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Case Report

An unusual variant of ascites: congenital chylous ascites

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ABSTRACT

Chylous ascites is a rare condition. It is defined as the accumulation of chyle into the peritoneal cavity in infants younger than three months. Most common cause of its occurrence is malformation of the intra-abdominal lymphatic system. Other pathological conditions like malignant neoplasms, infections, liver cirrhosis, blunt abdominal trauma and surgery injury (iatrogenic injury) can also result in chylous ascites. The objective of this case report is to describe the case of a neonate with chylous ascites, establishing its diagnosis and the proposed medical treatment. A late preterm, female neonate born at 36 weeks of gestation with moderate abdominal distension was admitted in NICU and managed conservatively. At day 2 of life, diagnostic and therapeutic ascitic fluid tapping was done. Initial evaluation revealed normal blood and ascitic fluid investigations. Triglycerides were also normal (40 gm/dl) and done for exclusion of diagnosis of chylous ascites. Ascites was of exudative in nature, straw coloured with no malignant cells. At day 12 of life, in abdominal paracentesis ascitic fluid was cloudy in appearance with high triglycerides (1342 mg/dl), diagnostic of chylous ascites. Neonate was managed with withholding breastfeeding, medium chain triglyceride based rich diet, high protein diet, injection octreotide along with abdominal girth monitoring and close follow-up. Neonatal ascites improved gradually during 2 months of medical treatment following which breast feeding was introduced since long chain fatty acids are important for optimal brain growth in neonates and the baby started gaining weight.

Keywords: Total parenteral nutrition, Neonate, Octreotide, Medium chain triglycerides

INTRODUCTION

Chylous ascites is a rare condition. Congenital chylous ascites is even rarer and constitutes a challenge for the physician. It is defined as the accumulation of chyle into the peritoneal cavity in infants younger than three months.[1-3] Most common cause of its occurrence is malformation of the intra-abdominal lymphatic system. Other pathological conditions like malignant neoplasms, infections, liver cirrhosis, blunt abdominal trauma and surgery injury (iatrogenic injury) can also result in chylous ascites.[2] The objective of this case report is to describe the case of a neonate with chylous ascites, establishing its diagnosis and the proposed medical treatment.

CASE REPORT

A late preterm, female baby born at 36 weeks of gestation to a 24 years old multigravida mother by spontaneous vaginal delivery, with birth weight 3300 gm. The course of pregnancy was complicated by gestational diabetes, diagnosed at 20 weeks of gestational age. Since then, patient was on oral hypoglycaemic agent. Foetal ascites was detected antenatally on ultrasound at 22 weeks. The baby had APGAR score of 8 and 10 and physical examination revealed distended abdomen at delivery (Figure 1). Baby was put on breastfeeding with close monitoring. Abdominal circumference started to increase gradually and neonate developed tachypnoea. At day 3 of

life, ultrasound was done which revealed gross ascites with mild ureteric obstruction.

Figure 1: Neonate at birth.

Ascitic fluid was tapped under ultrasound guidance and analysed for counts, triglycerides, protein, amylase and lactate dehydrogenase (LDH) which were within normal limits (Table 1). Aspirate was straw coloured (Figure 2).

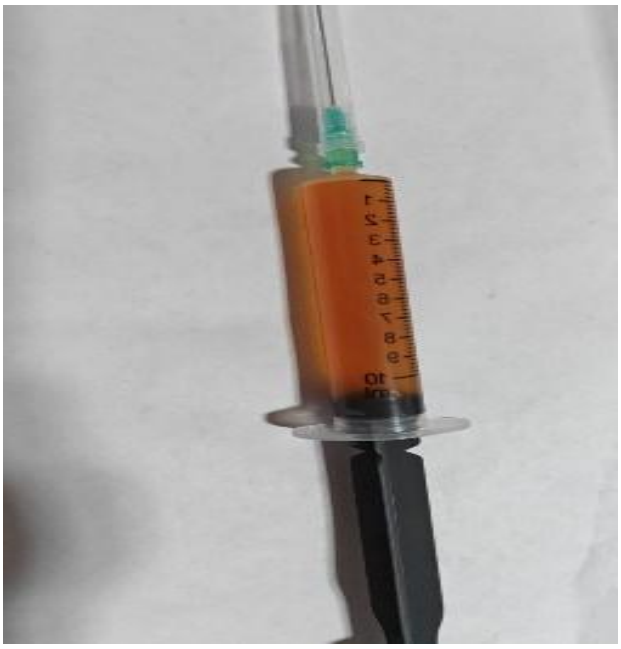

Figure 2: Straw coloured ascitic fluid at day 3.

Table 1: Ascitic fluid investigations at day 3 of life.

