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NON-INVASIVE DIAGNOSIS OF TRACHEOBRONCHOMALACIA IN AN INFANT WITH BPD USING 320-SLICE CT BRONCHOGRAPHY

K. Tan[1], S. Padmanaban[1], M. Ditchfield[2], S. Hope[3], M. Cossett[3], A. Ramsden[1]

[1]Monash Newborn, [2]Diagnostic Imaging, [3]Monash Heart, Monash Medical Centre, Melbourne, VIC, Australia

Background: Abnormal airway development may occur in preterm infants with BPD and give rise to symptomatic bronchomalacia in infants with severe disease. This condition may be under recognised in this population, however, because diagnosis has to date required highly invasive procedures to be undertaken (bronchoscopy or bronchograms). The case we present is a 6-month old infant (born at 24 weeks gestation) who developed severe BPD and pulmonary hypertension. Tracheobroncholmacia was suspected on clinical grounds because of repeated episodes of sudden and profound hypercapnia (pCO2 up to 150 mmHg) precipitated by periods of activity and coughing, despite support with mechanical ventilation. Because of worsening respiratory function Dynamic Volumetric CT bronchography was performed to assess airway patency non-invasively.

Method: Parental consent was obtained to perform a CT bronchogram using a 320 slice CT scanner (Aquilon ONE, Toshiba). A 2-second scan was performed while the infant was making spontaneous respirations through an ETT. Mechanical ventilation was temporarily interrupted and CPAP reduced to 0 for the duration of the procedure.

Results The scan was well tolerated by the infant. Using a spiral, non-gated scan protocol, 3D reconstruction of the pulmonary anatomy was obtained with dynamic images of the airway during a full respiratory cycle. The images provided a definitive diagnosis of extensive bronchomalacia.

Conclusions: We have demonstrated that tracheobronchomalacia can be diagnosed non-invasively in a sick infant, using a 320-slice CT scanner. This imaging modality offers exciting opportunities to enhance diagnostic evaluation in severe lung disease.

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148 CASES OF CONGENITAL DIAPHRAGMATIC HERNIA: OUR EXPERIENCE

C. Bellan[1], A. Auriemma[1], M. Teani[1], C. Mora[1], D. Alberti[2], P. Menghini[1]

[1]NICU, [2]Pediatric Surgery, Ospedali Riuniti di Bergamo, Bergamo, Italy

Background: The prognosis of babies with CDH remains unsatisfactory despite recent advances in medical and surgical treatment.

Recent studies have proved that mortality rate in high risk patients is around 50-60%.

Methods: 148 neonates affected with CDH were treated in the NICU of Bergamo, from 1994 to 2009.

In the case of pulmonary hypertension iNO is given, if neonates show severe hypoxia refractory to conventional therapies, they are treated with ECMO.

Only when a stable situation is reached, can surgical repair be performed, in the NICU, during HFOV.

In the case of wide defects or complete agenesis of the diaphragm (53 cases), prosthetic material is used (Gore-Tex).

After the surgical operation HFO ventilation is carried out, followed by weaning of the conventional ventilation until extubation.

Results: Antenatal echographyc diagnosis was made in 91 cases.

Gestational age was 38 ± 2.2weeks. There were 116 left CDH and 18 right CDH; 14 hemidiaphragm agenesis.

Major associated anomalies have been identified in 33 patients and 9 newborns had a gestational age of < 35 w.

In 18 cases stabilization was not obtained and neonates died before undergoing surgery. 5 neonates underwent ECMO. 49 babies were treated with iNO.

102 neonates survived (68.9 %) and survival reaches 75.8 % if we exclude neonates with major associated anomalies and 80.5% if we also exclude preterm infants.