

Safety of biopsy in liver hemangiomas

Karaciğer hemanjiyomlarında biyopsinin güvenilirliği

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Hemangiomas are the most common tumors of the liver. Almost all cases are easily detected by ultrasonography, computed tomography, magnetic resonance imaging, and erythrocyte-tagged technetium-99m scintigraphy. In case of inconclusive radiologic features and a history of malignancy or underlying liver disease, liver biopsy is indicated. Bleeding is the most feared complication of biopsy of hemangiomas due to its highly vascular structure. In our clinic, we biopsied seven patients with suspected masses and they were diagnosed histopathologically afterwards as having hemangiomas. We did not observe any complication including bleeding during or after the procedure. Although the case number is too small to reach a definite conclusion, we think that our report deserves attention in showing that concerns about bleeding during biopsy of hemangiomas may be overstated.

Key words: Hemangioma, liver biopsy, hemorrhage

Hemanjiyomlar karaciğerin sık görülen tümörleridir. Neredeyse tüm vakalara ultrasonografi, bilgisayarlı tomografi, manyetik rezonans görüntüleme ve teknesyum işaretli eritrosit sintigrafisi ile tanı koymak mümkündür. Görüntüleme yöntemleriyle hemanjiyom varlığının dışlanamadığı vakalarda özellikle malignansi öyküsü ya da altta yatan karaciğer hastalığı öyküsü varsa biyopsi gerekir. İleri derecede vasküler yapıda olması sebebiyle hemanjiyom biyopsilerinde kanama komplikasyonlarından çekinilir. Kliniğimizde 7 hastada şüpheli kitlelerden yaptığımız biyopsinin sonucunda hemanjiyom tanısı elde edilmiş, ancak işlem esnasında ve sonrasında kanama da dahil olmak üzere herhangi bir komplikasyonla karşılaşılmaştır. Vaka sayımızın kısıtlı olmasına rağmen bu sonuçların hemanjiyomlarda biyopsiden çekinmenin abartıldığı olduğu konusunda dikkat çekici olduğunu düşünmekteyiz.

Anahtar kelimeler: Hemanjiyom, karaciğer biyopsisi, kanama

INTRODUCTION

Hemangiomas are the most common benign tumors of the liver (0.4-20%) (1). They are vascular in origin. Eighty-five percent are asymptomatic. Most are incidentally detected at imaging studies done for other reasons. Hemangiomas are important masses due to confusion in differential diagnosis of malignancy and cysts in spite of their clinical features, complications, and prognosis. There is widespread perception that liver biopsy is contraindicated in hemangiomas due to high risk of bleeding.

CASE REPORTS

Between 2000 and 2004, tru-cut biopsy guided by ultrasonography (US) was performed for seven indeterminate masses in seven patients in our clinic. Three were male and four were female. Mean age was 59.2 years and mean diameter of the

masses was 5.8 cm. One had cirrhosis of Child Pugh class A caused by hepatitis B. Diagnosis of cirrhosis was based on clinical and laboratory findings. None of the patients had ascites.

The invasive approach was inevitable because clinical features, laboratory findings, and imaging studies were fruitless in reaching a definite diagnosis. There was no history of malignancy elsewhere in the body. Alpha fetoprotein level was below 10 IU/L in all cases. Liver enzymes were lower than two times upper normal limit in the cirrhotic patient and one non-cirrhotic patient. The rest of the patients had normal levels.

Ultrasonography (US) was done for all cases. Thereafter either contrast-enhanced computed tomography (CT) or gadolinium enhanced-magnetic resonance imaging (MRI) (7 vs. 2) was performed in addition. RBC labeled scintigraphy was

performed only in one case because of unavailability. Six cases had solitary lesion (5 on the right, 1 on the left) and the cirrhotic patient had multiple (3 lesions). Five out of seven cases had peripheral hemangiomas. The lesion was centrally located in other cases. The patient with multiple tumors had two small (<2 cm) centrally located lesions and one peripheral lesion. The peripheral lesion was chosen for biopsy because of its larger size and because it was more accessible.