Variables	Results
Albumin (g/dl)	3.5
Sugar (mg/dl)	88.2
RBC (cells/µl)	8-10
Differential count (cells/µl)	N5L93
Fluid albumin (g/dl)	2.54
Fluid LDH (IU/l)	214
Triglycerides (mg/dl)	40

Figure 3: At day 12 of life with increasing abdominal circumference

Abdominal circumference kept on increasing day 3 onwards (Figure 3). Repeat ultrasound guided tapping was done on day 12 which revealed cloudy appearance of the ascitic fluid (Figure 4). Analysis of this fluid showed triglycerides 1342 mg/dl, which was diagnostic of chylous ascites (Table 2). Following this, breastfeeding was withheld. Total parenteral nutrition (TPN) and medium chain triglyceride (MCT) formula feed was started. Injection octreotide subcutaneous @50 microgram/kg/day was started in 2 divided doses at 14 days of life. Initial, first 2 weeks showed poor response to therapy, subsequently gradual resolution of ascitic fluid started. Reduction in abdominal girth, optimum weight gain (20-30 gm/day) and increase in head circumference and length were appropriate for age and plotted on revised Fenton growth chart. There was no history of altered bowel habits. Dietary modifications were done including high protein, low fat and MCT oil. Neonate was followed up with serial ultrasound abdomen which showed decreased quantity of ascitic fluid and hence octreotide was also tapered and stopped by day 40 of life. At 2 months of age, baby was shifted to mother milk

from MCT formula. Baby was then followed up regularly at our outpatient clinic till one year of age which showed normal growth and development.

Figure 4: Ascitic fluid with cloudy appearance at day 12 of life.

Table 2: Ascitic fluid investigations at day 12 of life.

Variables	Results
pH	7.5
Creatinine (mg/dl)	0.34
Triglyceride (mg/dl)	1342
Albumin (g/dl)	2.75
Total Bilirubin (mg/dl)	3.89
Direct Bilirubin (mg/dl)	1.04

DISCUSSION

Ultrasound guided abdominal paracentesis is vital for diagnosis of abdominal chylous ascites.[5] Triglycerides (over 200 mg/dl) is a diagnostic feature of lymph in chylous ascites and more than 1000 cells/mL with a predominance of lymphocytes, protein levels above 2.5 g/dL and LDH above 110 IU/l confirm the diagnosis.[6,7] Presence of chylomicrons is considered to be pathognomic.[8] Magnetic resonance (MR) lymphangiography and lymphoscintigraphy are methods to show site of lymph leakage, yet they could be resorted to in complicated cases, refractory to medical management because of the technical difficulties in very small neonates and other side effects.[9,10] There is not yet an established treatment protocol for congenital chylous ascites. Treatment is primarily conservative, regarding reduced intestinal fat absorption and chylous flow. MCT are given because they are transported as free fatty acids and glycerol directly to the liver via the portal vein. The use of a low-fat diet with medium chain triglyceride supplementation therefore reduces the production and flow of chyle.[11] Somatostatin has been widely used for chylothorax both in paediatric and adult patients. There are few reports on the beneficial effect of octreotide in congenital chylous ascites of premature newborns.[9,12] It has been speculated that somatostatin improves chylous ascites by inhibition of lymph fluid excretion through specific receptors found in the lymphatic vessels.[11] Prolonged use with somatostatin can cause malabsorption, hepatic dysfunction, and hyperglycaemia so periodic monitoring of liver function, blood sugar and thyroid function is recommended.[13,14] Yang et.al reported that chylous ascites improved more rapidly when TPN and octreotide were use together.[14]

Surgery is recommended when conservative treatment fails after 1-2 months of therapy. Success has been reported in more than 80 percent of cases when drainage site had been microscopically identified.[12]

In our case, patient was treated with TPN and octreotide and then fed with MCT diet after 12 days of life. This led to decrease in abdominal girth. On follow-up, her abdominal parameter was within the limits for her age without clinical decompensation (Figure 5). Nil per orally (NPO) with TPN might have reduced the lymph flow, resulting in reduce lymph leakage and MCT oil-based diet could have reduced chyle production. After one year of follow-up, baby was normal in growth and was on normal baby diet without any symptoms of ascites.

CONCLUSION

Chylous ascitic fluid analysis in initial stage was not suggestive of features of chylous ascites like milky coloured fluid with raised triglycerides and LDH because the baby was on intravenous fluid therapy. Once the baby started taking adequate full breast feeding, ascitic fluid became cloudy and then milky coloured with raised triglycerides level. So initial examination can lead to diagnostic dilemma and diagnosis has to be vigilantly made.

In settings where lymphangiography facilities are not available, rather than focussing on aetiology of origin of ascites, our plan was to try conservative management for the treatment of our baby. Conservative approach of MCT based diet and TPN is an effective way of reducing chyle production and lymph flow. Octreotide with MCT oil-based diet aids in repair of anomalous lymphatic vessel. There is no standard set of therapeutic approach in neonatal chylous ascites. From our experience, it can be successfully treated with diet modification including MCT diet, TPN and octreotide as pharmacotherapy.

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