CASE REPORT

Mesenteric Malignant Lymphoma Detected with Routine Color Doppler Ultrasonography

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Abstract

This report concerns a case of primary mesenteric malignant lymphoma detected with routine color Doppler ultrasonography. When a 44-year-old man underwent a first-time medical checkup, ultrasonographic imaging and computed tomography showed the presence of a large tumor measuring about 8 cm in transverse diameter. Color Doppler ultrasonography identified the characteristic vessel structure of a nodal lesion, namely, a hilar vessel, a curved section of the central vessel together with peripheral branches, and focal absence of perfusion in a hypoechoic imaging of the left periumbilical area. These findings contributed to the diagnosis of a malignant lymphoma and the surgical treatment of the tumor was successful.

Introduction

The incidence of primary malignant lymphomas of the mesentery is relatively rare compared with that of lymphomas occurring in other gastrointestinal tracts, such as the stomach and intestine (1). The detection of mesenteric lymphomas is often delayed because the abdominal symptoms occasionally are infrequent during the early stages of tumor development (2, 3). However, a characteristic finding, the so-called, “sandwich sign” detected by computed tomography (CT) and ultrasonography (US), is known to contribute to the identification of tumors as lymphomas (4). Recently, color Doppler US has provided information that is useful for making correct differential diagnoses of superficial benign or malignant lymphadenopathy (5–8). Here we report a case of primary malignant lymphoma of the mesentery identified by means of color Doppler US at a first-time medical check-up.

Case Report

A 44-year-old man underwent a first-time medical checkup in November 2001. Although he had been in good health, four months previously he had noticed a palpable abdominal mass but had not had examination. Although the laboratory data showed no specific abnormalities, US demonstrated a large hypoechoic tumor measuring about 8 cm in transverse diameter and encasing the mesenteric vessels (Fig. 1, indicated by arrow) in his left periumbilical area. Color Doppler US identified characteristic blood flow in the nodal lesion (on the right in Fig. 1), where a hilar vessel, a curved section of the central vessel together with peripheral branches, and focal absence of perfusion were seen. In addition to the color Doppler US findings, identification by CT of the characteristic so-called “sandwich sign” (Fig. 2A), and a high intensity mass in the left abdominal portion on magnetic resonance imaging (Fig. 2B) strongly suggested a malignant lymphoma of the abdomen. No hepatosplenomegaly or swelling of the para-aortic lymph nodes was observed, nor did Gallium scintigraphy show any accumulation anywhere in the body.

The patient had no complaints of abdominal pain, fever, weight loss, or night sweating. The main laboratory data were: erythrocyte sedimentation rate, 9 mm/h; red blood cell count, 442×10⁶/mm³; hemoglobin level, 14.2 g/dl; white blood cell count, 5,300×10⁴/mm³; thrombocyte count, 25.2×10⁵/mm³; total protein, 6.9 g/dl; serum albumin, 4.7 g/dl; gamma globulin, 1.6 g/dl; aspartate aminotransferase, 12 IU/l; alanine aminotransferase, 10 IU/l; gamma-glutamyl transpeptidase, 10 IU/l; alkaline phosphatase, 127 IU/l; lac-

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Figure 1. Ultrasonography showed a large hypoechoic lesion and blood vessel-like appearance indicated by an arrow (left). Appearance of tumor with a vascular hilum, a curved course of the central vessel with branches to the surface, and focal absence of perfusion were revealed by color Doppler US (right).

tate dehydrogenase, 352 IU/l; and C reactive protein, 0.20 mg/dl. Moreover, no hepatitis B surface antigen, hepatitis C virus antibody, Epstein-Barr virus capsid antigen or human T-cell leukemia virus 3 antibody, nor any elevation of tumor markers was detected. Surgical exploration showed a mesenteric malignant lymphoma of the small intestine enveloping the jejunal arteries without invasion of the wall of the small intestine. The histopathologic diagnosis was a diffuse large B-cell lymphoma, clinical stage IE (Fig. 3A). An immunohistochemical study was performed on paraffin-embedded specimens by using the streptavidin-biotin peroxidase complex method with the Vectastain Elite ABC kit (Vector Laboratories, Burlingame, CA, USA) and the atypical cells were diffusely positive for L26 (Dako Japan Co., Ltd., Tokyo, Japan) (Fig. 3B). Chemotherapy was started and the patient has remained alive and free of disease.

Discussion

One study found the occurrence of primary mesenteric lymphoma (11 out of 92) to be relatively rare compared with that in other gastrointestinal organs (52 in the stomach and 29 in the intestine) (1) and most of the patients had centroblastic-centrocytic lymphomas with a follicular growth pattern (1). Moriwaki and colleagues reported a case of mesenteric malignant lymphoma accompanied by immune thrombocytopenia but the relationship between these two phenomena was unclear (9). Although a primary mesenteric tumor, an adult T-cell leukemia/lymphoma was identified by Nishimura and colleagues in a patient with positive human T-cell leukemia virus antibody, the mechanism of the occurrence of T-cell mesenteric malignant lymphomas remains uncertain (10).

Early detection and differential diagnosis of the abdominal mass is crucial for proper management of patients such as ours. US can provide useful additional information for reaching a correct diagnosis of the abdominal mass. A “sandwich sign” indicates involvement of the mesentery accompanying the appearance of lymphoma as seen on US and CT. This sign is characterized by a sandwich-like encasement of the superior mesenteric artery as a result of the tumor infiltrating the leaves of the mesentery (4).

It has recently been proposed that the characteristic findings of vascularization and angioarchitecture of benign (5–8) or malignant (5, 7, 8) lymphadenopathy of the superficial lymph nodes can be detected by color Doppler US. A central blood flow characterized by vessels running through the central portion of the lymph nodes and a peripheral blood flow characterized by vessels at the peripheral portion are significantly more often seen in lymph nodes encased by neoplasms, metastases or lymphomas, than in reactive benign lymph nodes (5, 7). Moreover, the focal absence of blood...
Medium-sized and large atypical lymphoma cells were (Fig. 3A, HE stain, x220) diffusely positive for L26 (Fig. 3B, x300).

perfusion, characterized by intranodal regions without flow signals and displacement of the blood vessel affected by malignant lymphoma, occurs more frequently than in benign lymphadenopathy (8). The color Doppler US findings in the present case, indicating the presence of a nodal lesion accompanied by a vascular hilum, a curved central vessel with peripheral branches to the surface, and focal absence of perfusion, strongly suggested the presence of a malignant lymphoma of the abdomen. To the best of our knowledge, color Doppler US has not been used before for a diagnosis of mesenteric malignant lymphoma.

We conclude that color Doppler US is useful for detecting tumors at an early stage and diagnosing lymphadenopathy of the abdomen, because such a diagnosis requires the characteristic findings of intranodal blood flow, which can be obtained with color Doppler US examination of the superficial lymph nodes.

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