Charles D. Collard, M.D., Editor

Severe Pediatric Bronchomalacia

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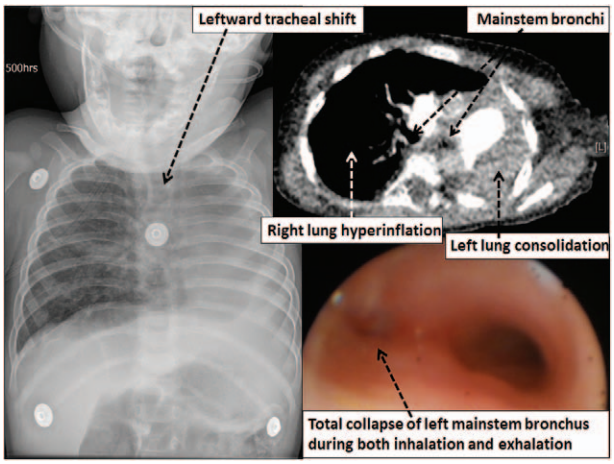

BRONCHOMALACIA is caused by deficiency in the bronchial cartilages and is defined as an appearance of deformity and a bronchial cross-sectional decrease of more than or equal to 50% during exhalation.[1] Malacia may affect one or both bronchi and/or the trachea. Tracheobronchomalacia may be primary or secondary to external compression or prolonged intubation, especially with high-pressure ventilation.[2] It is associated with esophageal atresia/tracheoesophageal fistula, congenital heart disease, and other syndromes and is part of the differential diagnosis in refractory asthma.[1]

During bronchoscopy with the patient breathing spontaneously, dynamic bronchial closure during exhalation confirms the diagnosis. Dynamic multislice helical computed tomography and virtual bronchoscopy imaging are also highly sensitive for detecting dynamic airway collapse.

We present figures of a 7-month-old child who was born at 24 weeks' gestation and required 3 months of mechanical ventilation, including, before successful extubation, 6 days of selective left bronchus intubation to treat right lower lobe bullous emphysema. The figures show left severe lung atelectasis/consolidation, contralateral lung hyperinflation, and mediastinal shift, consistent with critical/complete left bronchial obstruction. Bronchoscopy at 7 months confirmed complete collapse of the left mainstem bronchus during spontaneous exhalation with only minimal and inconsequential dilatation during inhalation.

Of note, this patient was stable on room air at home without the need for continuous positive airway pressure support. He had an uneventful herniorrhaphy under caudal anesthesia (no general anesthesia) at 5 months postnatal when he was known to have left lung collapse.

With most tracheobronchomalacia, respiratory difficulties improve with age. Positive pressure ventilation improves airflow through the stenosis. Major respiratory difficulties that persist may require long-term positive-pressure ventilatory support, resection of the affected segment(s) for more distal malacia, splinting, pexy procedures, and stenting.[3]

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Competing Interests

The authors declare no competing interests.

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References

1. Yalçin E, Doğru D, Ozçelik U, Kiper N, Aslan AT, Gözaçan A: Tracheomalacia and bronchomalacia in 34 children: Clinical and radiologic profiles and associations with other diseases. Clin Pediatr 2005; 44:777–81
2. Aaseboe K, Berstad AK, Skadberg BT: Noninvasive treatment of bronchomalacia, successful ventilation of a severely ill infant. Acta Paediatr 2007; 96:310–2
3. Austin J, Ali T: Tracheomalacia and bronchomalacia in children: Pathophysiology, assessment, treatment and anaesthesia management. Paediatr Anaesth 2003; 13:3–11

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