regions. A rabbit model of GMH/IVH demonstrated an increase in activated MG in the adjacent PVWM, which may cause or exacerbate WM injury.

Aim: To use post mortem (PM) brain MRI and immunohistochemistry to investigate MG distributions in the immature brain in the presence of GMH/IVH and to compare to controls with normally appearing brain.

Methods: Preterm (< 30 wk GA) PM cases were recruited with parental consent and ethics approval. Images were acquired at 3T with T1 and T2 weighted sequences. Iba1 and CD45 MG were counted in the anterior and posterior PVWM areas, centrum semiovale, germinal matrix (GM), subplate and cortex.

Results: 6 brains showed isolated GMH/IVH and 6 showed normal appearances. Total number of MG in the GM (Iba1=14.21±1.39 p< 0.05; CD45=11±4.70) and PVWM (Iba1=12.30±0.91 p< 0.05; CD45=4.8±1.52) were higher than other regions in the GMH/IVH group. GMH/IVH PVWM MG numbers were higher than in the normal group (p=0.005).

In the presence of IVH/GMH there was a marked increase in PVWM MG as seen in experimental models of IVH/GMH. These may be responsible for initiating or exacerbating an injurious process.

98

DOPAMINE AND CIRCULATION IN THE BRAIN: A STUDY IN NEWBORN PIGLETS

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BACKGROUND AND Aims: Dopamine is widely used to treat hypotension in newborns. Data regarding its effect on the circulation in the brain, however, are ambiguous. To test for a direct effect on the brain, we estimated the magnitude of variability in arterial blood pressure (ABP) passing from systemic to cerebral circulation (i.e. frequency gain) during an ABP-challenge with dopamine in piglets.

Methods: Piglets (n=7, age 1-2 days) were anaesthetized and monitored with NIRS (cerebral oxygenation) during normo- and hypovolaemia. In both states, ABP was challenged with dopamine during a 20-minute stepwise dose-increment (20, 30, 40 and 50 µg/kg/min). Each infusion lasted 2½ minutes. Pauses lasting 2½ minutes were interpolated. Before and after the dopamine-challenge, ABP was challenged with six inflations of a thoracic aorta balloon. Each inflation lasted 30 seconds and pauses lasting 30 seconds were interpolated. Subsequently, frequency gain between ABP and cerebral oxygenation was calculated (frequency range: 0.003-0.04 Hz).

Results: Mean variability in ABP was 36±4.3 mm Hg during balloon challenge and 17±3.2 mm Hg during dopamine challenge (mean ±SEM). Mean gain between ABP and cerebral NIRS was 0.11±0.019 during ABP-challenge with the aorta balloon and 0.12±0.029 µM/mm Hg during ABP-challenge with dopamine (P=0.86). The mean difference was 0.01 [95%-CI: -0.07 to +0.09]

Conclusions: ABP-variability induced by dopamine and by inflating an aortic balloon had similar effects on cerebral oxygenation. This suggests that dopamine has no direct constricting or dilating effect on the cerebral blood vessels or that such effects are counterbalanced by changes in cerebral oxygen uptake.

99

CORRELATION OF NON-INVASIVE SYSTOLIC AND MEAN BLOOD PRESSURE (BP) MEASUREMENTS WITH ECHOCARDIOGRAPHIC HAEMODYNAMIC ASSESSMENT

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Objective: Systolic and mean BP values are routinely utilised to define hypotension on neonatal units. There is however no data correlating systolic or mean BP with cardiac haemodynamics in newborn infants.

Methods: In a randomised trial¹, 71 infants received either two transfusions of 10ml/kg or single transfusion of 20ml/kg. Clinical and echocardiographic haemodynamic measurements

were recorded before and after receiving transfusion. BP was measured using standard non-invasive oscillometric technique before performing every echocardiographic assessment. A single investigator using Philips HD-11 machine performed the haemodynamic assessments utilising standard echocardiographic and Doppler techniques. Ethics approval was obtained & statistical analysis performed utilising SPSS17.0 software.

Results: Complete data on 288 measurements was available for analysis (Table 1). The mean gestation of study infants was 26 weeks and birth weight 863 gram. Of these, 70% infants were on respiratory support at the time of study.

Table1: Pearson's correlation coefficient comparing variables(*p< 0.01)

	LVCO	RVO	SVC FLOW	SYS-TOLIC BP	MEAN BP	DIAS-TOLIC BP
LVCO	1	.494*	.508*	.236	.124	-.006
RVO	.494*	1	.477*	.196	.187	.132
SVC FLOW	.508*	.477*	1	.417*	.267	.123
SYS-TOLIC BP	.236	.196	.417*	1	.809*	.653*
MEAN BP	.124	.187	.267	.809*	1	.898*
DIAS-TOLIC BP	-.006	.132	.123	.653*	.898*	1

[Table 1: Pearson's correlation coefficient compari]

Conclusions: Systolic BP has significant correlation with SVC flow, and a significant positive correlation exists between SVC flow, LVCO & RVO. There is no correlation between mean BP and SVC flow, LVO or RVO.

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100

CARDIOPROTECTIVE EFFECTS OF CYCLOSPORINE IN A NEWBORN PIGLET MODEL OF ASPHYXIA: A DOSE-RESPONSE STUDY

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Introduction: Myocardial depression following asphyxia of the newborn is a significant cause of mortality. Cyclosporine reduces myocardial damage in adult patients undergoing percutaneous coronary intervention for myocardial infarction. However, the potential cardioprotective effects of cyclosporine in neonates have not yet been studied. We hypothesize that cyclosporine in asphyxiated newborn piglets will improve cardiac function, systemic hemodynamics and oxygen metabolism.

Methods: Thirty-six piglets (1-4 days-old) were instrumented for continuous monitoring of cardiac output and systemic arterial pressures. After stabilization, normocapnic alveolar hypoxia (10-15% oxygen) was instituted for 2h followed by reoxygenation with 100% oxygen for 0.5h, then 21% for 3.5h. Piglets were block randomized to receive one of three cyclosporine intravenous boluses (2.5, 10 or 25 mg/kg) or placebo (normal saline, control) after 5 minutes of 100% reoxygenation (n=8/group). Blood samples were collected for analysis of blood gases and plasma troponin. Statistical analysis performed using ANOVA.

Results: All piglets demonstrated cardiogenic shock (cardiac output 45% of baseline), hypotension (systemic arterial pressure 30mmHg) and acidosis (pH=7.04) at the end of 2h of hypoxia. Cyclosporine treatment at reoxygenation caused dose-related improvements in cardiac output and oxygen delivery compared to controls (both P< 0.05). Cyclosporine at 10 mg/kg significantly improved stroke volume compared to controls, demonstrating preservation of cardiac function. Plasma troponin, a marker of myocardial damage, was significantly higher in controls than that of 2.5 and 10 mg/kg cyclosporine treatment groups.

Conclusion: We first demonstrated that the post-resuscitation administration of cyclosporine caused dose-related preservation of cardiac function in newborn piglets following asphyxia-reoxygenation.