Direct percutaneous lymphography and interventional occlusion of a retroperitoneal lymph fistula.

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Learning objectives

Chylous ascites is a rare, but severe complication after resection of retroperitoneal and iliacal lymph nodes (incidence of 0.9% after laparoscopic lymph node dissection in gynecological malignancies according to a study by Zhao et al. (1)). Due to the loss of lipids it can lead to a catabolic situation. Imaging of lymph vessels and lymph fistulas is challenging.

Treatment options are surgery, interventional procedures and conservative treatment.

The goal of this publication is to review and discuss the different treatment options of chylous ascites due to a lymph fistula and to present a case of a successful percutaneous interventional CT-guided direct lymphography and embolisation of a lymph fistula.

Background

Due to the small size of lymph vessels the detection of a lymph fistula is challenging.

Some fistulas can be detected by lymphography and lymph scintigraphy. The intraoperative injection of methylene blue into lymph vessels can show the leak of a lymph vessel.

There is no consensus on the management of chyle leaks (6) and the low number of patients results in the lack of prospective therapy studies.

Non invasive treatment with bowel rest, parenteral nutrition and pharmacological therapies etc. will not stop a lymph fistula immediately in most cases, although Zhao et al. (1) stated that in their study of 9 patients the chylous ascites resolved in all patients within a maximum of 9 days by treating the patients conservatively with an abdominal drainage tube. There are some reports about the occlusion of lymph fistulas as an effect of pedal lymphography, e. g. Gruber-Rouh et al. (2) described a successful treatment rate of 70.3% by performing a diagnostic lymphography with a higher success rate (96.8%) in patients with an ascites production of less than 200 ml per day whereas the efficiency was less if there was an ascites production of more than 200 ml (58.1%). Post lymphangiography-CT can increase the diagnostic accuracy of lymphography (5).

If the localisation of the lymph fistula can be detected, surgical or interventional therapy can be an option to occlude the fistula immediately especially in patients with a persisting fistula after conservative therapy (3). Surgical therapy is reported to be highly efficient (2).
There are only very few reports on the treatment of chylous ascites by interventional embolisation of lymph vessels, e. g. computed tomography guided injection of N-butyl cyanoacrylate glue (4). A case report by Itou et al. (7) showed the successful therapy by embolisation of the extralymphatic leakage site by metallic coils and an N-butyl cyanoacrylate-ethiodized oil mixture.

Findings and procedure details

In a patient (age 63 years, female) a radical hysterectomy and lymphonodectomy was performed due to uterine cervix carcinoma. After surgery high amounts of chylous ascites and transvaginal loss of ascites (2000 ml/d) occurred. Due to the catabolic situation as a result of the loss of lipids the intended chemoradiation could not be started and the postoperative recovery was delayed.

The initial conservative treatment was not effective.

The postoperative CT scan (Fig. 6) showed a small fluid collection in the retroperitoneal space between the inferior V. cava and the Aorta abdominalis. The lymph scintigraphy (Fig. 4 and 5) could not detect the location of the lymph fistula as there was a destruction of the iliacal lymph vessels due to the surgery. Therefore a classical lymphography was not performed. The abdominal MRI (Fig. 1-3) confirmed the retroperitoneal fluid collection, but could not show the location of the leakage.

As an interdisciplinary decision a CT-guided puncture of the fluid collection was performed (Fig. 7 and 8). A 17G-needle with a sharp inner needle was used to penetrate the abdominal wall. For the passage of the peritoneal cavity the inner needle was exchanged to a blunt inner needle in order to avoid a damage to the mesenteric vessels and the intestine. Directly anterior to the collection the sharp inner needle was reinserted for the puncture of the fluid collection. The fluid that was aspirated was chylous fluid. The injection of a small amount of contrast agent was performed (Fig. 9 and 10). The delayed CT scans could show the location of the lymph fistula (Fig. 11 and 12). As a first attempt occlusion of the fistula with a blood patch via the diagnostic needle was performed. The ascites production and vaginal fluid loss was stopped for almost a week. As the symptoms of the lymph fistula occurred again a new CT scan was acquired and showed again the lymphocele. A surgical attempt to stop the fistula was not successful. Therefore another CT-guided puncture of the fluid collection was done. Via the needle the fluid was removed and a small amount of Ethoxysclerol and Histoacryl (mixed with Lipiodol (1/5)) was injected. Afterwards the ascites production and the vaginal fluid loss were stopped and did not occur again.
Fig. 1: Abdominal MRI (axial FIESTA): interaortocaval fluid collection.

Fig. 2: Abdominal MRI (axial SSFSE): interaortocaval fluid collection.
Fig. 3: Abdominal MRI (coronal T2 SSFSE): retroperitoneal fluid collection.
Fig. 4: Lymph scintigraphy. Diffuse dissemination of the tracer in the pelvis.
**Fig. 5:** Lymph scintigraphy: pelvic dissemination of the tracer due to destruction of pelvic lymph vessels after lymph node resection.
**Fig. 6:** Contrast-enhanced abdominal CT: interaortocaval fluid collection.
**Fig. 7:** Blunt passage of the needle through the peritoneal cavity under CT guidance avoiding damage to the mesenteric vessels.
Fig. 8: Puncture of the fluid collection under CT-guidance.
**Fig. 10:** Direct lymphography after injection of contrast agent into the lymphocele.

**Fig. 9:** Coronal MIP depicting the fluid collection after intraluminal injection of contrast agent.
**Fig. 12:** Late phase of direct CT-lymphography showing the lymph fistula from the retroperitoneal lymphocele to the peritoneal cavity.
Fig. 11: Coronal MIP of CT-lymphography showing the lymph fistula.
Conclusion

Interventional embolisation of a retroperitoneal postoperative lymph fistula detected by direct CT-lymphography provides an effective alternative to conservative treatment and open surgery. The combination of Ethoxysclerol and Histoacryl was more efficient than the primary attempt with a blood patch.

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