Case Report

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Primary hepatic mucosa-associated lymphoid tissue lymphoma and hemangioma with chronic hepatitis B virus infection as an underlying condition

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Summary **Primary hepatic mucosa-associated lymphoid tissue (MALT) lymphoma has a low incidence and is a rare subtype of hepatic malignant lymphoma. Described here is a rare case of primary hepatic MALT lymphoma and hepatic hemangioma with chronic HBV infection as an underlying condition. Possible treatment modalities, which should be selected in accordance with tumor size, tumor location, tumor number, and underlying liver disease, are discussed in conjunction with a review of the literature. In addition, the potential use of hepatic resection, radio frequency ablation (RFA), or radiotherapy followed by chemotherapy *via* the R-CHOP regimen is also discussed.**

Keywords: Primary hepatic mucosa-associated lymphoid tissue lymphoma, hepatic hemangioma, chronic hepatitis B virus infection, treatment modality

1. Introduction

Primary hepatic malignant lymphoma has an extremely low incidence, accounting for 1% of all malignant lymphomas, although secondary involvement of the liver is common in lymphoma (*1,2*). Primary hepatic mucosa-associated lymphoid tissue (MALT) lymphoma has an even lower incidence and is a subtype of hepatic malignant lymphoma. There are several case reports regarding hepatic MALT lymphoma with or without hepatitis C virus (HCV) infection, but there were only 2 cases involving hepatitis B virus (HBV) infection and no mentions of concurrent hepatic hemangioma or relevant treatment modalities. Described here is a rare case of primary hepatic MALT lymphoma and hepatic hemangioma with chronic HBV infection as an underlying condition. After surgery, this case was followed for 40 months. Here, possible treatment modalities are discussed.

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2. Case presentation

A 53-year-old Chinese male underwent a routine abdominal ultrasound (US) in January 2011. The patient had a history of HBV infection noted 20 years ago. He had been undergoing a routine physical examination including liver enzymes, concentrations of serum a-fetoprotein (AFP), and abdominal US every 6-12 months.

Routine abdominal US revealed a mass with a diameter of 4.5 cm in liver segments 4-8. This mass was identified as a malignant hepatic tumor based on contrast-enhanced US but could not be subgrouped into hepatocellular carcinoma (HCC) or other malignancies (Figure 1A). Another mass with a diameter of 1 cm was found on the surface of liver segment 5. This second mass was identified as hepatic hemangioma. Subsequent magnetic resonance imaging (MRI) was unable to subgroup this hepatic malignancy (Figure 1B). Serum AFP was 3.3 ng/mL, and liver function was Child-Pugh class A. There were no abnormal findings in gastroscopy and no gastric MALT lymphoma according to MRI.

The patient subsequently underwent a nonanatomic hepatic resection of the tumor in segments 4-8 and the tumor in segment 5 rather than a biopsy since HCC could not be ruled out and since the patient had an

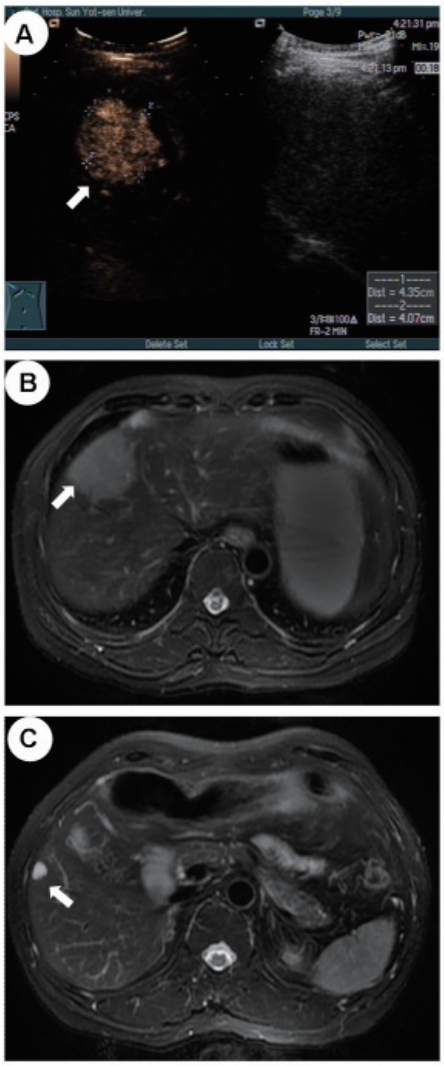

Figure 1. Preoperative imaging study. Contrast-enhanced ultrasonography (US) revealed a mass with a diameter of 4.5 cm, which was identified as a malignant hepatic tumor (white arrow), in liver segments 4-8 **(A)**; T2-weighted magnetic resonance imaging (MRI) revealed a mass in liver segments 4-8 **(B)** that could not be subgrouped and another mass in segment 5 that was diagnosed as hemangioma **(C)**.

