Primary Multicystic Undifferentiated Embryonal Sarcoma of the Liver in an Adult Presenting with Peripheral Eosinophilia

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ABSTRACT

Primary undifferentiated embryonal sarcoma of liver is an extremely rare pathologic entity in the adult population. An unusual case is reported of a 44-year-old female who presented with multiple hepatic cysts and peripheral eosinophilia, initially thought to be hydatid disease of the liver. Angiogram revealed neovascularization. Surgical biopsy showed an anaplastic mesenchymal neoplasm. Pathologic findings are presented and the relevant literature reviewed. Hepatic undifferentiated embryonal sarcoma should be included in the differential diagnosis of eosinophilia accompanying hepatic cysts.

Introduction

The term mesenchymoma or undifferentiated embryonal sarcoma applies to a sarcoma of the liver without specific histologic differentiation. Undifferentiated embryonal sarcoma is an infrequent tumor in children and has been rarely reported in adults.1,2,3,4,5,6 A variety of synonyms, reflecting the uncertain nature of these tumors, have been used in the literature, including fibromyxosarcoma, embryonal rhabdomyosarcoma, lipofibrosarcoma, and malignant mesenchymoma.1 An unusual case is reported of an undifferentiated hepatic sarcoma presenting with multiple hepatic cysts and marked peripheral eosinophilia mimicking hydatid cyst.

Case Report

A 44-year-old Puerto Rican female presented with a four month history of intermittent nausea and
vomiting, right upper quadrant pain, 30 lbs weight loss, and fever. Physical examination revealed right upper quadrant and flank tenderness. Leucocyte count was $14.3 \times 10^6$ microliter, hemoglobin 12.6 gm/dl, hematocrit 37 percent, MCV 74.3, and a differential count of 63 percent neutrophils, 8 percent bands, 4 percent lymphocytes, 1 percent monocytes, and 24 percent eosinophils. Alkaline phosphatase was 401 U/L (normal 30 to 115) and LDH 454 U/L (normal 60 to 200). Hepatic transaminases and bilirubin were normal. Chest x-ray and EKG were unremarkable. Examination of stool for ova and parasites was negative. Serologic studies for amoebiasis and echinococcal disease were also negative. Alpha fetoprotein was 101 ng/ml (normal 0 to 8.7) and CEA 1.8 ng/ml (normal 0 to 3). An abdominal sonogram revealed multiple echogenic lesions throughout the liver with the largest lesion, located in the right lobe, measuring $10 \times 9 \times 8.5$ cm in size. Computed tomography of the abdomen demonstrated irregular thick walled cystic lesions (figure 1). Endoscopic retrograde cholangiopancreaticogram showed dilatation of the biliary tree. Selective arteriography of the celiac axis demonstrated several large mass lesions in the liver which had abnormal neovascularity. Computed tomography of the brain was unremarkable.

Exploratory laparotomy revealed a massive degenerating septate mass in the right lobe of the liver, measuring approximately 10 cm in greatest diameter, with several satellite lesions. Biopsy of the liver showed undifferentiated tumor of mesenchymal origin. The patient did well post-operatively and was begun on chemotherapy with Adriamycin as a single agent. She was admitted to another hospital one week later and subsequently expired. No autopsy was obtained.

Pathologic findings. Light microscopic examination of the tumor showed a varied histologic pattern with predominant areas of highly anaplastic, round to oval cells with vesicular nuclei, prominent macronucleoli and a high nuclear:cytoplasmic ratio (figure 2). Other areas had distinctly spindle-shaped cells arranged in short fascicles with pleomorphic fusiform nuclei in a loose stroma (figure 3). In some areas, these spindly cells became more slender and

![Figure 1. Computerized tomogram. Undifferentiated embryonal sarcoma. Multiple, irregular, thick walled cystic lesions within the parenchyma of the liver are present, predominantly in the right lobe.](image-url)
FIGURE 2. Undifferentiated embryonal sarcoma. Anaplastic tumor cells with numerous abnormal mitotic figures. A few neoplastic cells with a bizarre epithelioid appearance are also seen. (Hematoxylin and eosin, × 200)

