A Rare Case of Mixed Adult Hepatoblastoma Mimicking as Hepatocellular Carcinoma*

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Abstract

Hepatoblastoma (HB) is a rare pediatric malignant tumor of the liver. Most of these tumors arise in the embryo and this is usually discernible in the first 3 years of life; thus, its occurrence in the adult population seems to be unusual. We present this case due to its rarity and its potential to mimic other primary liver tumors in adults such as HCC. To the best of our knowledge with literature review, there are only 40 cases of adult HB reported worldwide.

In this paper, we report a case of a 49-year-old female, diagnosed with Chronic Hepatitis B, admitted due to abdominal pain. Physical examination revealed hepatomegaly. Liver function test was unremarkable. AFP was elevated at >50,000ng/ml. Triphasic CT scan revealed a hypodense mass in the right lobe of the liver measuring approximately 11 x 11 x 13cm suggestive of HCC. Subsequently, patient underwent right hepatectomy. Pathological examination, however, demonstrated that the tumor showed a malignant neoplasm with epithelial and mesenchymal components consistent with adult HB, mixed type. Since treatment of adult HB is not yet established, studies have suggested that it is logical to follow the treatment protocol for childhood HB. Hence, this patient underwent chemotherapy with Cisplatin, Vincristine and 5-Fluorouracil.

The low incidence of HB in adults presents a diagnostic challenge, requiring a high index of suspicion and a thorough evaluation. Since prognosis could be improved with early detection and treatment, it is important for clinicians not to overlook HB.

Keywords: hepatoblastoma, HCC, liver tumor, hepatomegaly

INTRODUCTION

Hepatoblastoma (HB) is a primary malignant hepatic tumor in children. This accounts for approximately 1% of all pediatric malignancies. Most of these tumors arise in the embryo and is usually discernible in the first three years of life [1].

Conversely, the occurrence of hepatoblastoma in adults seems to be extremely unusual, thus it is considered as a rare cause of primary malignant liver tumor in adults. Due to this, patient may be diagnosed at late stages of the disease leading to poor prognosis in this group with a mean survival time of two months and one-year survival of 24 %. Most of the cases are asymptomatic and may be diagnosed at late stages of the disease. With regards to treatment, no therapeutic strategies have yet been established because of the rarity of the disease. [2].

In this paper, we report a case of a 49 year-old female with chronic hepatitis B, initially diagnosed with hepatocellular carcinoma but was found to have mixed adult hepatoblastoma on histopathology.

OBJECTIVES

General Objective:

To report a rare case of mixed adult hepatoblastoma mimicking as hepatocellular carcinoma in the setting of liver cirrhosis in a 49-year-old, Chinese female.

Specific Objective:

- To briefly discuss the epidemiology, incidence of Adult Hepatoblastoma based on published literature

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- To discuss the diagnostic modalities and work up of Adult Hepatoblastoma

- To review the therapeutic strategies of the management of Adult Hepatoblastoma

THE CASE

A 49 -year old Chinese female was referred to our institution due to a 10 day history of right upper quadrant pain associated with anorexia and weight loss. The patient is known to have liver cirrhosis due to chronic hepatitis B infection without previous episodes of liver decompensation. She is maintained on Tenofovir 300mg tablet once a day. She denied use of alcohol, drugs and contraceptive pills. There was no family history of liver disease, cancer, or autoimmune diseases.

Physical examination was notable for significant hepatomegaly-12 cm below the right midclavicular line with direct tenderness over the involved area. No jaundice, edema and ascites were noted.

Laboratory data showed the following values: alpha-fetoprotein >50,000ng/ml, alanine aminotransferase (ALT) 25IU/L, total bilirubin 0.8mg/dl, alkaline phosphatase 136mg/dl and INR 1.35. Complete blood count was unremarkable. Test for HBV viral load showed 122, 984 IU/ml. Chest Xray was unremarkable. Triphasic CT scan (Figure A) revealed enlarged liver and a hypodense mass was with a small punctate calcification in the right lobe of the liver extending from segments 6, 7 and 8 with characteristic arterial hyperenhancement and subsequent hypoenhancement in the portal venous and delayed phases ("washout") suggestive of hepatocellular carcinoma. This measures approximately 11x11x13cm. Margins were well circumscribed with a pseudocapsule. Splenomegaly was also noted on CT scan.

