Short Clinical Report

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Idiopathic congenital chylothorax treated with povidone-iodine

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CASE PRESENTATION

A 2900g female term newborn born by cesarean section to a 21-year-old primigravida mother. Bilateral pleural effusion and polyhydramnios were detected on follow-up at the 36th week of gestation. After delivery, the newborn was intubated immediately due to respiratory depression. Bilateral thoracentesis was carried out in the delivery room. The chest x-ray showed bilateral pleural effusion (Fig.1). Since the pleural effusion re-accumulated rapidly, the chest tube (right side) was placed on postnatal day 1. The pleural fluid was colorless and its analysis revealed pH 7.3, density 1005, lactate dehydrogenase 164 IU/L, protein 1.1g/dl, cholesterol 27 mg/dl, triglyceride 13 mg/dl, white cell count with 5% lymphocytes and 90% polymorphs. Chromosomal analysis, echocardiogram, cranial, and abdominal ultrasound (USG) examinations of the baby were normal. No viral or bacterial infection was detected on laboratory workup.

On improvement, the intercostal tube was removed on the fifth day and the baby weaned off the ventilator on the 6th day. On the 10th day, the baby again required intubation and mechanical ventilation because of respiratory distress. The radiograph was suggestive of right pleural effusion. Thoracic USG showed pleural effusion reaching 30 mm on the right hemithorax. The intercostal tube was reinserted, and the analysis of fluid revealed milky white fluid with a triglyceride level of 1114 mg/dl, a cholesterol level of 64 mg/dl, and a total count of 15120/mm3 with 93% lymphocytes. The fluid culture was sterile. A diagnosis of congenital chylothorax was made. Enteral feed was discontinued, and parenteral nutrition was instituted along with octreotide infusion. Octreotide infusion was started at a rate of 1 µg/kg/hr and was gradually increased to 10 µg/kg/hr. As the response was poor with octreotide, on the 27th day of life, chemical pleurodesis was done with 10% povidone-iodine (Betadine®), 2 ml/kg, without dilution through the intercostal tube. The chest tube output decreased within 24 hours. The chest tube was removed after 48hrs of nil chest tube output. The baby recovered continuously and was discharged on the 45th day of life, with a formula containing medium-chain fatty acid. At the 12-month follow-up, she was doing fine with normal thyroid functions.

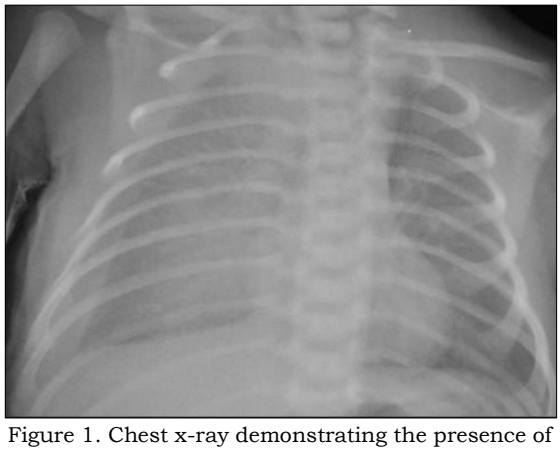

Figure 1. Chest x-ray demonstrating the presence of pleural effusion at 30 min of age.

DISCUSSION

Congenital chylothorax is one of the most important causes of pleural effusion in newborns.[1] Chylous and non-chylous effusions are difficult to distinguish in infants who are not taking orally. In our case, the first pleural fluid sample was taken before the start of enteral feeding, thus was not indicative of chylothorax. However, the pleural fluid became milky white after the start of enteral feeding. The resultant chylous effusion may cause respiratory compromise [2] as happened in our case who required mechanical ventilation in addition to tube thoracostomy. The conservative treatment should be started immediately after the diagnosis is made.[3,4] In cases refractory to

the conservative treatment, chylothorax leads to hypoalbuminemia, electrolyte imbalance, coagulation dysfunction, lymphopenia, malnutrition. and immune deficiency. Chyle that exceeds 10ml/kg/day or prolonged conservative treatment (more than 2-4 weeks) is accepted as a failure of the treatment.[5] In our case, we labeled the treatment as ineffective when persistent chylous leakage was higher than 20ml/kg/day despite 4 weeks of maximum dose of intravenous octreotide therapy.

The surgical treatment is recommended in resistant cases but it is more invasive than chemical pleurodesis.[5] Povidone-iodine acts by producing local inflammation in the pleural cavity.[1] Its side effects are rare and include transient acute respiratory distress, temporary generalized edema, hypotension, mucosal/skin lesions, acute renal failure, and hypothyroidism.[4,6,7] None of these side effects were observed in our case. Only a few case reports and small case series exist on the use of povidone-iodine pleurodesis for persistent chylothorax (total 19 cases).[3,4,6-10] This method was effective in 13/19 patients. The concentration used was either 4% or %10. The duration of the chest tube clamping varied from 3hr to 5hr in studies. We used 6 mL of 10% povidone-iodine and the chest tube was blocked for 5 hours. Very low birth weight infants, or those with lymphangiectasia, extensive deep central veins thrombosis, and abnormal kidney function before treatment may not respond to treatment or may be prone to more serious side effects.[1] None of these factors was present in our case.

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