# Postoperative chylous ascites: increased scrotal volume as "alarm bell"

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**Chylous ascites has been reported only rarely as a possible consequence of congenital diaphragmatic hernia (CDH) surgical treatment. The present report regards a case of chylous ascites that developed after surgical treatment of CDH and was interestingly anticipated by increased scrotal volume. The aim was to alert neonatologists and pediatric surgeons about the potential usefulness of this clinical sign as a precocious "alarm bell" for chylous ascites development.**

***Key words: chylous ascites, congenital diaphragmatic hernia, scrotal volume, neonate.***

Chylous ascites (CA) represents an uncommon clinical entity usually due to obstruction or rupture of peritoneal or retroperitoneal lymphatic glands. Multiple causes of CA have been described: congenital defects of the lymphatic system, infections, abdominal surgical and traumatic injuries, liver diseases, and malignant neoplasms[1,2].

During the neonatal period, congenital lymphatic anomalies and thoracic or retroperitoneal surgical interventions are the most common causes. Concerning surgical interventions, CA has been reported only rarely as a possible consequence of congenital diaphragmatic hernia (CDH) surgical treatment[3,4].

We present an uncommon case of neonatal CA developed after CDH surgical repair and unusually anticipated by the occurrence of a rapidly increasing scrotal swelling.

## Case Report

A male neonate (gestational age 40 weeks, birth weight 3120 g) was born by cesarean section carried out because of prenatal diagnosis of CDH. Immediately after birth, he was intubated (Apgar score: $6^{1'}$- $8^{5'}$) and mechanical ventilation was started with sedation. Radiological findings confirmed the presence of CDH. On the third day of life (DOL), he underwent surgical repair of left posterolateral CDH by means of suture alone. Three days after surgery, pleural effusion was detected and a chest drainage was placed.

On DOL 13, considering the markedly reduced amount of pleural drainage, enteral feeding (20 ml/kg) with a formula containing medium-chain triglycerides (Portagen®, Mead Johnson) was begun; nevertheless, it was stopped after only two days because of newly increased fluid drainage showing the chemical characteristics of chylothorax (proteins 3.8 g/dl, triglycerides 220 mg/dl, cholesterol 60 mg/dl, white blood cells 12,650/$mm^3$, lymphocytes 90%). At this time, subcutaneous octreotide (10 μg/kg/day) was administered obtaining a gradual chylothorax disappearance.

On DOL 22, enteral feeding was restarted. Twenty-four hours later, a rapid increase in scrotal size was noticed but no further clinical abnormalities were reported. On DOL 26, severe abdominal distention, dyspnea, oliguria, and excessive weight gain were also detected. Abdominal ultrasound showed abnormal collection of fluid both in the peritoneal cavity and scrotum (Fig. 1A). By evacuative paracentesis, carried out without the occurrence of any complication, 140 ml of milky fluid (Fig. 1B) was withdrawn suggesting CA (proteins

