

Nutritional Management of Neonatal Chylous Ascites following Congenital Diaphragmatic Hernia Repair

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ABSTRACT

Chylous ascites is characterised by accumulation of lymph in the peritoneal cavity and is a recognised complication of congenital diaphragmatic hernia repair. We report a case of

neonatal chylous ascites that occurred as a complication of congenital diaphragmatic hernia repair and its successful nutritional management with a cost effective skimmed milk based preparation.

Keywords: Abdominal distension, Peritoneal cavity, Skimmed milk preparation

CASE REPORT

A term, appropriate for gestational age female baby, with a birth weight of 3500 grams, delivered by normal vaginal delivery was born to a G2A1 mother with previous history of spontaneous abortion. The baby was antenatally diagnosed to have congenital diaphragmatic hernia and was operated on day 2 of life. The post-operative period was uneventful and was discharged on day 10 of life. The baby was brought to our Emergency Department, with progressive abdominal distension and worsening respiratory distress of one week duration, on day 24 of life [Table/Fig-1]. On examination, baby was tachypneic with tense and distended abdomen. Baby looked well-nourished and the rest of the systemic examination was normal. X-ray of the chest showed normal lungs and ultrasound abdomen showed massive ascites with no hepatosplenomegaly. About 130 mL of ascitic fluid was tapped [Table/Fig-2], for diagnostic purpose and to relieve the respiratory distress. It was milky in colour suggesting chyle and the fluid was sent for analysis,



[Table/Fig-1]: Baby on admission with abdominal distension.

[Table/Fig-2]: Image showing the milky ascitic fluid.

which showed triglyceride 1928 mg/dL, cholesterol 121 mg/dL and WBC 350 cells/mm with 70% lymphocytes, confirming the diagnosis of chylous ascites.

After confirming the diagnosis, oral feeds were temporarily stopped and total parenteral nutrition was started. Octreotide infusion was started at 1 µg/kg/hour and was subsequently increased to 2 µg/kg/hour. The ascites started to resolve. Two days later, the baby was started on skimmed milk based preparation (skimmed milk powder-10 gm, sugar-10 gm, coconut oil-2.5 mL and water 70-80 mL), as part of the nutritional management to provide high protein and low fat diet [Table/Fig-3].

Contents	Energy (cal)	Protein (gram)
Skimmed milk powder (10 gm)	35.7 cal	3.5
Sugar (10 gm)	40 cal	-
Coconut oil (2.5 mL)	22.5 cal	-
Total	98.2 cal	3.5

[Table/Fig-3]: Composition of skimmed milk based preparation.

Feeds were slowly advanced and baby achieved full feeds in five days' time and total parenteral nutrition was stopped. After full feeds were achieved, baby was discharged on day 43 of life. At discharge, baby had minimal ascites on ultrasound. On follow-up on day 50 of life, there was adequate weight gain and complete resolution of ascites. Subsequently, regular feeds were reintroduced on 65th day of life, with no recurrence of ascites. The baby was followed-up for four months and her growth and development were appropriate for age.

DISCUSSION

Chylous ascites is a recognised but uncommon complication associated with congenital diaphragmatic hernia repair and was first reported in 1974 [1]. Chylous ascites following congenital diaphragmatic hernia repair occurs as a result of obstruction or traumatic injury to the peritoneal or retroperitoneal lymphatic glands during surgery [2]. Although, the main stay of management of chylous ascites is primarily medical and is based on spontaneous closure of chyle leak by decreasing the chyle flow [3], using various modalities including bowel rest with total parenteral nutrition and octreotide. Every care must be taken to maintain or improve the nutritional status of the baby. Dietary modification with high protein and low fat is the standard non-surgical approach that can reduce chyle flow and help maintain nutritional status at the same time [4]. In our case, we had three options available for dietary modification. The first option was to use MCT based formula which is known to reduce chyle flow [5] as MCT are absorbed directly into intestinal cells and transported as FFA and glycerol directly into liver. The MCT based formula available in India is only MCT enriched with the same amount of fat as normal formula but with added MCT. The second option was to use fat free human milk where the EBM is centrifuged and fat free lower portion is used [6]. The cost and feasibility of the technique, prevented us from using this option. The third option was to use skimmed milk preparation using skimmed milk powder, sugar and coconut oil which is rich in MCT, and water, as described by Gupta et al., in the treatment of two babies with congenital chylothorax [7]. Skimmed milk has nearly all the fat removed with a minimal fat content of 0-0.5%. Coconut oil (70-75% MCT) is then added to make it MCT enriched. It was cost effective and easy to prepare. The mother was taught by the nutritionist to prepare it at home using measuring scoops so the baby could be discharged on skimmed milk preparation feeds thus avoiding a lengthy hospital stay. There were no side effects while using this preparation and growth was well maintained.

Skimmed milk based preparation may be a very important dietary therapy in the management of chylous ascites.

CONCLUSION

Nutritional management of neonatal chylous ascites warrants maintaining a balance with low fat diet special formulas, in order to reduce chyle flow and provide adequate nutrition to avoid growth failure. In a resource limited setting like India, this becomes even more difficult, because of the cost and non-availability of these formulas. Skimmed milk based preparation is cost effective and easy to prepare, thus playing a very important role in the nutritional management of chylous ascites, it provides high protein and low fat that helps to reduce chyle production without compromising on nutrition.

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