In more advanced cases, bronchoplastic procedures have been reported.⁵

In conclusion, this case highlights an unusual presentation of tuberculosis. A high index of suspicion is warranted to make a timely diagnosis of endobronchial tuberculosis and initiate early treatment. Serial bronchoscopies will be required in this patient to assess the degree of airway stenosis.

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Lymphoceles in premature infants after congenital diaphragmatic hernia repair: Thoracoscopic management

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Polytetrafluoroethylene (PTFE) is a prosthetic material used for congenital diaphragmatic hernia (CDH) closure that has been associated with low morbidity. We report the case of a 2150-g premature newborn with a left-sided diaphragmatic hernia managed with PTFE. Heparin therapy was initiated because of an inferior vena caval thrombosis formed as a result of an indwelling umbilical catheter placed after birth. During the postoperative course, left thoracic lymphoceles developed that increased in volume, leading to bouts of respiratory distress. The lymphoceles could be successfully managed with minimal invasive thoracoscopic surgery.

Clinical Summary

A premature newborn (III/II; male; birth weight, 2150 g; gestational age, 33 weeks and 1 day) with a left-sided CDH diagnosed antenatally was delivered by means of cesarean section because of premature detachment of the placenta in a pregnancy complicated throughout by vaginal bleeding. The newborn presented with Apgar scores of 5/8/8 and was intubated immediately after birth because of the presence of pulmonary hypoplasia (arterial blood gas, pH 7.24; Pco₂, 59 mm Hg; Po₂, 357 mm Hg) and accompanying hypotension (blood pressure, 47/36 mm Hg; mean arterial

pressure, 23 mm Hg). Ventilatory support with the intermittent application of surfactant and nitric oxide, as well as circulatory support with catecholamine, was carried out for 4 days. On the fifth day, under stable cardiorespiratory conditions, the patient was operated on for the left-sided CDH.

Laparotomy revealed the presence of the stomach, spleen, and small and large bowels in the left thoracic cavity. After reducing the herniated organs, it was not possible to directly approximate the diaphragmatic defect, and a PTFE patch (Gore-Tex Soft Tissue Patch; W.L. Gore & Associates, Inc, Flagstaff, Ariz) of 1 × 1 cm was sutured to close the hernia. A femoral vein catheter was inserted to the level of the inferior vena cava to gain adequate vascular access for the procedure and postoperative management.

Two weeks after the operation, increased prominence of the abdominal veins was observed, and an ultrasonographic examination was performed. The results revealed an inferior vena caval thrombus extending from the catheter tip to the right atrium. The catheter was removed, and low-dose heparin (20 IU · kg⁻¹ · h⁻¹) prophylaxis was initiated.

Four weeks after the procedure, pleural effusions in the left thorax manifested as signs of dyspnea. On x-ray films, the effusions were peculiar in the fact that they were located throughout the left thorax and exerted hydrostatic pressure on the relatively smaller ipsilateral lung. Thoracocentesis (50 mL of cloudy secretion with a triglyceride count of 638 mg/dL and lymphocytes) was performed, and the infant was weaned from mechanical ventilation. Initially, this pleural effusion was presumed to be a result of unnoticed injury to the thoracic duct during the operation, and total parenteral nutrition was commenced.

However, 1 week later, the pleural effusions reappeared in the left thorax. Approximately 45 mL and 50 mL of blood-tinged secretion were evacuated on consecutive days. Despite thoracocentesis, the infant presented with increased respiratory distress. A reintubation was performed, and a chest tube was placed in the left

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Figure 1. An echocardiogram demonstrating the presence of multiple cyst-filled lymphoceles around the heart.

thorax. Subsequent echocardiography demonstrated the presence of multiple cyst formation around the heart, which could not be drained by the chest tube (Figure 1).

Thoracoscopy was performed, with entry gained through the left midaxillary line with a 2.7-mm optic trocar and 4 mm Hg CO₂. Clear wall cysts were visualized in the entire thoracic cavity (Figure 2). Thoracoscopic fenestration was performed, with a cautious approach to the precardiac cysts. The cystic content collected was found to have increased leukocyte content (mainly lymphocytes), and the diagnosis of thoracic lymphoceles was established. Heparin was discontinued because the thrombus was organized, and no recurrence was observed.

Discussion

Seroma formations have been reported in patients with PTFE grafts along with heparin therapy after Blalock-Taussig shunts.¹ However, this has not been reported in newborns with CDH undergoing repair with PTFE patches, although heparin treatment is administered during extracorporeal membrane oxygenation rescue before or after repair.²

Figure 2. Thoracoscopic view of the lymphocele with fenestration created to evacuate the contents.

Seroma formations are observed in patients with vascular PTFE grafts (direct contact with circulation) and demonstrate gradual growth³; however, in our case a nonvascular PTFE graft was triggered by heparin to form lymphoceles with rapid growth, which manifested as respiratory distress.

Lymphoceles are observed after renal transplantation with PTFE vascular grafts, and their laparoscopic management has been reported.⁴ However, application of thoracoscopy to evaluate and fenestrate lymphocele formations in the chest have not been reported. Thoracoscopy has been found to be an excellent and valuable minimally invasive method to treat this condition. It can be effectively used, even in premature infants with a low birth weight, and can reduce the risk of open surgical intervention and its associated morbidity.

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