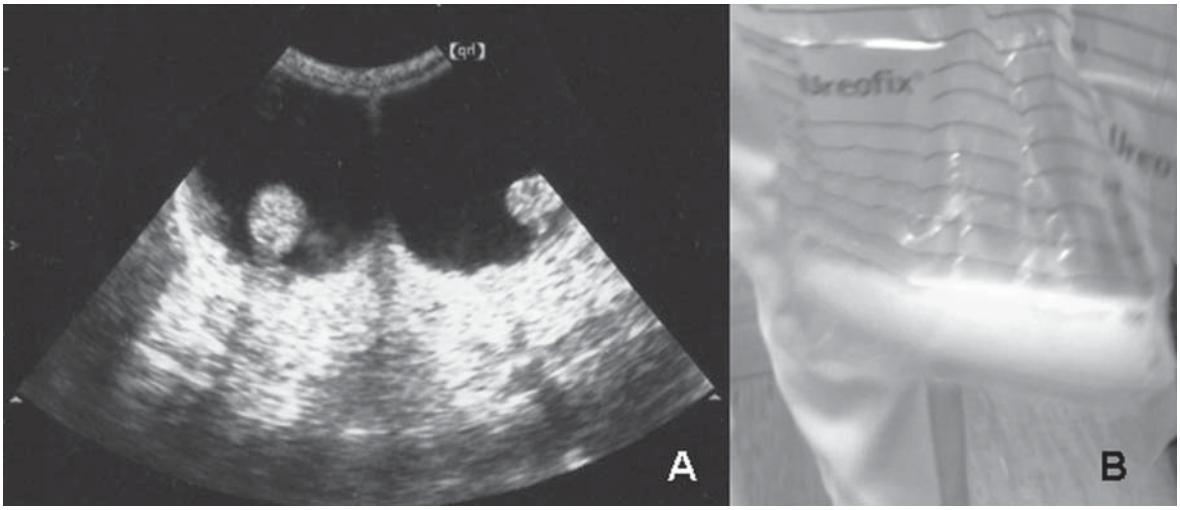


**Fig. 1.** ECHO image of fluid collection in the scrotum (A) and milky fluid withdrawn by evacuative paracentesis (B).

3.3 g/dl, triglycerides 1059 mg/dl, cholesterol 37 mg/dl, white blood cells 13,580/mm$^3$, lymphocytes 85%). For the recurrence of peritoneal fluid accumulation, on DOL 28 and 30, two additional paracentesis procedures were performed, draining 103 ml and 110 ml of milky fluid, respectively. Throughout this period, octreotide dosage was progressively increased up to 80 μg/kg/day on DOL 30, and total parenteral nutrition was administered. Complete ascites resolution and scrotal size normalization were obtained one week later. Therefore, enteral nutrition was restarted on DOL 37 without any problem of feeding tolerance and the octreotide dosage was progressively reduced until complete suspension on DOL 40. The neonate was discharged on DOL 60 in good clinical condition, showing normal feeding tolerance.

## Discussion

Chylous ascites (CA) is defined as the accumulation of chyle in the peritoneal cavity. While among adult patients, CA development is reported as a complication of thoracic and abdominal surgery, to date, only very few cases have been described during the neonatal period, mainly as a consequence of CDH (3,4). In these cases, as in adult patients, CA occurs late, about two weeks after surgical repair.

In our case, chylothorax anticipated CA development, which occurred three weeks after surgical intervention, only after enteric feeding administration and despite the low-fat, medium-chain triglyceride diet and the low enteric contribution. It is interesting to note that scrotal swelling was the first sign of CA, occurring 72 hours in advance of abdominal distention. During the neonatal period, the patency of the processus vaginalis may explain the rapid increase in scrotal size, which should therefore be considered a precocious "alarm bell" of fluid collection in the peritoneal cavity.

In our case, as in the cases reported in the literature, the exact cause of CA is not clear. In fact, CA may represent a consequence of obstruction or rupture of peritoneal/retroperitoneal lymphatic glands, or the result of chyle transdiaphragmatic passage through the lymphatic channels[3,4].

In the presence of CA, a conservative management, contemplating total parenteral feeding or enteral diet with medium-chain triglycerides, is recommended[5]. In addition, a subcutaneously administered somatostatin analogue (octreotide) can contribute to a quicker resolution of chylous effusion[6,7]. In fact, although the exact mechanism is still not completely clear, it has been previously shown that somatostatin induces a decreased intestinal fat absorption, a reduced triglyceride concentration in the thoracic duct and an attenuated lymph flow in the main lymphatic channels[8]. In our case, conservative management and octreotide administration were effective and without side effects, even if, due to the recurring CA, repeat paracentesis was necessary.

Precocious paracentesis represents a valid approach either for diagnostic purposes or to relieve abdominal distention[1], while further paracentesis procedures are recommended only in case of clinical signs and fluid accumulation recurrence, since adverse effects such as infections have been associated with its performance.

In conclusion, the present case report reminds that CA development after surgical treatment of CDH could be a rare but possible late complication. In addition to a conservative management, high-dosage treatment with octreotide may be required for a quicker CA resolution.

During the neonatal period, CA occurrence may be anticipated by rapidly increasing scrotal sizes, which should be considered a potential precocious sign of fluid collection in the peritoneal cavity. Consecutively, scrotal swelling may represent a useful and precocious "alarm bell" for CA development.

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