Since one patient had underlying liver disease and multiple lesions, and other cases had tumor of more than 1 cm in diameter and inconclusive features on imaging modalities, biopsy was performed. Atypical features were mixed echo and ill-defined margins on US, heterogeneous appearance and hypoattenuation on CT in contrast to the characteristic hyperattenuation, complete and rapid enhancement in contrast to the characteristic early phase nodular peripheral enhancement towards center on MRI, and incomplete filling of the lesion on scintigraphy. All patients' platelet counts were above 50000/ml and prothrombin time was shorter than 3 seconds over the control time. The lesions were not closely located to the gallbladder or to major hepatic vascular structures.

18-gauge tru-cut biopsy needle was used routinely. The procedure was done on an outpatient basis. Two passes were performed in only one patient; adequate tissue core was recovered from the remaining cases with the initial pass. The patients remained recumbent after the procedure for four hours. Pulse rate and blood pressure were recorded every 15 mins for the first hour and every 30 mins for the next three hours. The patients were then allowed to leave the hospital. They were informed about symptoms of possible complications following the procedure, i.e. bleeding, fainting, vertigo, severe abdominal pain, and dyspnea. The patients were cautioned to contact the staff as soon as possible if the outlined symptoms occurred within 24 hours. One patient was reexamined due to severe abdominal discomfort, but physical examination and ultrasound yielded no signs of complication. No complication including bleeding was observed during or after the procedure. Histopathologic evaluation provided a diagnosis of hemangioma. All patients were invited by telephone for repeat US examination six months after the procedure; four did not return for reex-

amination. Size of the lesion did not change in two. The cirrhotic patient had larger central lesions in the repeat US, and a diagnosis of hepatocellular carcinoma was made.

DISCUSSION

Ninety-five percent of hemangiomas are easily diagnosed with the help of imaging procedures like US, CT, MRI, and erythrocyte-tagged technetium-99m scintigraphy. Biopsy is not warranted in those cases. Although US is non-invasive, cost-effective, and easily performed, it is a suggestive and not a diagnostic modality for hemangiomas. US is an operator-dependent technique; its success in recognizing hemangiomas is highly dependent on the experience of the sonographer. It provides less satisfactory images in obese patients. Diffuse fatty infiltration of the liver may result in an atypical echo-poor appearance of the hemangioma. More specific imaging methods are needed for diagnosis of hemangiomas. Because of its vascular structure and dynamic features, dynamic contrast-enhanced CT is the preferred modality when CT is performed. Hemangiomas are therefore visualized both in arterial and venous phases.

Sometimes biopsy is warranted because of indeterminate features on imaging studies or technical restriction. This is especially the case in differential diagnosis of hepatoma, focal nodular hyperplasia, adenoma, and hypervascular metastasis. There are four types of needle biopsy: percutaneous blind needle biopsy, a visually guided needle biopsy at laparoscopy, guided fine-needle biopsies with US or CT, and the transvenous liver biopsy (2). US guidance allows lower complication rates (3). Transvenous liver biopsy is especially useful in patients with impaired coagulation parameters. Another alternative approach for bleeding diathesis is embolization of biopsy tract with gelfoam or thrombin. Bleeding complication rate is low (0-2.8%) (4, 5). Bleeding complication is related to operator experience and severity of coagulation disorders (6). Comparison of bleeding rates favors transcutaneous biopsy instead of plugged liver biopsy (7).

Hemangiomas should be evaluated in context of approach to the liver masses. The American College of Radiology (ACR) proposes a diagnostic guideline for liver masses including hemangiomas (8). History of malignancy and radiologic features compatible with benign or malignant masses de-

termine the type of imaging study that shall be preferred at first and during follow-up and determine the need for biopsy. An appropriateness criteria scale from 1 to 9 has been developed.

