



Case Report

A fatal case of hemoperitoneum after ultrasound-guided liver biopsy in a patient with intravascular large B-cell lymphoma

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ABSTRACT

An autopsy case of fatal complication of percutaneous liver biopsy targeting a rare type of large B-cell lymphoma is presented. A 79 year-old man was referred to the hematology unit of a hospital because of anemia with thrombocytopenia and hepatosplenomegaly. Results of inguinal lymph node biopsy were inconclusive. To investigate a mass lesion in the liver visualized by ultrasonography, image-guided liver biopsy was performed following platelet infusion. The patient became unresponsive 6 h post procedure because of hypotension due to intraperitoneal hemorrhage of undetermined origin. Autopsy revealed hemoperitoneum but failed to identify any macroscopic intra- or extrahepatic vascular injuries. Histopathological investigation disclosed infiltration of atypical lymphocytes into the systemic organs including the lymph nodes, spleen, liver, and lungs. Prominent hemophagocytosis was also noted. The lymphoma cells were exclusively accumulated within vascular and sinusoidal structures, and diagnosed with immunohistochemistry as Asian variant of intravascular large B-cell lymphoma. Massive blood extravasation was presumed to originate directly from the markedly dilated liver sinusoids filled with erythrocytes, macrophages and tumor cells, under the condition of impaired hemostasis. Although the biopsy was thought to have been correctly performed, this case would be instructive for evaluation of the indications and risks associated with liver biopsy.

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1. Introduction

Deaths during or within a short period after surgical or invasive diagnostic procedures usually become the subject of a medico-legal investigation in most jurisdictions [1,2]. Moreover, forensic pathologists are now increasingly involved in the evaluation of the appropriateness of medical care and improvement of patient safety [3,4]. Fatalities associated with medical intervention cover a wide spectrum, and include cases in which a patient in a serious condition died following a diagnostic intervention considered to be safe. Such cases may be informative for pathologists faced with the difficult and sometimes sensitive task of distinguishing and assessing the relative contributions of each factor involved in a case [1].

Liver biopsy is now widely used for the diagnosis, assessment, and monitoring of lesions and injuries involving the liver [5–7]. Apart from the hepatological, gastroenterological and rheumatological investigation, it has been shown to be a useful technique to establish hepatic lymphomatous involvement [8–11]. Elective

percutaneous liver biopsy with or without ultrasonographic assistance is generally thought to be a safe investigation. However, complications including fatality, and contributing risk factors have been reported [5,6,12]. Here we present a case of fatal bleeding following diagnostic percutaneous liver biopsy, presumed to have resulted from liver sinusoids which were dilated due to embolization by lymphatic tumor cells.

2. Case report

2.1. Case history

A 79 year-old diabetic male with a history of hypertrophic cardiomyopathy with arrhythmia, was referred to the hematology unit of a hospital because of anemia with thrombocytopenia. Computed tomography showed hepatosplenomegaly. Suspected lymphatic malignancy was investigated by needle aspiration of the inguinal lymph nodes, with inconclusive results. Subsequent abdominal ultrasonography revealed mass lesions in the hepatic parenchyma and the patient's general condition gradually worsened, with complaints of dizziness and chest discomfort, so liver biopsy under hospitalization was scheduled. Because the platelet

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count was less than 60,000/ μ l, platelet concentrate ($\geq 2 \times 10^{11}$ /200 ml) was infused prior to the biopsy, which was performed in the patient room under ultrasound monitoring. He remained stable for 3 h after completion of the procedure, despite persistent minor bleeding from the puncture site. However, 6 h after the biopsy, systolic blood pressure had fallen to 50 mm Hg. Emergency ultrasonography followed by selective abdominal angiography disclosed perihepatic hematoma but failed to identify the origin. Red cell (1200 ml) concentrates were administered, to no avail, and 5 h later he was pronounced dead in the intensive care unit.

2.2. Autopsy findings

A forensic autopsy was performed at 36 h postmortem. The decedent was 158.0 cm, 64.0 kg, oriental male appearing consistent with the stated age. The face was pale and faint *rubor mortis* appeared on the back. Moderate pitting edema was noted in the lower extremities, and the scrota were swollen.

