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Background and aims Health-care seeking behavior is affected by various socio-economic, physical and cultural factors. A proper understanding of such factors can improve access to health-care and focus the development of health outreach programs. We determined factors that influence and differentiate health-seeking behaviors for children compared to care for mothers among women in rural India.
Method Cross-sectional health survey of women, 18–45 years conducted by female interviewers in a hospital clinic and in sixteen surrounding villages in rural Gujarat, India. As a part of the survey, respondents identified the "most significant factor" that influences their decision when selecting a health-care provider. Additionally, respondents with a living child were also asked the same question in regards seeking care for their children.
Results 681 women completed the survey, of which 496 reported having a living child. Of these 496, 193 (39%) identified cost as "most significant factor" when choosing a provider for themselves compared with only to 73 (15%) for their children (χ^2, p<0.0001). Quality of the care provided is a more significant factor when seeking care for children (11%) than for mothers (4%) (χ^2, p<0.0001). Education and income significantly influence mothers' behavior when choosing a healthcare provider for themselves, but not for their children.
Conclusion Health-seeking behavior is an important variable in the success of outreach health programs. Mothers in this area of India consider quality of care more and cost less when selecting provider for their children's care in contrast to their own.

06 COMMUNICATION BETWEEN DOCTORS AND PATIENTS/ PARENTS IN PAEDIATRIC OUT-PATIENT CLINIC SETTING

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Background General Medical Council (GMC) has produced guidance to standardise what constitutes 'good communication' in order to provide a framework for clinicians. Excellent communication in the paediatric setting is challenging and paediatricians are faced with the challenge to meet the needs of heterogeneous paediatric patient group of different ages along with the presence of parents/extended family during the consultation.
Aim To evaluate the communication between doctors and patients/parents in paediatric out-patient clinic setting.
Methods Willing parents and young persons were asked to fill out a standardized questionnaire following their consultation in the children's out-patient clinic. In order to limit bias, the clinicians were blinded and data collection was carried out in the reception area without their knowledge.
Results 100 questionnaires were completed. All parameters scored at least 47% in the 'excellent' category. The highest proportions of 'excellent' (70%) results were seen in the 'polite and caring' category (95% CI 61.02 to 79.98). The area requiring most attention was 'giving the parents/patients opportunity to ask questions'. Consultants received a higher proportion of 'excellent' results than paediatric trainees. Overall satisfaction rate (good and excellent) was close to 90%.
Conclusion Although majority of the feedback on communication was good to excellent, there was room for further improvement. This can be targeted using communication skills tools involving role players in simulated setting during departmental and regional teaching sessions. Assessment of communication should constitute one of the components of annual appraisals for junior paediatric trainees. This should also be incorporated into GMC's revalidation procedure.

07 HYPOGLYCAEMIA AND HIGHER LEVELS OF HOMOCYSTEINE ARE ASSCOCIATED WITH WATERSHED AND WHITE MATTER INJURY IN NEONATAL ENCEPHALOPATHY FOLLOWING HYPOXIA-ISCHEMIA

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Objective Neonatal encephalopathy (NE) is a serious condition, primarily seen following hypoxia-ischemia. Different patterns of brain injury can be recognised following perinatal hypoxia-ischemia (HI). Whether these patterns of injury can be attributed to different associated risk factors still needs to be established.
Aim To identify the association of antenatal, perinatal and thrombophilic risk factors in infants with NE following HI with pattern of brain injury.
Methods In 110 infants with clinical signs of NE following perinatal HI, thrombophilic factors were prospectively investigated. These included factor V Leiden and prothrombin gene mutation, C677T and A1298C polymorphisms in the MTHFR gene and plasma levels of homocysteine and lipoprotein(a). Antenatal and perinatal variables were studied.
Results White matter/watershed injury was seen in 44 infants (40%), basal ganglia/thalamus injury in 34 (31%) and normal neuroimaging in 32 infants (29%). Antenatal factors did not differ across the different patterns of injury. The basal ganglia/thalamus pattern was associated with emergency Cesarean section. White matter/watershed pattern was associated with hypoglycaemia (< 2.0 mmol/L) (OR 5.3; 1.6–17.8 (95% CI)), CT or TT 677 polymorphism in the MTHFR gene and plasma homocysteine levels in the upper quartile (OR 2.9; 1.01–8.4 (95% CI)) compared to the no injury group.
Conclusion Across three patterns of injury in infants with NE following perinatal HI, predominant white matter/watershed pattern was associated with hypoglycaemia, the MTHFR 677CT or TT genotype, and higher levels of plasma homocysteine. Basal ganglia/thalamus injury showed an association with signs suggestive for more severe, acute HI.