Liver masses with typical imaging features of simple cyst or hemangioma in patients who are not known to have, or are not suspected of having, a malignancy may be classified as benign. There is no need for further evaluation of the mass by other radiologic means and radiologic follow-up may be recommended at an appropriate interval (appropriateness rate=7). US is the most appropriate imaging technique (appropriateness rate=8). Biopsy is not preferred (appropriateness rate=2).

Liver masses with typical imaging features of simple cyst or hemangioma in patients who are known to have a malignancy may be considered benign. However, if there is any doubt that the mass is benign, follow-up imaging (using the same test with which the lesion was initially detected) should be performed to ensure there is no change in the lesion appearance (appropriateness rate=8). Biopsy is also not warranted (appropriateness rate=2).

When the features of the imaging modalities are inconclusive, indeterminate masses more than 1 cm in size can be biopsied in patients who are not known to have, or are not suspected of having, a malignancy or liver disease (appropriateness rate=6).

Indeterminate masses more than 1 cm in size are biopsied in case of suspicion or evidence of malignancy or liver disease (appropriateness rate=8).

The most common complication of biopsy is bleeding despite underlying pathology. Currently, the opinion that risk assessment is somewhat overstated is gaining in popularity. Bleeding occurs either as oozing through the puncture site or as intraperitoneal, intrathoracic, intrahepatic, hemobilia, and arteriovenous fistulae in massive amounts. The diagnosis of hepatic hemangiomas by fine needle puncture is sometimes problematic because the cytological identification of benign endothelial cells is difficult. Tru-cut biopsy provides greater amount of tissue for histopathologic examination though bleeding risk is higher. In other words, the success of diagnostic sampling and bleeding rate is directly proportional to the size of the biopsy needle. Generally accepted criteria be-

fore biopsy include platelet count above 50,000/ml and prothrombin time less than 3 seconds over control. Platelet function is as important as the number.

In contrast to the widespread perception that biopsy is contraindicated in highly vascular masses, namely hemangiomas, some studies show contradictory results. Preliminary reports included small numbers of cases. Bondestam *et al* (9). and Caturelli (10) experienced no bleeding during fine needle aspiration biopsy (FNAB) of patients with hemangiomas (in 3 and 6 patients, respectively). In a study done by Taavitsainen *et al* (11), only one out of 36 FNAB of hemangiomas was complicated with serious bleeding requiring transfusion. Other reports showed lower bleeding rates in FNAB (0 in 10, 2 in 114, and 1 in 33, respectively) (12-14). Gebel *et al* (15) also found the risk of bleeding of hemangioma due to FNAB nearly the same as that of a malignant tumor (2.5% vs. 1.5%).

Since bleeding complication is correlated with the size of the needle, results in relation with core-needle are also important. Heilo and Stenwig (16) reported no serious complication in relation with core-needle biopsy of 47 hemangiomas with a median diameter of 4.5 cm. An average of 1.4 punctures were performed at each biopsy session. Also, in another series of 15 subjects, no hemorrhage was observed with core-needle biopsy (11). Tung *et al* (18). also demonstrated no bleeding complication in percutaneous biopsy of 38 hemangiomas with a median size of 3 cm and using an average of 2.27 passes. Caturelli *et al* (19). reported no complication after 44 biopsies performed in cirrhotic patients to determine the true nature of lesions. Mean diameter of lesions was 22 mm. Twenty-two were proven as hemangiomas in pathologic examination. This finding supported the opinion that liver biopsy is a safe procedure in patients without accompanying bleeding diathesis.

In our study we observed no complication during sampling of seven cases. We suggest that biopsy is a safe procedure for masses, even for hemangiomas, that cannot be diagnosed with imaging studies. The potential for significant bleeding, which is probably overstated, may be similar to any other liver lesion biopsy procedure. US guidance, normal bleeding parameters, and location distant from main vascular structures and gallbladder may also contribute to the low complication rate.

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