an ominous prognosticator since it tends to represent a more aggressive disease course with a dismal prognosis [22]. This patient has multi-organ involve which adds to treatment options and dramatically alters prognosis [23].

2.3. Diagnostic Approaches

HCC is usually diagnosed based on clinical presentation, laboratory and imaging studies. In our patient, the serum AFP had an absolutely key predictive value on HCC. Though very useful in the context of screening and diagnosis, AFP has its limitations. In cirrhosis, acute liver failure and other liver tumors AFP levels are increased as well so that it is not a specific marker for diagnosing HCC [24]. Imaging studies such as ultrasound, CT scans and MRI are also very important in the identification of the locus of tumors and its dimensions. Thus, in this patient CT scanning showed a massive hepatic mass and metastases to the lungs, heart and skull [25].

Further progression of clinical status in a short time frame strongly suggested advanced HCC with liver metastasis The biopsy was not done because of the deteriorating clinical status of our patient which might lead to significant morbililty [26]. Staging by biopsy with histological confirmation may be necessary in some cases where imaging is ambiguous, although not so helpful in the advanced stage.

2.4. Treatment Options and Challenges

Advanced HCC with systemic metastases is a difficult disease to treat. In the earlier stages liver resection, liver transplantation and ablation therapies have treatment options for HCC The patient in question was no longer a candidate for curative treatment, though this disease had progressed to early states.

Systemic therapies targeting advanced, nonresectable HCC have been investigated using sorafenib (a tyrosine kinase inhibitor) and lenvatinib [27], which aim to retard tumor progression with an impact on survival. These treatments are not curative, and they barely improve overall survival in patients with advanced disease. The chemofrail case patient was deemed too frail for chemotherapy and therefore palliative care became the focus, mainly related to symptom control [28].

Management of the patient includes supportive measures for refractory respiratory symptoms: providing pain relief (acute or chronic), managing ascites and securing respiratory support in the patient with profound respiratory distress. In this case, the patient's family was an active member in decision-making, and priority was to keep "the peace" honouring the patient as well as his family [29]. The role of a multidisciplinary team, composed of hepatologists, oncologists, palliative care experts and radiologists in the management of complex and multi-system patients like this one is paramount.

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2.5. Palliative Care and Prognosis

Palliative care becomes the centre-piece of treatment for patients with advanced HCC when conventional therapies are no longer curative. Meaning interventions for symptoms management, ascites correction, and supportive respiratory care in order to increase the quality of the remaining life. While palliative care does not significantly prolong survival, it may relieve symptoms and provide comfort to ensure their patient have more comfortable time left.

Our patient presented with very poor prognosis, being metastasized throughout and rapidly progressing disease. Therefore, a much lower life expectancy was predicted due to the metastases across multiple organs (eg., lungs and heart). In addition, the family received counselling and care to actively decide on end-of-life care [30].

3. Conclusion

This case series highlights the significance of early HBV infection screening and liver lesions in primary hepatocellular carcinoma, especially for high-risk groups to prevent hepatocellular carcinoma reaching advanced stages. A classic example of this is the presentation of HCC by late in resource-constrained settings, where curative treatments are less available and a palliative course is necessary, just as seen with this case Extra-hepatic metastasis in HCC are uniformly a poor prognostic entity, early care management thus highly crucial to providing benefit. Systemic treatments (tyrosine kinase inhibitors etc.) offer some improvement in patients with advanced HCC and systemic metastasis, but the outlook is still dismal. Palliative care continues to be a cornerstone in the palliation of these patients, and the need for a multidisciplinary healthcare team is important when dealing with such complex patients.

Highlights

- Chronic HBV infection is a strong risk factor for hepatocellular carcinoma especially in resource-limited settings.
- Extrahepatic metastases to late-stage HCC is a huge problem in diagnostic and in the management field of HCC.
- Alpha-fetoprotein (AFP): AFP levels are often increased in HCC, but this is not always specific for HCC and requires conformation from imaging and biopsy.
- Palliative care is the first line option to treat advanced, metastatic HCC as no curative options are available sometimes.
- Detection and Screening of HBV and liver disease should be cheap, sensitive and done early so as to prevent progression towards HCC to increase survival.

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