08 IMPACT OF INHALED NITRIC OXIDE ON HYPEROXIA-INDUCED WHITE MATTER DAMAGE IN NEONATAL RATS

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White matter damage (WMD) and chronic lung disease (CLD) are the two main complications occurring in very preterm infants. Clinical and experimental evidence suggest that the use of high oxygen in preterm infants lead to both WMD and CLD. Inhaled nitric oxide (iNO) has been proposed to promote alveolarization in the developing lung, and we have reported that iNO promotes myelination and induces neuroprotection in neonatal rats with excitotoxic brain damage.

We made the hypothesis that iNO may be neuroprotective in rat pups exposed to hyperoxia. Pregnant rats were randomly assigned to hyperoxia (80% O_2) or normoxia for 8 days (E21 to postnatal

day (P) 7). Both groups received iNO (5 ppm) or air from E21 to P7. Animals were evaluated at P3, P10 and P21 using immunohistochemistry, cognitive functions and mass spectrometry imaging.

iNO significantly attenuated the severity of hyperoxia-induced WMD induced in neonatal rats. Specifically, iNO decreased white matter inflammation, cell death, and enhanced the density of developing oligodendrocytes and oligodendroglial maturation. Furthermore, iNO triggered an early upregulation of P27kip1 and brain-derived growth factor (BDNF). Whereas hyperoxia disrupted early associative abilities, iNO treatment maintained learning scores to a level similar to that of control pups. In contrast to its marked neuroprotective effects, iNO induced only small and transient improvements of CLD.

These findings suggest that iNO exposure at low doses is specifically neuroprotective in an animal model combining simultaneously injuries of the developing lung and brain that mimicked CLD and WMD in preterm infants.

09 THE SIGMA-1 RECEPTOR AGONIST PRE-084 ATTENUATES INFLAMMATION-SENSITIZED NMDAR-MEDIATED EXCITOTOXIC BRAIN INJURY IN NEWBORN MICE

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Excitotoxicity and inflammation play crucial roles in the etiopathogenesis of perinatal brain injury. We have shown that the sigma-1 receptor agonist 2-(4-morpholinethyl) 1-phenylcyclohexanecarboxylate (PRE-084) protects against N-methyl-d-aspartate (NMDA) receptor-mediated excitotoxic brain injury. In models of adult central nervous system pathology, PRE-084 has demonstrated potent anti-inflammatory properties, which makes it a promising candidate for countering inflammation-enhanced perinatal brain injury.

In the present study we evaluated the effect of PRE-084 in a neonatal mouse model of inflammation-sensitized excitotoxic brain injury.

From postnatal days 1 to 4, pups were pre-sensitized by intraperitoneal injections of IL-1beta (10ng). Two hours after the last IL-1beta dose, pups received an intracranial ibotenate injection, 1 hour after the insult they were randomly treated with i) 0.1 µg/g bodyweight PRE-084 or ii) vehicle.

Administration of PRE-084 resulted in a significant decrease in cortical grey (mean length of the lesion: vehicle 780.00µm ± 495.35 vs. PRE-084 433.33µm±116.51; n=8–9; p<0.05) and adjacent white matter damage (mean length of the lesion: vehicle 767.50µm ± 489.07 vs. PRE-084 391.11µm±126.14; n=8–9; p<0.05). No sex-specific differences in lesion size were detected (n=3–6, p>0.05). PRE-084 treatment significantly reduced the number of isolectin B4-positive activated microglial cells in perilesional white matter (mean number of isolectin B4-positive activated microglia vehicle 36.40±6.96 vs. PRE-084 19.93±11.99; n=5; p<0.05).