FIGURE 3. Undifferentiated embryonal sarcoma. One of the several sarcomatous areas which were noted throughout the tumor. Cells are spindly with pleomorphic nuclei and show numerous mitotic figures. A few binucleated cells are present. (Hematoxylin & eosin, × 200)
Figure 4. Undifferentiated embryonal sarcoma. A myxoid area showing numerous pleomorphic spindle-}
stellate with long cytoplasmic processes. No cytoplasmic cross striation was identifiable. Areas with a loose myxoid stroma containing spindle and stellate pleomorphic neoplastic cells, as well as multinucleated cells, were noted (figure 4). Scattered areas were seen with relatively large, bizarre, epithelioid-looking cells containing abundant eosinophilic cytoplasm, frequent multinucleation and an extremely high mitotic index. There was extensive tumor necrosis which in places was surrounded by an ill-defined fibrous capsular wall. No residual hepatic tissue was seen in the tumor. Occasional cells with periodic acid Schiff positive cytoplasmic droplets were noted. Immunohistochemical studies were done and are summarized in table I. Ultrastructural studies disclosed large primitive neoplastic cells with varying amounts of dispersed intermediate filaments and dilated rough endoplasmic reticulum consistent with an undifferentiated mesenchymal tumor (figure 5).

Discussion

Primary undifferentiated embryonal sarcoma of the liver is extremely rare in adults. Only 4 of 31 cases reported in a

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review from the Armed Forces Institute of Pathology\textsuperscript{1} were older than 15 years of age. Forbes et al.\textsuperscript{2} reviewed 25 cases of adult hepatic sarcomas and found only 4 to be undifferentiated embryonal sarcomas. There is a preponderance of females in these series of patients. The usual mode of presentation is right upper quadrant pain, mass, or swelling. Abnormal liver function tests and jaundice can be present at diagnosis. Patients may also have fever, weight loss, anorexia, and fatigue. Signs and symptoms may also mimic liver abscess\textsuperscript{3,4} or hydatid cyst, as in our case, and reflect the prominent necrosis and cystic degeneration seen in these tumors. Ultrasound of the liver can show various findings ranging from a predominantly solid echogenic mass to a cystic hypoechoic mass with multiple septations that form loculi of variable sizes.\textsuperscript{7} Computerized tomography may show large hypodense lesions in the liver with multiple septations.\textsuperscript{7} Liver scintiscans can be helpful in locating the lesion. Angiography usually shows a hypovascular pattern, although hypervascular and avascular patterns have also been reported.\textsuperscript{7} The characteristic histologic appearance has been described\textsuperscript{8,9} and is essentially similar to our case. Histogenesis remains obscure, but these tumors are thought to be of mesenchymal\textsuperscript{8} or fibrohistiocytic origin.\textsuperscript{10} Histologically, they are known to have a highly variable morphologic appearance, thus lacking any well defined criteria for their light microscopic diagnosis. In addition to sarcomatous regions with spindly cells containing elongated pleomorphic
nuclei, these tumors also have areas with predominantly epithelioid appearance. The cells are large and bizarre with occasionally abundant eosinophilic cytoplasm often showing periodic acid-Schiff positive, diastase resistant globules. Other authors have described distinct myxoid areas containing pleomorphic spindly cells.

Once the diagnosis is made, which is usually at laparotomy, the only chance for cure is a complete resection. Otherwise, the prognosis is poor with a median survival of less than 1 year. In the presence of residual or unresectable disease, aggressive therapy may be warranted provided the patient's performance status is good. Excellent palliation was seen in one patient using 5-Fluorouracil (5-FU) infusion and hepatic artery ligation. A recent case report demonstrated excellent response with combination chemotherapy and radiation therapy followed by elective surgery. Chemotherapy in this latter case consisted of vincristine, cisplatin, Adriamycin, cyclophosphamide, etoposide and dactinomycin. Radiation dose was 4680 cGy delivered in 26 treatments over 46 days.

The most unusual aspect of our patient was the presence of peripheral eosinophilia with multiple cysts in the liver, suggesting hydatid disease. The demonstration of neovascularity by means of celiac axis angiography pointed towards a malignant process. Hepatic undifferentiated embryonal sarcoma should be included in the differential diagnosis of eosinophilia accompanying hepatic cysts.

In summary, undifferentiated embryonal sarcoma of the liver is an extremely rare entity in the adult population. There appears to be a preponderance of females and the right lobe of the liver is most commonly involved. Prognosis in general is poor. This case report demonstrates that this tumor can mimic hydatid disease of the liver and be associated with eosinophilia. A high index of suspicion is required to pursue this diagnosis.

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References