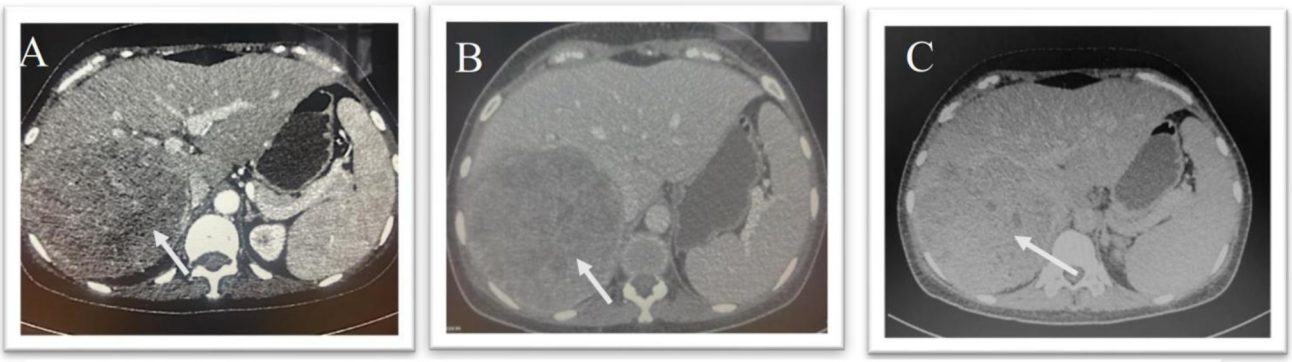

Figure 1. Triphasic CT scan: arterial (A) Arterial phase showing encapsulated mass with heterogenous enhancement. (B) Washout appearance in the portal venous phase (C) Delayed phase showing an isodense area of the mass

Subsequently, patient underwent right hepatectomy. At surgical exploration, a large mass measuring 12 x 13cm was occupying the right lobe of the liver (Figure 2A). On serial sectioning, a largely necrotic, white tan mass with well-defined borders was noted (Figure 2B).

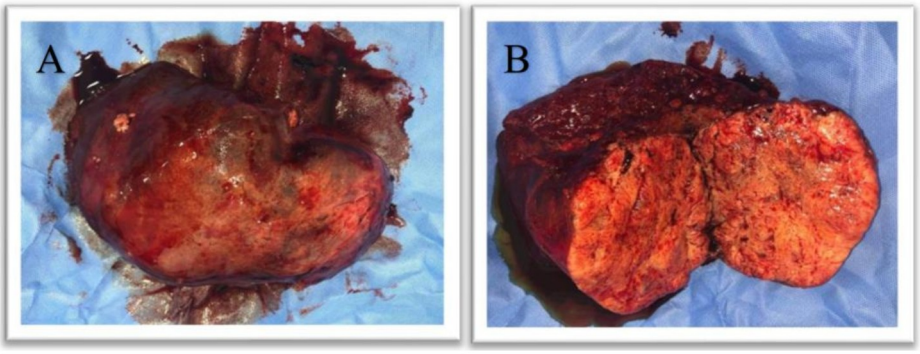

Figure 2. A. Right lobe of the liver showing a well-defined tumor mass. B. Necrotic mass on serial sectioning

Pathological examination, however, demonstrated that the tumor showed a malignant neoplasm with epithelial and mesenchymal components. The epithelial component exhibited embryonal cells arranged in solid sheets with prominent glandular morphology and pseudorosettes. The mesenchymal component displayed an enlarged, elongated bizarre nuclei with prominent nucleoli. This was consistent with adult hepatoblastoma, mixed type. Hepatoblastoma was also confirmed by histologic examination with immunohistochemistry stains using glypican and cytokeratin 19 as shown in the images below.