We are the first to report that PRE-084 reduces inflammation-sensitized NMDAR-mediated excitotoxic perinatal brain damage. Since sigma-1 receptor agonists are investigated in clinical trials in adult neurological diseases, they might be considered a promising therapeutic option also in perinatal brain injury.

10 MTOR ACTIVATES HYPOXIA-INDUCIBLE FACTOR-1α AND INHIBITS NEURONAL APOPTOSIS IN THE DEVELOPING RAT BRAIN DURING THE EARLY PHASE AFTER HYPOXIA-ISCHEMIA

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The mammalian target of rapamycin (mTOR) exerts neuroprotective effects under hypoxic or ischemic conditions. To explore whether mTOR participates in neuroprotective signaling through regulation of hypoxia-inducible factor-1α (HIF-1α), vascular endothelial growth factor (VEGF) and neuronal apoptosis in developing rat brain with hypoxia-ischemia (HI), we operated on postnatal day 10 rats by ligating the common carotid artery followed by exposure to systemic hypoxia. Brains were collected at various intervals to detect the expression of mTOR, phosphorylated mTOR (p-mTOR), HIF-1α, VEGF and cleaved caspase 3 (CC3), using immunohistochemistry and Western blot analysis. We also used terminal deoxynucleotidyl transferase-mediated dUTP-nick end labeling (TUNEL) to detect neuronal apoptosis. The p-mTOR protein expression increased at 2 h after HI, peaked at 8 h, lasted 24 h, and then dropped to the basal level. Also, the expression of HIF-1α and VEGF was significantly enhanced and peaked at 8 h after HI. Up-regulated expression of CC3 was observed at 2 h, peaked at 24 h, and lasted 72 h after HI. Increased neuronal apoptosis is associated with reduced HIF-1α and VEGF expression. Furthermore, pretreatment with rapamycin, a mTOR specific inhibitor, significantly inhibited HIF-1α and VEGF protein after HI. The expression of CC3 and the number of TUNEL-positive cells were up-regulated at 8 h and down-regulated at 24 h after HI in the rapamycin-treated group. Our findings suggest that mTOR may participate in the regulation of HIF-1α, VEGF and neuronal apoptosis, serving neuroprotective functions after HI in developing rat brain.

11 FLUID THERAPY SHOULD BE GUIDED BY FLUID RESPONSIVENESS

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Background To predict fluid response is very Important because a little or excessive expansion may alter the prognosis of the child in shock.

Methods We review experimental and clinical articles in adult and children about parameters that could predict fluid responsiveness in shock. We also analyze our experimental data in pediatric experimental model of hemorrhagic shock.

Results The most used parameters to try to predict hemodynamic response to fluids are: static pressure parameters as central venous pressure (CVP); volume as global end diastolic ventricular index (GEDVI) or stroke volume index (SVI); dynamic parameters, as pulse pressure variation (PPV) and systolic volume variation (SVV), and the response to a maneuver that increases blood volume without expanding the patient (leg raises). Several studies in adults suggest that hemodynamic volume parameters (SVI or GEDVI) predict better the response to fluids than pressure parameters (PVC); that dynamic parameters (PPV and SVV) predict better the response to fluids that static parameters; and that maneuver leg raises maneuver is the best predictive parameter. However, the results of other studies are contradictory. In children there are few studies and there is no evidence that dynamic parameters are better predictors than static volume parameters. Our experimental studies confirm these findings. Preliminary data suggest that leg raise maneuver has not good predictive power in children.

Conclusion at this time fluid therapy in children with shock should be guided by fluid responsiveness. Macrohemodynamic, microhemodynamic and tissue parameters should be used to control the response to fluid therapy.