Two needle marks, each 4 mm in length, were found in the right hypochondriac region (Fig. 1a) and their wound tracks reached the hepatic parenchyma. Aside from the measured 1100 g of coagulated blood on and around the frontal and lateral surfaces of the liver, the peritoneal cavity contained 3300 ml of bloody fluid (Fig. 1b). The non-cirrhotic 2230 g liver was congested and had

two punctures in the lateral surface of the right lobe, 3 mm and 2 mm in length and each 3 cm in depth, which ended at a whitish region of 1 cm in diameter, in the dark maroon parenchyma (Fig. 2). Serial sectioning of the liver along the wound track failed to disclose any macroscopic vascular injuries, although the intrahepatic arteries were atherosclerotic with calcification. The enlarged 620 g spleen was congested, and multiple whitish-yellow firm nodules, up to 1 cm in diameter were scattered throughout the cut surfaces. The right iliac lymph nodes were markedly swollen up to $3.5 \times 2 \times 1.5$ cm, although changes were insignificant in other regional lymph nodes.

The left and right thoracic cavities each contained 100 ml of dark red fluid. The 660 g left lung and 785 g right lung had smooth pleural surfaces with excessive anthracotic pigmentation. The pulmonary cut surfaces were markedly edematous and the bronchi contained a moderate amount of dark red and yellowish fluid. The globular 540 g heart had thickened myocardium and the left ventricular cavity was narrowed. A whitish patch, 0.5 cm in diameter, was noted in the anterior wall of the myocardium just above the apex. The right dominant coronary arterial system had mild atherosclerosis and the lumens were dilated. The 185 g left kidney and 110 g right kidney had fine granular cortical surfaces and multiple cysts up to 1.5 cm in size. The adrenal glands were grossly unremarkable externally and on sectioning.

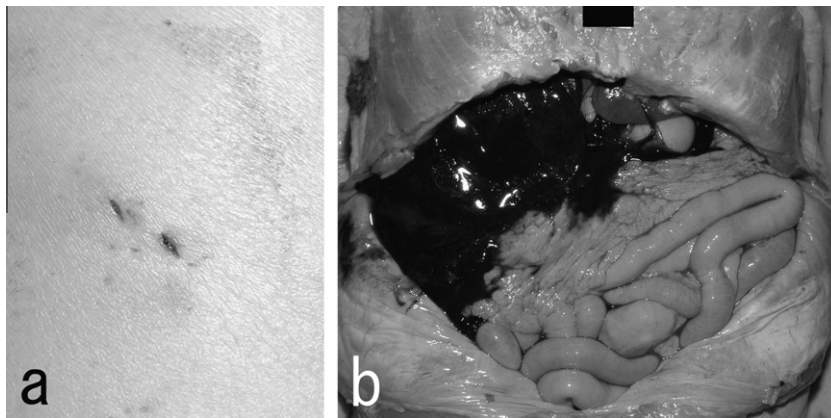


Fig. 1. (a) Two needle marks, each 4 mm in length, in the right hypochondriac region. (b) Coagulated blood (1100 ml) measured in the perihepatic area.

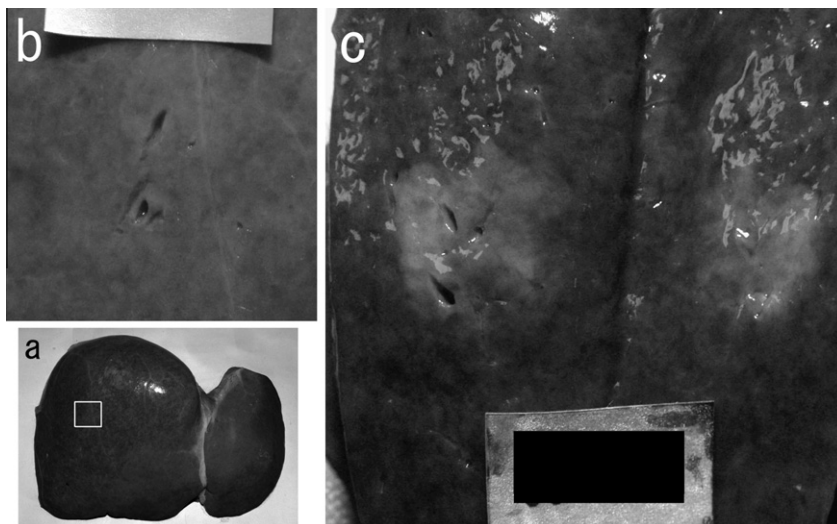


Fig. 2. Wound track in the liver. (a) and (b) Needle marks on the surface of the right lobe of the liver. Fig. 2b is the magnified image of the area enclosed within the rectangle in Fig. 1a. (c) Cut surfaces of the liver at the level of the bottom of the wound track (right side). No macroscopic vascular injuries were discernible with serial sectioning.

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