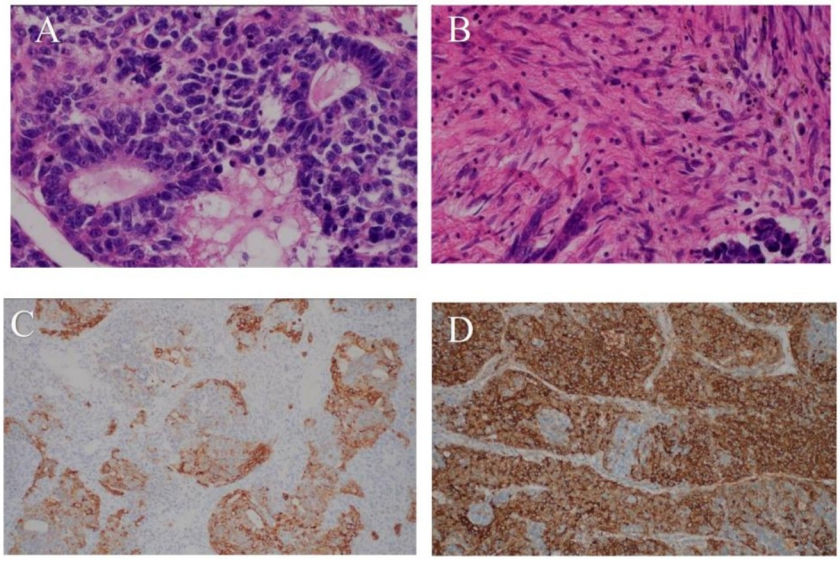

Figure 3 . A. HPO, B. HPO C. CK19 D. Glypican Stain. Microscopic examination shows a malignant neoplasm mainly composed of embryonal cells arranged in solid sheets, nests, with prominent glandular/acinar morphology and pseudorosettes. These are interspersed with areas of necrosis, cyst formation, and mesenchymal elements with variable pleomorphism.

Postoperatively, the patient's hospital course was uneventful, and the patient was discharged 5 days after surgery. Since treatment of adult HB is not yet established, studies have suggested that it is logical to follow the treatment protocol for childhood hepatoblastoma. Hence, this patient had combination chemotherapy with Cisplatin, Vincristine and 5-Fluorouracil. A good response to the treatment was observed with a repeat AFP of 869 ng/ml and a repeat CT scan imaging showed no tumor recurrence.

DISCUSSION

Hepatoblastoma (HB) is the most common primary malignant liver tumor in children.

This accounts for 0.2-5.8% of total malignancies of the liver and for 25%-45% of primary hepatic tumors in children [3]. Their annual incidence is only 0.5-1.5 per 1,000,000 people [4]. Most of the cases occur in patients under 5 years of age.

In this case, we report a Chinese female diagnosed with mixed adult hepatoblastoma. The exact incidence of adult HB in the literature is unknown; however, according to the study of Wang and Liu, only 40 cases of HB has been reported worldwide, one of which was from China. [5]. Hence, the occurrence of HB in adults is extremely rare and the prognosis is poor because they are usually diagnosed late.

A variety of synonyms have been used to describe HB such as hepatic embryonic mixed tumor, mixed tumor of the liver, adult hepatoblastoma, and mixed adult hepatoblastoma. The latter is the most commonly accepted term today [5].

HB originate from the primitive hepatic stem cells that give rise to epithelial cells of the liver. It has two anatomical variants: the epithelial

type and the mixed epithelial and mesenchymal type. The mixed type contains foci of mesenchymal differentiation consisting of primitive mesenchyme, osteoid, cartilage, and striated muscle [6].

The pathologic mechanism of HB has been elusive. It may occur sporadically or in association with hereditary syndromes such as familial adenomatous polyposis (FAP) and Beckwith- Wiedemann syndrome. It should also be mentioned that in 25% of cases, HB is associated with liver disease such as liver cirrhosis, hepatitis B and hepatitis C [7]. Due to the presence of hepatitis B in our case, we initially thought that the tumor was HCC but it turned out to be an adult hepatoblastoma.

The initial diagnosis of HB is mainly based on imaging such as ultrasound (US), computed tomography (CT) or magnetic resonance imaging (MRI). These imaging modalities are used to define the extent of tumor involvement and aid in pre-surgical planning [9]. However, the final diagnosis of adult hepatoblastoma relies on histopathology. Our patient's biopsy report confirmed the diagnosis.

Surgical resection is the cornerstone treatment of hepatoblastoma . Approximately 60% of tumors are unresectable at presentation [10]. If the tumor is unresectable and resistant to chemotherapy, a liver transplant should be offered because this has a good long-term survival rate [10]. Since, there is no standardized chemotherapy for adult hepatoblastoma, studies have suggested to follow the pediatric treatment protocol. The cisplatin/5-fluorouracil (5-FU)/vincristine (VCR) combination is regarded as the accepted chemotherapeutic treatment in hepatoblastoma. In addition, a-fetoprotein (AFP) levels are used as a guide to determine response to therapy [11].

The prognosis of adult hepatoblastoma is generally poor especially if surgery is not possible or tumor recurs after surgery. In adults, the reported cases survived for only 2 weeks to 38months (mean survival duration, 6 months) [12].

CONCLUSION

The low incidence of HB in adults presents a diagnostic challenge, requiring a high index of suspicion and a thorough evaluation. Since prognosis could be improved with early detection and treatment, it is important for clinicians not to overlook HB.

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