Intrahepatic Portal Hypertension Secondary to Metastatic Carcinoma of the Prostate

Tan Attila, MD; Milton W. Datta, MD; Gary Sudakoff, MD; Majed Abu-Hajir, MD; Benson T. Massey, MD

ABSTRACT
While the liver is a common site of metastasis, tumor metastases are not a common cause of portal hypertension. We report a case of a patient with symptomatic portal hypertension due to diffuse metastatic prostate carcinoma infiltration of liver parenchyma that was not appreciated with routine imaging.

INTRODUCTION
Diseases interfering with blood flow at any level within the portal venous system can cause portal hypertension. While the liver is the most common site of metastatic disease, tumor metastases are not a common cause of portal hypertension. We report a case of a patient with symptomatic portal hypertension due to diffuse metastatic prostate carcinoma infiltration of liver parenchyma that was not appreciated with routine imaging. As prostate cancer is the most frequently diagnosed cancer in American men and is the second leading cause of cancer death in males, this potential disease manifestation warrants note.

CASE REPORT
A 57-year-old man presented with right flank pain, hydronephrosis, and elevated PSA of 159 ng/dl (normal: 0-4 ng/dl), requiring stent placement to relieve his urinary obstruction. Prostate biopsies revealed a poorly differentiated adenocarcinoma of the prostate diagnosed as small cell carcinoma. Computed tomography (CT) scans of the chest, abdomen, and pelvis revealed enlargement of the left seminal vesicle but no evidence of distant metastasis or lymphadenopathy. Bone scan revealed multi-focal areas of uptake compatible with metastatic bone involvement. Bone marrow biopsy was positive for tumor involvement with metastatic adenocarcinoma.

The patient was subsequently treated with androgen blockade (LHRH agonist: leuprolide [Lupron®] and bicalutamide [Casodex®]). He also received 8 cycles of chemotherapy consisting of total body hyperthermia plus platinum, gemcitabine, and interferon alpha.

Fourteen months after diagnosis, the patient developed abrupt onset of abdominal distention, lower extremity edema, nausea, emesis, and jaundice. He was not on any hepatotoxic medications. His past medical and family history was unremarkable, with no history of liver disease. His alcohol consumption was infrequent. Examination was significant for jaundice, hepatomegaly, ascites, and lower extremity edema without any stigmata of chronic liver disease. Laboratory studies showed total bilirubin 8.6 mg/dl (normal 0.1-1 mg/dl), direct bilirubin 6.4 mg/dl (normal 0-0.3 mg/dl), alkaline phosphatase: 1353 U/L (normal 35-125 U/L), gamma-glutamyl-transferase (GGT) 1400 U/L (normal 11-51 U/L), aspartate transaminase (AST) 120 U/L and alanine aminotransferase (ALT) 80 U/L (normal 10-45 U/L), albumin 2.4 g/dl (normal 3.5-5 g/dl), prothrombin time 15.7 seconds (normal: 10.9-12.3 sec) and prostate-specific antigen (PSA) was 1676.

CT scans of the patient’s abdomen (Figure 1) revealed minimal ascites, numerous collaterals in the splenic hilum and mesentery, patent hepatic veins as well as hematomegalv with only small low-density lesion suspicious for metastasis. Hepatobiliary scan showed an enlarged liver with diffuse poor hepatocyte function. Because the etiology of portal hypertension was unclear from the prior studies, hepatic angiography and transvenous liver biopsy were performed. This confirmed the portal hypertension and demonstrated the patency of hepatic veins. The free hepatic vein pressure was 14 mm Hg (normal: 2-7 mm Hg) and the wedge pressure
was 28 mm Hg (normal: 6-12 mm Hg), with a corrected sinusoidal pressure of 14 mm Hg (normal: <8 mm Hg). Transvenous liver biopsy revealed poorly differentiated prostatic carcinoma without evidence of small cell differentiation, characterized by sheets and groups of cells with uniform nuclei and prominent nucleoli (Figure 2). Immunohistochemical studies were positive for PSA and negative for Chromogranin. (Chromogranin stain highlights the prostatic tumor cells exhibiting neuroendocrine differentiation.) There was no evidence of fibrosis. Review of the prostate biopsy demonstrated a similar morphology and immunoprofile. The patient elected not to pursue further therapy and entered hospice care.

DISCUSSION

While metastatic prostate cancer to the liver is not an uncommon finding at autopsy, being the third most common site after bone and lung, its presentation during life is uncommon. Radiologic examinations of over 500 patients with known metastatic prostatic disease identified only 3 cases with liver metastasis. It's even more rare for this tumor to result in a hepatic clinical presentation. After a review of literature (1966-present), we identified only 3 cases where liver involvement by metastatic prostatic carcinoma was noted based on clinical features, and in these cases the patients presented with obstructive jaundice. This is the first case, of which we are aware, whose presentation with intrahepatic portal hypertension lead to the identification of prostatic metastasis. This manifestation of hepatic metastatic disease has been reported with other tumor types (breast adenocarcinoma, colonic adenocarcinoma, and undifferentiated bronchial carcinoma).

Portal hypertension was clearly confirmed in this case by angiographic study, which also excluded Budd-Chiari syndrome. The patient had no other risk factors for the development of portal hypertension, and cirrhosis was excluded by transvenous biopsies. It is important to note that the extent of liver replacement by tumor was not appreciated based on CT imaging. This was ultimately confirmed by transvenous biopsy.

Metastatic prostate cancer to the liver is often associated with more aggressive androgen-independent disease. In particular, the rare small cell variant of prostatic carcinoma has been described as often spreading to the liver. Identification of this tumor is important as many of these patients will receive small cell carcinoma based chemotherapy, although survival only ranges from 7 to 17 months. In contrast, the survival of patients with typical prostatic carcinoma metastatic to the liver can be better, and treatment with agents such as intrahepatic diethylstilbestrol has resulted in survival times of up to 3 years after identification of the metastasis. Thus in an elderly man with hepatic dysfunction, consideration of hepatic involvement by prostate cancer can lead to the successful treatment and an increased lifespan for these rare patients.

In summary, we present a case of abrupt onset portal hypertension, associated with hepatic replacement by metastatic prostate carcinoma. This phenomenon should be considered in the differential diagnosis of hepatic dysfunction in patients with metastatic prostate carcinoma, particularly as standard imaging studies may be non-diagnostic.
REFERENCES


The mission of the Wisconsin Medical Journal is to provide a vehicle for professional communication and continuing education of Wisconsin physicians.

The Wisconsin Medical Journal (ISSN 1098-1861) is the official publication of the Wisconsin Medical Society and is devoted to the interests of the medical profession and health care in Wisconsin. The managing editor is responsible for overseeing the production, business operation and contents of the Wisconsin Medical Journal. The editorial board, chaired by the medical editor, solicits and peer reviews all scientific articles; it does not screen public health, socioeconomic or organizational articles. Although letters to the editor are reviewed by the medical editor, all signed expressions of opinion belong to the author(s) for which neither the Wisconsin Medical Journal nor the Society take responsibility. The Wisconsin Medical Journal is indexed in Index Medicus, Hospital Literature Index and Cambridge Scientific Abstracts.

For reprints of this article, contact the Wisconsin Medical Journal at 866.442.3800 or e-mail wmj@wismed.org.

© 2007 Wisconsin Medical Society