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

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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. Tracheobronchomalacia 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

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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 echographic 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.

Conclusions: The use of advanced techniques of ventilation assistance, associated with pre-surgical clinical stabilization and surgery performed in the NICU, during HFOV, have improved the outcome and the CDH neonatal survival.

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RISK FACTORS FOR MECONIUM ASPIRATIONEM

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The objective of this study was to identify link between fetal distress and respiratory distress (RD) in association with meconium stained liquor. In our hospital -a tertiary referral maternity hospital was born 6783 live newborns for one year during our prospective study. All infants born after meconim stained liquor who developed RD has:

1. fetal distress, proven with CTG, first pH after admission, Apgar score, asphyxia related complications (also were analysed mode of the delivery, sex, gestational age and birth body waight)
2. maternal risk factors: fetal infection
3. meconium aspirationem syndrome (MAS), PPHN and infection. 12% of newborns born alive for one year had meconium stained liquor, 74 term infants and 27 preterm developed RD. There were 58 term infants who had evidence of fetal distress and 67% had chorioamnionitis, 29% MAS, 54% develop PPHN. In preterm infants 87% had suspected infection. We conclude that asphyxia and infection are common in newborns who develop RD after meconim stained liquor.

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THE RESPIRATORY DISTRESS AS A CAUSE FOR ADMISSION TO THE PICU

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Objective: The respiratory distress as a cause for admission in PICU

Material and methods: Studies have been retrospectively reviewed to children that had been hospitalized in the PICU "Aglia Kyriakou"

children's hospital from January 2006 until December 2009. From 702 admissions in period of 4 years, to 182 children (21%) whose admission cause was respiratory distress. The patients were divided in seven categories: 1) Viral infections of the respiratory tract-Bronchiolitis 2) Bacterial infections of the respiratory tract, complicated or not 3) Cardiac disease 4) Malignant disease 5) Chronic disease and syndromes 6) Post operational respiratory failure 7) and other causes (i.e. intoxication).

Results: Viral infections-Bronchiolitis 60 children(33%)-RSV(31%), Bacterial pneumonia 29(16%): complicated 14(7,7%) of known factor (staph aureus 50%) and simple pneumonia 15(8,3%). Cardiac disease 11 children had (6%), malignant 13(7%), chronic sub causal disease (brain paralysis, neuromuscular disease or other syndromes) 34 (19%). Postoperation respiratory failure 16 (9%) other diseases 19 (10%) as: ADEM(2), sdr Guillain Barre (3), acute obstruction of the airway (11), diaphragmatocele (1), post traumatical contusion of the lungs (1), rabdomyolisis(1).

Therapy: Oxygen therapy were given 82(45%) children, controlled mechanical ventilation 87(47,8%) with minimal duration of ten days and NIV 12(6,5%) with minimal duration 6 days in PICU, while 3 children from these continued mechanical ventilation at home. Thoracic drainage was required by 30 children, tracheostomy 6 and thoracotomy-decortications 9

Conclusion: Respiratory distress is a common cause for admission in the PICU. Is the main symptom for various and different diseases, not including only the respiratory tract.

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POSITIVE EXPIRATORY PRESSURE (PEP) FOR LOBAR COLLAPSE IN INFANTS

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Background and aims: PEP is a commonly applied modality of chest physiotherapy in infants with chronic respiratory conditions such as cystic fibrosis. We report two cases of infants with acute right upper lobe collapse treated with PEP.