

CLINICAL VIGNETTE

Metastatic Hepatocellular Carcinoma Presenting as a Posterior Mediastinal Mass

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Case Report

A 69-year-old man presented to the emergency room with generalized fatigue, dysphagia, and unintentional weight loss. He reported a 60-pound unintentional weight loss over 9 months which he attributed to worsening solid-food dysphagia. He also reported generalized abdominal pain associated with progressive abdominal distension over the past 6 months. The patient also reported intermittent mild hemoptysis for the past month, but he denied any fevers or night sweats. He denied significant travel or sick contacts within the prior year. Other symptoms included urinary urgency and incontinence, and occasional episodes of fecal incontinence. He also noted worsening bilateral lower extremity weakness with increasing difficulty ambulating. The patient denied any nausea, emesis, hematochezia, melena, or back pain. His past medical history was significant for chronic diastolic heart failure, coronary artery disease, chronic kidney disease stage 3, essential HTN, peripheral vascular disease, and latent TB infection in adolescence (never treated). He had a remote history of alcohol and tobacco use but denied any other drug use. The patient is a retired chemical plant worker.

On presentation to the emergency room, vitals include temperature of 36.6°C, blood pressure 160/85, heart rate 78, respiratory rate 20, and oxygen saturation of 98% on room air. Physical exam was notable for cachexia, left axillary lymphadenopathy, bilateral scleral icterus, and a distended abdomen with caput medusae and fluid wave. There was no midline spinal tenderness, normal rectal tone, and intact sensation to light touch in bilateral lower extremities, with 4/5 strength in bilateral lower extremities. Laboratory evaluation was notable for hemoglobin 11.9, sodium 128, creatinine 3.6, calcium 9.0, potassium 4.5, phosphorus 4.9, alkaline phosphatase 954, aspartate transaminase 265, alanine transaminase 104, total bilirubin 3.8, direct bilirubin 2.7, uric acid 12.3, and lactate dehydrogenase 488. CT Chest without contrast revealed a large upper posterior mediastinal mass (110 mm x 90 mm x 82 mm) encasing multiple thoracic vertebral bodies (T2-T6), with likely invasion into the spinal cord, and causing anterior displacement of the aortic arch as well as of the superior mediastinal vessels. CT Abdomen and Pelvis without contrast revealed hepatic cirrhosis, an infiltrative large right hepatic lobe mass causing biliary ductal dilatation, nonvisualization of the right adrenal gland, diffuse retroperitoneal lymphadenopathy, mild right hydronephrosis, and moderate volume ascites. Given concern for possible hepatocellular carcinoma or lymphoma, the patient

was admitted to the inpatient medicine service for further evaluation and management.

The patient was initially resuscitated with IV fluid hydration given acute renal failure attributed either to pre-renal etiology versus tumor lysis syndrome versus hepatorenal syndrome. Nephrology and Oncology consultants recommended treatment with rasburicase to lower the uric acid level. The patient was placed on airborne isolation to rule out active TB infection. Induced sputums returned negative for acid-fast bacilli. Further laboratory evaluation revealed an alpha-fetoprotein level of 407,226 as well as chronic hepatitis B and chronic hepatitis C infections. The patient was unaware of these infections. Given the spinal involvement of the mass on CT imaging as well as the patient's history of urinary and fecal incontinence, MRI of the entire spine re-demonstrated thoracic vertebral involvement but no evidence of spinal cord compression. Neurosurgery did not believe patient required emergent surgical intervention as the patient's exam and imaging did not seem consistent with acute cord compression.

The patient underwent CT-guided biopsy of the posterior mediastinal mass. Pathology revealed metastatic hepatocellular carcinoma. Despite aggressive IV fluid hydration with both normal saline and albumin, the renal function and liver function continued to worsen. Given that the patient was in multi-system organ failure, the Oncology team did not believe he would benefit from any palliative chemotherapy, and recommended goals of care discussion. With assistance from the Palliative Care team, the patient elected to forgo any aggressive treatment and he was eventually discharged to a nursing home with recommendations for initiation of hospice care.

Two days later, the patient returned to the emergency room via ambulance with worsening lethargy. His laboratory tests were notable for hemoglobin 5.1, creatinine 7.9, blood urea nitrogen 147, alkaline phosphatase 1239, AST 924, ALT 230, and total bilirubin 7.1. The patient was re-admitted to the inpatient medicine service with fulminant multi-system organ failure. The patient's sister reaffirmed his preference against treatment measures. With assistance from the Palliative Care, he was placed on comfort measures and later died in the hospital.