acceptable liver reserve and no obvious liver cirrhosis. The surgical margin was > 1 cm. A specimen of the tumor from liver segments 4-8 is shown in Figure 2. Immunohistochemistry results indicated positivity for CD3 (+), positivity for CD45Ro (+), strong positivity for CD20 (+++), and strong positivity for CD79a (+++) (Figure 3). Based on its morphological and immunohistochemical features, this tumor was diagnosed as primary hepatic MALT lymphoma (low grade). The tumor in segment 5 was microscopically diagnosed as hepatic hemangioma according to hematoxylin and eosin staining.

The patient received 4 continuous courses of postoperative chemotherapy starting on March 1, 2011. The regimen was R-CHOP (rituximab 600 mg day 0, cyclophosphamide 1,000 mg day 1, pirarubicin 70 mg day 1, vincristine 2 mg day 1, prednisone 100 mg days 1-5). Once therapy ended the patient recovered

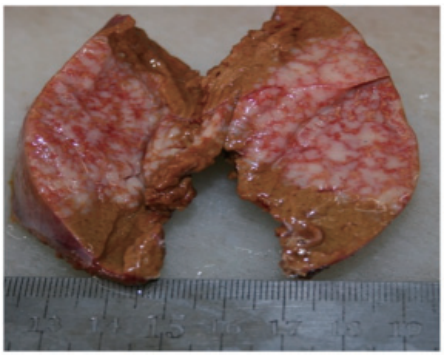

Figure 2. Specimen of the tumor from segments 4-8. Gross appearance of the tumor in liver segments 4-8. The cut surface of the tumor had a white-yellow medullary pattern.

uneventfully. No recurrence inside or outside of the liver was noted during follow up.

3. Review of the literature and discussion

The concept of MALT lymphoma in the gastrointestinal tract was first proposed by Isaacson and Wright in 1983 (*3*), and subsequent studies indicated that MALT lymphoma could involve many other sites, such as the thyroid glands, lungs, thymus, salivary glands, and liver, that are devoid of normal lymphoid tissue (*4-8*). MALT lymphomas account for approximately 7% to 8% of all non-Hodgkin lymphomas (*9*). Cases of hepatic MALT lymphoma with HCV infection have been reported, but cases without HCV infection have also been reported (*10-14*). Whether HCV infection can lead to hepatic MALT lymphoma or not remains unclear. There are only 2 reported cases of MALT lymphoma (*15,16*) with HBV infection. The correlation between HBV and hepatic MALT lymphoma remains unclear, although hepatic MALT lymphoma is thought to be associated with specific immune reactions or autoimmune disorders.

To date, the diagnosis of hepatic MALT lymphoma can only reached based on pathology and immunohistochemistry. There are no positive serum markers, and imaging studies such as MRI, computed tomography, and US do not yield patterns with features specific to hepatic MALT lymphoma (*17*).

The current patient was determined to have a malignant liver tumor preoperatively but this tumor could not be accurately diagnosed as hepatic MALT lymphoma, so the patient did not undergo a biopsy because of risk of possible needle seeding if the tumor was HCC. That said, low-grade lymphomas are characterized as indolent and having a favorable clinical course (*18*).

The clinical features of hepatic MALT lymphoma can affect the choice of treatment modality. Most cases of hepatic MALT lymphoma reported in the literature involve a hepatic resection. However, radiotherapy alone was performed in 1 case and resulted in long-

