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C<sub>5b-9</sub> DEPOSITION IN CHILDREN WITH GLOMERULAR DISEASES

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Kidney biopsies obtained in 28 children with glomerular diseases and studied using indirect immunofluorescence and immunoperoxidase for the detection of IgG, IgA, IgM, C1q, C3c, C4, Fibrinogen and the neoantigens of the terminal C<sub>5b-9</sub> complement complex. An affinity purified rabbit IgG was used to recognize the neoantigens of the assembled terminal components of the complement system into the C<sub>5b-9</sub> Complex. The immunohistochemical studies were correlated to the clinical data and laboratory investigations. Fourteen of the 28 patients presented specific C<sub>5b-9</sub> glomerular deposits; they were also present at the tubular sites in 8 patients and at the vascular sites in 12 patients. An unfavourable evolution was observed for patients presenting C<sub>5b-9</sub> deposits in contrast to those without such deposits, even of the same histopathological pattern of glomerulonephritis. The presence of C<sub>5b-9</sub> complex at the site of glomerular injury suggests a pathological involvement of the "in situ" complement activation and could be a marker in the prognosis of the glomerular diseases.

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## EARLY REFEEDING IN THE MANAGEMENT OF ACUTE DIARRHEA IN INFANTS BETWEEN 0 - 1 YEAR

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The authors compared early versus late refeeding in the management of acute diarrhea in infants between 0-1 year. The study was carried out on two homogeneous patient groups. In the study group (73 patients) breast feeding was resumed or early refeeding was performed in infants on nonbreast feeding, so that feeding prior to the onset of the disease was reached within 2-3 days. Refeeding was performed by resuming the milk formula in infants < 5 months, or of other foods (meat, soft, cheese, cereal, fruit, vegetables) in those > 5 months. In the control group (49 patients) late refeeding was performed, introducing milk formula after 24-36 hours (in infants < 5 months), or other foods (in those > 5 months), reverting to original feeding after 4-6 days. There were significant differences regarding the number of stools and duration of evolution. Weight halt and loss during diet was noted more frequently in the group with late refeeding. The differences between the changes of weight curve between the two groups are statistically significant ( $t = 5.32$ , at  $p = 0.01$ ). The results of the study indicate the favourable effect of early refeeding on the weight curve in the management of acute diarrhea.

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SIMPLE AND CHEAP APPARATUS FOR INHALATORY APPLICATION OF NITRIC OXIDE (NO) WITH THE POSSIBILITY OF CONTINUOUS MONITORING NO AND NO<sub>2</sub> IN THE INHALATION MIXTURE

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**Introduction** The direct application of NO into the ventilator's circuit has disadvantages: 1) it is expensive; 2) large volume of this inert gas carrying NO can decrease FiO<sub>2</sub> in the respiratory circuit of the ventilator.

**Methods** NO is diluted with nitrogen (up to 300ml/min) in the first stage. A part (0-300 ml/min) is then sucked off from this mixture and this defined amount is substituted with oxygen. Quartz capillary is the source of stabilized low-volume flow of NO. Its outer surface is covered with polyamide, which secures its elasticity. The NO concentrations are monitored using a simple chemiluminescence analyser. NO<sub>2</sub> is analysed by a aerosol chemiluminescence detector.

**Results** The Quartz capillary is sufficiently accurate (for five months it secured the NO flow of 1,8 +/- 0,05 ml/min). The stability for dosing 17 ppm was +/- 8%, for 41 ppm +/- 6%. The chemiluminescence aerosol detector of NO<sub>2</sub> detects continuously the concentrations even in the units ppt.

**Conclusions** This apparatus presents a simple, sufficiently accurate, and particularly cheap method of the NO application and monitoring NO, NO<sub>2</sub> concentrations within the ventilator's respiratory circuit.

