



UNIVERSITY of
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MEDICAL CENTER

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DEPARTMENT OF IMAGING SCIENCES

Imaging Sciences Interesting Cases

CASE 29

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CLINICAL PRESENTATION: A 4-month-old male who was found to have an abdominal mass on a well child visit to his primary care pediatrician. He had been doing well, without fever or gastrointestinal symptoms. An ultrasound and CT were performed. Open biopsy results showed hepatoblastoma. After a regimen of chemotherapy, a left hepatic lobectomy was performed.

IMAGING FINDINGS:



Figure 1 - Sagittal ultrasound image through the left lobe of the liver demonstrates a large mass which is mildly hyperechoic and heterogeneous.



Figure 2 - Non-enhanced CT demonstrates the large mass in the left lobe, which is hypoattenuating and heterogeneous. Focal area of higher attenuation anteriorly may represent calcification.



Figure 3 - Enhanced CT demonstrates peripheral enhancement of the mass, with decreased enhancement centrally. Focal areas of lower attenuation may represent necrosis.



Figure 4 - Non-enhanced CT from a different patient demonstrates a large heterogeneous mass with focal coarse calcification anteriorly.



Figure 5 - Enhanced CT from the same patient demonstrates heterogeneous enhancement, which is less than the normal liver parenchyma.

DIAGNOSIS: HEPATOBLASTOMA

DISCUSSION: Hepatoblastoma is the most common primary hepatic malignancy in childhood, usually presenting before the age of 3 years, with all cases occurring under the age of 5 years. It is twice as common in males. Clinical findings usually include a palpable abdominal mass, with abdominal pain, weight loss, nausea, and vomiting occurring less frequently. Serum alpha-fetoprotein levels are elevated in over 90% of patients, and may be used to monitor for recurrence after therapy.

The incidence of hepatoblastoma is associated with Beckwith-Wiedemann syndrome, hemihypertrophy, trisomy 18, familial polyposis coli, Gardner syndrome, Wilms tumor, biliary atresia, and in siblings of those with hepatoblastoma. Histologic subtypes include epithelial and a mixed type (epithelial and mesenchymal). The main differential considerations in the age-appropriate group are hemangioendothelioma and metastatic neuroblastoma. Hemangioendotheliomas have finer calcifications. Hepatocellular carcinoma is

usually seen in older children.

Ultrasound is often the first radiologic exam performed on a child with an abdominal mass. Findings include a large heterogeneously hyperechoic mass. Hepatoblastoma is more common in the right side of the liver. Hyperechoic shadowing foci within the mass are seen with calcification, and anechoic areas with hemorrhage and necrosis. Doppler can evaluate for vessel invasion.

A CT exam is performed to evaluate extent of the tumor and for metastatic disease, which most commonly involves the lungs. On non-enhanced CT, the lesions will be hypoattenuating compared to normal liver parenchyma. On enhanced CT, there is relatively lower enhancement centrally peripheral enhancement. Coarse and chunky calcifications are often present in the mixed type.

MR examination demonstrates a heterogeneous hypointense mass on T1-weighted imaging, with hyperintense foci representing hemorrhage. T2-weighted imaging demonstrates a heterogeneously hyperintense mass with fibrous septa, which are hypointense.

Photopenia is seen on Tc-sulfur colloid examination. Gallium scanning may demonstrate increased uptake within the mass. Angiography is now rarely utilized, however, would demonstrate a hypervascular mass.

Diagnosis is made by biopsy. Treatment is chemotherapy and resection.

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