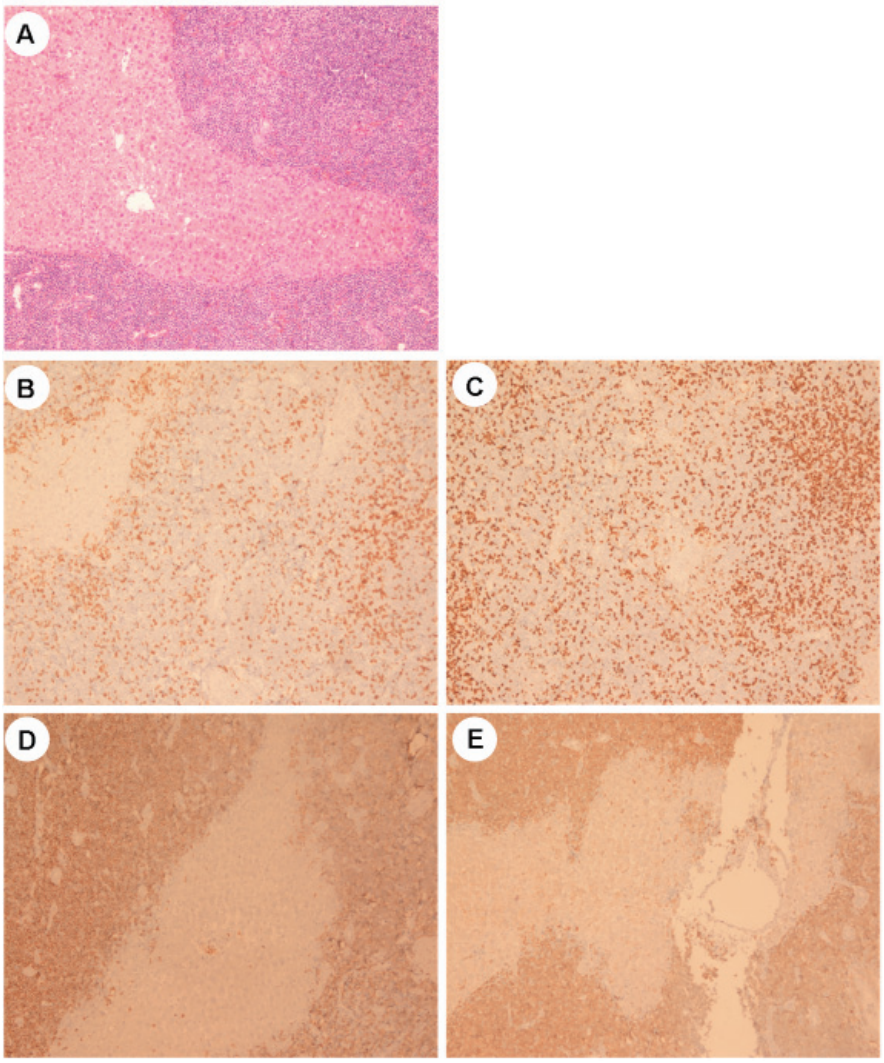

Figure 3. Microscopic examination of tumor specimens from liver segments 4-8 (×100). Lymphoid cells infiltrated along Gleason's sheath according to hematoxylin and eosin staining **(A)**. Immunohistochemistry indicated diffuse positivity for CD3 (+) **(B)**, diffuse positivity for CD45Ro (+) **(C)**, and strong positivity for CD20 (+++) **(D)** and CD79a (+++) (E).

lasting remission of 6 years (*19*). Radio frequency ablation (RFA) was performed in another case and subsequent rituximab chemotherapy resulted in a disease-free period of 24 months as of when the study was published (*20*). Since hepatic MALT lymphoma is a systemic form of non-Hodgkin lymphoma and based on reported cases, a hepatic resection was performed in the current case followed by 4 courses of chemotherapy *via* the R-CHOP regimen. Once therapy ended, the patient recovered uneventfully, and the patient has been disease-free for 40 months as of today. Rituximab is said to have a combination of immune-mediated effects, including complement-mediated lysis, antibody-dependent cell-mediated cytotoxicity, and direct effects induced by CD20 ligation leading to apoptosis (*21*). The CHOP regimen has been recommended for treatment of non-Hodgkin lymphoma (*22,23*). Radiotherapy, RFA, or hepatic resection might be selected as a local therapy to treat hepatic MALT lymphoma. As hepatic resection is the standard therapy for HCC and RFA is an option for small HCC, RFA and hepatic resection can reasonably be used to treat hepatic MALT lymphoma, which is more indolent than HCC. A needle biopsy should be performed on patients without HBV or HCV infection. A needle biopsy should also be considered for those with HBV or HCV infection, and it should be performed by an experienced doctor. Hepatic resection can be used to treat local hepatic MALT lymphoma without severe cirrhosis. RFA can be used to treat small hepatic MALT lymphoma (usually less than 3 cm in diameter) with severe cirrhosis. Radiotherapy can be attempted for diffuse or unresectable hepatic MALT lymphoma, and chemotherapy should subsequently be performed following the R-CHOP regimen since this regimen is effective at treating MALT lymphoma and hepatic MALT lymphoma cannot be ruled out as a systemic disease.

In conclusion, described here is a rare case of primary hepatic MALT lymphoma and hepatic hemangioma with chronic HBV infection as an underlying condition. A treatment modality should be selected in each case in accordance with the tumor size, tumor location, tumor

number, and underlying liver disease. Hepatic resection, RFA, or radiotherapy can be performed followed by chemotherapy *via* the R-CHOP regimen.

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