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## Circulatory performance in neonates on high-frequency oscillation

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High-frequency oscillation (HFOV) is used to manage respiratory failure in critically ill newborns. To determine whether HFOV alters cardiac and cerebral performance we studied 18 infants (gestational age 34±13 wk, postnatal age 47±12 hours; birth weight 2350g±450) before and during HFOV (Stephan SHF 3000) for severe respiratory failure that has been unresponsive to IMV-ventilation. Dopplerechocardiography was used to determine changes in left ventricular output (LVO), cerebral and intestinal blood flow. Primary indications for HFOV included intractable airleaks (n=6), lung hypoplasia (n=1), meconium aspiration (n=1), pulmonary hypertension (n=2) and RDS (n=8). During HFOV, mean airway pressure was maintained at the same level as with IMV-ventilation. Mean blood pressure (RR) increased from 45±5 to 50±6 mmHg ( $p < 0.05$ ). Flow resistance (RR:LVO) increased from 204±13 to 231±18 ( $p < 0.05$ ). Shortening fraction did not change (28% and 27%, respectively). Heart rate decreased from 138±15 to 127±13 1/min ( $p < 0.05$ ). LVO (220±54 and 216±48 ml/kg/min, respectively) remained unchanged. Mean blood flow velocity increased from 0.15±0.04 to 0.21±0.05 m/s in the A. carotis interna, from 0.16±0.05 to 0.22±0.04 m/s in the A. cerebri anterior and from 0.25±0.07 to 0.31±0.09 m/s in the coeliac trunc ( $p < 0.05$ ). PaCO<sub>2</sub> decreased from 56±14 to 38±12 mmHg ( $p < 0.05$ ). Oxygenation index (OI=PaO<sub>2</sub>/FiO<sub>2</sub>) increased markedly. The results indicate that adequate ventilation and oxygenation can be maintained with HFOV in critically ill neonates without compromising their circulation.

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BRITISH PAEDIATRIC SURVEILLANCE UNIT (BPSU): A Proven Tool for Paediatric Research and Surveillance  
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Rare disorders which occur during childhood can have important public health implications. However, the study of these conditions requires large populations, a valid and reliable source of case ascertainment and the collaboration of many clinicians in order to generate enough cases for meaningful investigation and analysis. The BPSU, which was established in 1985 is a surveillance scheme which facilitates the investigation of rare childhood disorders seen by paediatricians throughout the British Isles. Each month, all 1300 consultant paediatricians and selected specialists are asked whether they have seen one of 13 rare disorders or not. As paediatricians are required to reply each month, compliance is consistently high at 90%. Of those who report having seen a case, 94% return the follow-up questionnaire. The rare conditions change from year to year and range from HIV infection and congenital rubella to Kawasaki's disease and Vitamin K deficiency bleeding. Conditions which require urgent investigation can be included at short notice. So far 21 large-scale studies have been completed with an additional 13 in progress.

The BPSU has successfully sustained nationwide collaboration among paediatricians and maintained a high level of case ascertainment. In addition, results from many BPSU studies have had important public health effects. For example: demonstration of severe side effects with one type of mumps, measles, and rubella vaccine; identification of Haemophilis influenzae vaccine failures; and providing evidence of an association between aspirin and Reye's syndrome which resulted in the withdrawal of aspirin for children. The surveillance scheme also provides clinical information to paediatricians about the identification and management of rare conditions

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## LUNG VOLUMES AND LUNG MECHANICS IN NEONATES AND INFANTS WITH CONGENITAL DIAPHRAGMATIC HERNIA (CDH)\*

Neonates with CDH are exceptionally vulnerable to complications of artificial ventilation such as pneumothorax and bronchopulmonary dysplasia (BPD) because of their reduced lung volumes, demonstrable by measurement of functional residual capacity (FRC) and thoracic gas volume (TGV). **Methods:** Serial lung function tests were performed in three infants with CDH, including single occlusion tests, nitrogen washout measurement of FRC (SensorMedics 2600, USA), and determination of TGV (Jaeger Baby-Bodyplethysmograph). **Results:** Two neonates with right-sided CDH showed appropriate increase of initially low respiratory system compliance, FRC, and TGV shortly after operation. The remaining infant had left-sided CDH and developed severe BPD accompanied by extremely low compliance and FRC, and elevated resistance and TGV values.

**Conclusions:** Serial measurement of both FRC and TGV permits early detection of lung overinflation in infants with CDH threatened by BPD. Our results are consistent with reports indicating a better prognosis for right-sided CDH in regard of lung function.

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