

Short Report

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Multisegmental hepatoblastoma with vascular compression in a 1-year-old: A radiopathological case insight

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Abstract

Introduction: Hepatoblastoma is the most common malignant hepatic tumor in early childhood, usually presenting before the age of three. Imaging and tumor markers such as alpha-fetoprotein (AFP) play a crucial role in diagnosis, staging, and management planning.

Case presentation: A 1-year-old female presented with progressive abdominal distension and a firm right upper quadrant mass. Ultrasound revealed a large, well-defined, heterogeneous hyperechoic lesion in the right lobe of the liver with internal vascularity and coarse calcifications. The mass appeared to displace adjacent hepatic vasculature. Plain abdominal radiograph demonstrated a soft tissue opacity occupying the right upper quadrant with displacement of bowel loops. CECT of the abdomen showed a large, lobulated, heterogeneously enhancing hepatic mass involving segments V, VI, VII, and VIII, with internal necrosis and calcification. The lesion exerted mass effect over the intrahepatic IVC, right and middle hepatic veins. Mild ascites and multiple periportal and mesenteric lymph nodes were noted. The lesion was radiologically classified as PRETEXT III. Serum AFP level was markedly elevated at over 3,000 ng/mL. Histopathology confirmed epithelial-type hepatoblastoma.

Conclusion: This case demonstrates the classic multimodal imaging appearance and clinical profile of hepatoblastoma in infancy, including elevated AFP and characteristic vascular compression. Early diagnosis through imaging and tumor markers is vital for accurate staging and timely management.

Keywords: Hepatoblastoma; Pediatric liver tumor; Alpha-fetoprotein; Vascular compression; Pretext staging; CT imaging; Ultrasound, Radiology case.

Introduction

Hepatoblastoma is the most frequent primary liver malignancy in children, typically diagnosed in the first three years of life. It arises from embryonal liver tissue and has strong associations with elevated serum alpha-fetoprotein (AFP) levels. Early detection is essential as the disease may progress rapidly, and timely intervention improves prognosis. Imaging plays a critical role in diagnosis, staging, surgical planning, and treatment response evaluation.

Case Presentation

A 1-year-old female was brought with complaints of increasing abdominal girth and a palpable mass in the right upper quadrant. Ultrasonography revealed a large, heterogeneous, hyperechoic lesion in the right lobe of the liver with coarse calcifications and internal vascularity. The lesion displaced the adjacent hepatic vasculature. A plain abdominal X-ray showed displacement of bowel loops due to a large soft tissue opacity in the right upper quadrant. CECT abdomen revealed a large, lobulated, heterogeneously enhancing mass involving segments V, VI, VII, and VIII of the liver. The mass exhibited areas of internal necrosis and calcification. It caused significant mass effect over the intrahepatic inferior vena cava, right hepatic vein, and middle hepatic vein. Additional findings included mild ascites and multiple periportal, peripancreatic, and mesenteric lymph nodes. The liver lesion was categorized as PRETEXT III. Serum AFP levels were elevated >3,000 ng/mL. Ultrasound-guided biopsy confirmed epithelial-type hepatoblastoma.

Discussion

Hepatoblastoma constitutes approximately 1% of pediatric cancers and typically presents between 6 months and 3 years of age. It is most commonly located in the right hepatic lobe. The PRETEXT (PRE-Treatment EXTent of tumor) staging system is widely used in treatment planning. Imaging modalities such as ultrasound and CT scan are essential for identifying lesion characteristics, vascular involvement, and regional lymphadenopathy. Serum AFP levels serve as a sensitive tumor marker, often markedly elevated in hepatoblastoma. Histologically, epithelial-type is the most common subtype. Treatment generally involves surgical resection and chemotherapy. Radiological assessment is crucial for staging, surgical candidacy, and monitoring treatment response [1-3].

Conclusion

This case of multisegmental hepatoblastoma in a 1-year-old child underscores the classical radiologic features, vascular involvement, and the importance of tumor markers. Accurate imaging and timely diagnosis are vital in guiding appropriate treatment and improving clinical outcomes.

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