

Ultrasound-Guided Intranodal Lymphangiography With Ethiodized Oil to Treat Chylous Ascites

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ABSTRACT

A 70-year-old man presented with abdominal distention and pain. A diagnosis of chylous ascites (CA) was made by abdominal paracentesis. Conservative treatment had failed to control CA; therefore, ultrasound-guided intranodal lymphangiography (UIL) with Lipiodol was performed. No obvious Lipiodol leakage was observed in the follow-up computed tomography; however, the persistent abdominal pain was significantly reduced within a day, and CA was resolved within 3 days. We present successful treatment of CA using UIL with Lipiodol. The combination of the technique of UIL and therapeutic lymphangiography with Lipiodol is a promising minimally invasive treatment option for CA.

INTRODUCTION

Chylous ascites (CA) is an uncommon form of ascites, with a reported incidence of approximately 1 in 20 000 admissions at a large, university-based hospital and is defined as the lymphatic leakage rich in triglycerides into the peritoneal cavity.^{1,2} In patients with malignancy, CA is caused by the disruption of the normal lymphatic flow and is generally associated with poor outcome.^{3,4} Recently, the effectiveness of lymphangiography with ethiodized oil (Lipiodol; Guerbet Japan, Tokyo, Japan) has been reported in some cases of chyle leakage.⁴⁻⁶ Moreover, the new technique of lymphangiography, ultrasound-guided puncture of inguinal lymph nodes, has appeared in literature.^{7,8}

CASE REPORT

A 70-year-old man, who had been diagnosed with cholangiocarcinoma 11 months earlier, presented with progressive abdominal distention with nonspecific abdominal pain. Abdominal examination revealed marked distention and mild diffuse tenderness without rebound tenderness. Abdominal computed tomography (CT) revealed marked ascites, which had not been seen previously (Figure 1). An abdominal paracentesis was performed because of the suspicion of malignancy-related ascites. The ascites had a milky and turbid appearance with triglyceride level of 195 mg/dL, and ascitic fluid samples for cytology and cultures were all negative (Figure 2). We diagnosed him with CA, although no obvious cause was found on CT.

Initial conservative treatment, including total parenteral nutrition along with octreotide, had failed to control CA; therefore, we opted to perform ultrasound-guided intranodal lymphangiography (UIL) with Lipiodol to treat CA. Bilateral inguinal lymph nodes were punctured with 25-gauge needles under ultrasonography guidance, and a total volume of 17 mL of Lipiodol was slowly injected under fluoroscopic guidance (Figure 3). Abdominal lymphatic vessels including cisterna chyli were visualized in the follow-up CT, which was obtained 6 hours after the lymphangiography; however, no obvious Lipiodol leakage into the abdominal cavity was observed (Figure 4). After the lymphangiography, the persistent abdominal pain was significantly reduced within a day. Moreover, the triglyceride level decreased to 21 mg/dL, and CA was resolved within 3 days.

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Figure 1. Abdominal CT showing marked ascites.

DISCUSSION

Chylous ascites is an uncommon form of ascites that develops as a result of disruption of the abdominal lymphatic system.³ Most of the lymph from abdomen drains into the cisterna

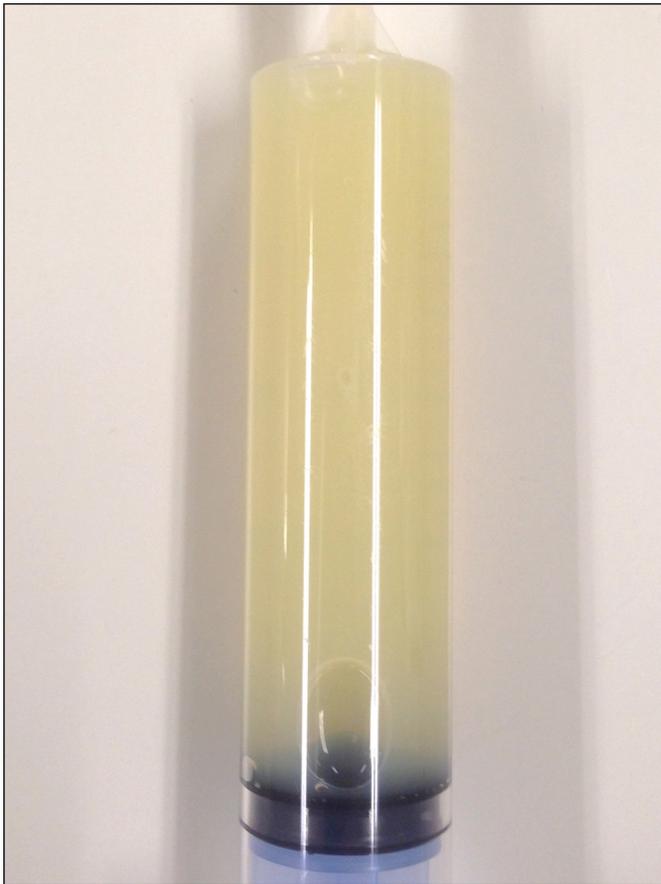


Figure 2. The ascites had a milky and turbid appearance with triglyceride level of 195 mg/dL.



Figure 3. Fluoroscopic image showing injected Lipiodol through the bilateral inguinal lymph nodes.

chyli, which is located at the level of the lower border of the 12th thoracic vertebral body or L1-L2 vertebrae, via the intestinal lymphatic trunk and the bilateral lumbar lymphatic trunks.^{9,10}

The management of CA has not been established. Most of the cases respond to conservative treatment such as medium chain triglyceride-based diet, total parenteral nutrition, and the use of somatostatin and its analogs (octreotide).^{2,11,12} In patients who are refractory to these conservative treatment, lymphangiography could be a promising strategy for the treatment of CA as well as the detection of chyle leakage. Lymphangiography can visualize the chyle leakage in 78% of cases, and the successful therapeutic outcome was achieved in 64%–89% of cases.^{4,6} Moreover, as with our case, the healing of chyle leakage after lymphangiography has been reported even though the chyle leakage has not been identified.^{4,6} Although the mechanism has not yet been clarified, it has been suggested that Lipiodol accumulates adjacent to the point of leakage to induce regional inflammatory reactions, and plays a role as an embolic agent within the lymphatic vessels.⁴



Figure 4. The follow-up CT visualizing abdominal lymphatic vessels including cisterna chyli (arrow) without Lipiodol leakage into the abdominal cavity.

In recent years, UIL has superseded pedal lymphangiography as an easier and more practical approach to obtain lymphangiogram. This is because conventional pedal lymphangiography requires an incision to access the pedal lymphatic vessels, whereas UIL simply requires an ultrasound-guided puncture of the accessible lymph nodes in the groin.^{7,8} If conservative treatments are not successful, most patients with malignancy-related CA are poor surgical candidates.

Combining UIL and therapeutic lymphangiography with Lipiodol is a promising, minimally invasive treatment option for CA.

DISCLOSURES

Author contributions: S. Kitagawa wrote the manuscript and is the article guarantor. W. Sakai and T. Hasegawa edited the final manuscript.

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Informed consent was obtained for this case report.

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