Hepatic Hemangioendothelioma: The Need for Early Diagnosis and Resection

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The most frequent childhood hepatic tumors are infantile hemangioendothelioma, cavernous hemangioma, mesenchymal hamartoma, hepatoblastoma, hepatocellular carcinoma and, rarely, benign or malignant germ cell tumors [1]. Hepatic hemangioendothelioma is the most common vascular tumor in childhood, accounting for 12% of all childhood hepatic tumors, with most of the lesions being diagnosed in the first months of life. Spontaneous regression is expected in some cases. The differentiation between tumors that will regress and malignant tumors is not possible at present [2]. We present the case of an infant HHE, which progressed rapidly during less than 1 month causing abdominal distension, respiratory distress, and severe coagulopathy leading to gastrointestinal and pulmonary hemorrhage and death at the age of 6 months.

Patient Description

Our patient was born after an uncomplicated pregnancy and labor by spontaneous delivery with a birth weight of 4100 g. Fetal ultrasound performed at 30 weeks gestation was reported as normal. The patient had a normal perinatal course, and developed well until 5 months of age. Due to hepatomegaly, a laboratory workup was conducted revealing a complete blood count, serum electrolytes, bilirubin and liver enzymes all within normal limits. alpha-fetoprotein blood level was 459 ku/L (normal up to 5 ku/L). An abdominal ultrasound revealed liver enlargement with multiple liver masses. Computerized tomography scan of the abdomen showed diffuse liver enlargement with multiple nodules without calcification, ascites or lymph node enlargement. A fine-needle biopsy of the liver showed scattered aggregates of hyperchromatic epithelial cells with hepatoid features. The background showed blood forming elements and reactive inflammatory cells. The histologic findings were summarized as hepatoblastoma and the patient was treated with steroids and sent for chemotherapy. The parents were hesitant regarding chemotherapy and during a period of 2 weeks sought an expert's opinion. During that time they observed a significant enlargement of the abdomen that was the reason for the patient's referral to our hospital (French Hospital, Nazareth, Israel).

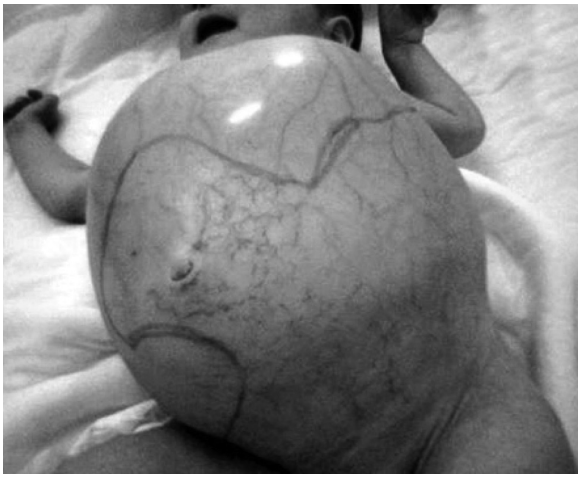
The initial physical examination disclosed tachypnea without cyanosis. His weight and length were in the 10th percentile, and the rest of the physical examination was normal except for a striking large abdomen with prominent superficial blood vessels. Firm and large masses were palpated on both sides of the abdomen [Figure].

Laboratory blood tests showed anemia, severe hepatic and coagulation abnormalities and increased α-fetoprotein serum level. Supportive treatments with vitamin K, fresh frozen plasma and oxygen were started. The infant's condition deteriorated rapidly, and death occurred after a few days due to hepatic failure, accompanied by massive gastrointestinal bleeding and pulmonary hemorrhage. Several fine-needle biopsies from different parts of the tumor were taken after death with the permission of the parents. The histology was compatible with infantile hepatic hemangioendothelioma.

Comment

We present a case diagnosed initially by imaging studies and fine-liver needle biopsy as hepatoblastoma. Over a few weeks, the child deteriorated, and a diagnosis of HHE was made postmortem.

Infantile HHE is a vascular tumor. Microscopically, the lesion is composed of vascular channels lined by a single continuous layer of plump endothelial cells in a supporting fibrous stroma that may contain well-preserved bile ducts (type 1 le-



Increased abdominal distension with prominent abdominal vessels. The line demarcates the tumor borders

HHE = hepatic hemangioendothelioma

sion). A type 2 lesion, seen in 20% of the cases, exhibits larger, pleomorphic and hyperchromatic cells along poorly formed vascular spaces often displaying tufting or branching [3] and staining positive for endothelial markers such as CD31, CD34, and Factor VIII. Clinical manifestations consist of abdominal distension, hepatomegaly, jaundice, congestive heart failure, dyspnea and coagulopathy leading to respiratory and cardiac compromise and bleeding with a high mortality rate despite medical treatment. Spontaneous regression is expected in some cases and repeated ultrasound to visualize this regression may be the practice of choice [4]. However, lesions may metastasize and the discrimination between "benign" and "malignant" behavior is not possible [2].

Our case showed a rapid progression. During less than 1 month the tumor acquired a huge volume, leading to respiratory distress and severe coagulopathy that caused gastrointestinal and pulmonary hemorrhage and death at the age of 6 months. Imaging, laboratory tests and fine-needle aspirations performed at the age of 5 months were mistakenly interpreted as hepatoblastoma. However, numerous histologic specimens taken after death from different sites of the liver changed the diagnosis to HHE.

Sharif and colleagues [4] concluded in their review that the disease seems more aggressive and faster growing in the pediatric population, particularly in very young children than reported in adults, and if resection of the tumor is possible this is the first choice of treatment [4]. The differentiation between HHE and other hepatic tumors is difficult by clinical and/or imaging studies, and it has been suggested that an initial laparotomy/laparoscopy should be done in most cases of childhood liver tumors [4,5].

Our case demonstrates rapid malignant progression of the tumor and the pitfalls that can occur in establishing the correct diagnosis. It also shows the importance of early surgical specimens, and accentuates the necessity of an early surgical resection to prevent rapid progression and deterioration in this patient population.

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