Discussion

Hepatocellular carcinoma (HCC) is a tumor of the liver associated with chronic liver disease. Risk factors include, hepatitis B and C and alcoholic liver disease, which are associated with cirrhosis. HCC incidence is as high as 6/100,000 with men being at three times higher risk than women.¹ The incidence and death rates are increasing in many parts of the world and HCC is the fastest rising cause of cancer related deaths in the U.S.² Of the identified factors the most important are hepatitis B carrier state, chronic hepatitis C virus infection, hereditary hemochromatosis and cirrhosis of almost any cause.² The presentation of HCC varies from a patient who is asymptomatic to a life threatening illness. Extrahepatic metastases occur in 30-50% of HCC cases.³ The most frequent sites of extrahepatic metastases are the lungs, intra-abdominal lymph nodes, and bones.⁴ Mediastinal metastases are unusual.³ Prognosis of patients with extrahepatic metastases is usually poor. Currently surveillance by abdominal ultrasound with or without serum alpha-fetoprotein is recommended every 6 months in patients with cirrhosis or chronic hepatitis B infection.

Patient with good performance status with early stage solitary may be considered for liver resection. Liver transplantation also can be performed in patients with limited tumor burden who are not candidates for resection. Percutaneous radio-frequency ablation is recommended for patients with early stage tumors who are not candidates for surgery. For those with intermediate stage tumors transarterial chemoembolization (TACE) should be considered. Patients with progressive or advanced disease systemic therapies are recommended with sorafenib. Newer agents include lenvatinib and regorafenib.⁵ TACE has shown good response for mediastinal metastasis.³

Our case describes an unusual presentation of HCC with a large posterior mediastinal mass causing dysphagia. This patient had both chronic Hepatitis B and Hepatitis C infections along with cirrhosis putting him at high risk for developing HCC. The case also highlights the wide variety of presentations of HCC. Unfortunately given the patient's extent of disease and poor performance status he decided to forgo any palliative treatment.



Figure 1: CT Chest showing a large posterior mediastinal mass.

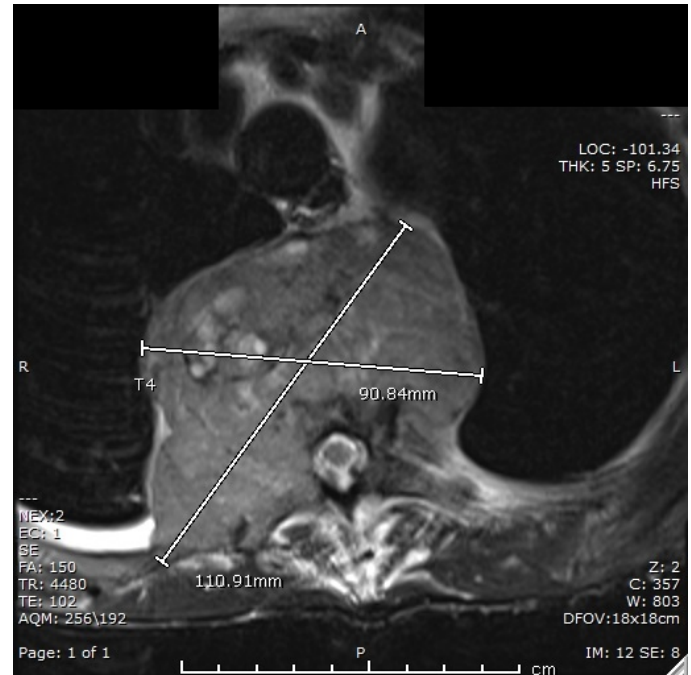


Figure 2: CT Chest showing the posterior mediastinal mass encasing the thoracic spine.

REFERENCES

1. **El-Serag HB, Kanwal F.** Epidemiology of hepatocellular carcinoma in the United States: where are we? Where do we go? *Hepatology*. 2014 Nov;60(5):1767-75. doi:10.1002/hep.27222. Epub 2014 Aug 25. Review. PubMed PMID: 24839253; PubMed Central PMCID: PMC4211957.
2. **Fujiwara N, Friedman SL, Goossens N, Hoshida Y.** Risk factors and prevention of hepatocellular carcinoma in the era of precision medicine. *J Hepatol*. 2018 Mar;68(3):526-549. doi: 10.1016/j.jhep.2017.09.016. Epub 2017 Oct 6. Review. PubMed PMID: 28989095; PubMed Central PMCID: PMC5818315.
3. **Alves RC, Auer LS, Saud LR, Arrelaro RC, Casado AC, Ferreira BG, Szjenfeld D, Poletti PB.** Hepatocarcinoma with metastasis to the anterior mediastinum. *Hepatoma Research*. 2016 Oct 21; 2:293-296.
4. **Uka K, Aikata H, Takaki S, Shirakawa H, Jeong SC, Yamashina K, Hiramatsu A, Kodama H, Takahashi S, Chayama K.** Clinical features and prognosis of patients with extrahepatic metastases from hepatocellular carcinoma. *World J Gastroenterol*. 2007 Jan 21;13(3):414-20. PubMed PMID: 17230611; PubMed Central PMCID: PMC4065897.
5. **Villanueva A.** Hepatocellular Carcinoma. *N Engl J Med*. 2019 Apr 11;380(15):1450-1462. doi: 10.1056/NEJMra1713263. Review. PubMed PMID: 30970190.