

Supplementary Information

Antenatal dexamethasone before asphyxia promotes cystic neural injury in preterm fetal sheep by inducing hyperglycemia

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Supplemental Tables

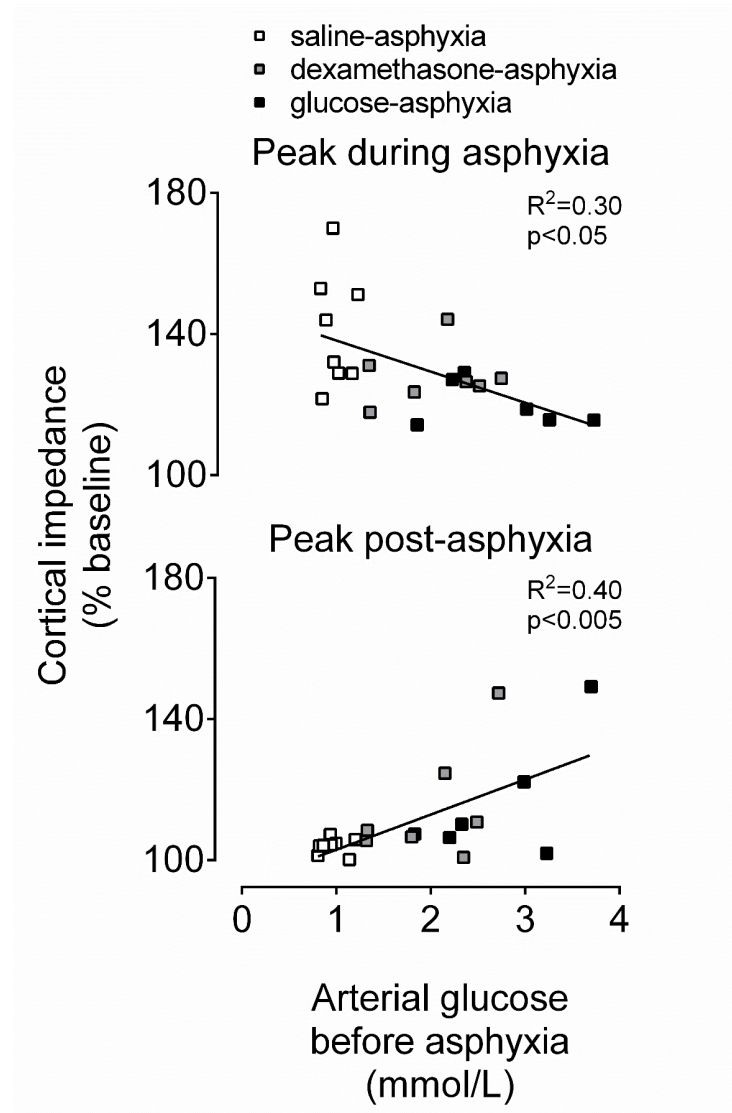
		Recovery						
		+1 day	+2 days	+3 days	+4 days	+5 days	+6 days	+7 days
pH	SS	7.37 ± 0.00	7.36 ± 0.01	7.36 ± 0.00	7.37 ± 0.00	7.37 ± 0.01	7.37 ± 0.01	7.37 ± 0.01
	DS	7.36 ± 0.01Φ	7.32 ± 0.02Φ	7.34 ± 0.02Φ	7.34 ± 0.01Φ	7.35 ± 0.01Φ	7.35 ± 0.01Φ	7.34 ± 0.02Φ
	SA	7.38 ± 0.01	7.38 ± 0.01	7.39 ± 0.01	7.39 ± 0.01	7.39 ± 0.01	7.39 ± 0.01	7.38 ± 0.01
	DA	7.36 ± 0.02Φ	7.33 ± 0.02Φ	7.37 ± 0.01Φ	7.36 ± 0.00Φ	7.35 ± 0.01Φ	7.37 ± 0.01Φ	7.36 ± 0.00Φ
	GA	7.36 ± 0.01#	7.35 ± 0.01#	7.35 ± 0.01#	7.35 ± 0.01#	7.35 ± 0.01#	7.35 ± 0.01#	7.35 ± 0.01#
P _a CO ₂ (mmHg)	SS	49.4 ± 0.7	48.9 ± 1.0	49.5 ± 0.8	44.4 ± 1.7	45.9 ± 1.6	48.8 ± 1.6	51.7 ± 1.8
	DS	52.6 ± 2.6	50.8 ± 1.2	49.0 ± 1.6	48.6 ± 1.8	51.4 ± 2.5	51.2 ± 1.4	53.5 ± 1.9
	SA	47.3 ± 0.8	47.2 ± 0.8	48.0 ± 0.9	47.2 ± 1.5	48.3 ± 1.6	49.3 ± 0.8	48.0 ± 1.3
	DA	49.5 ± 2.0	50.5 ± 3.7	48.5 ± 0.6	45.7 ± 2.4	50.9 ± 2.0	50.8 ± 1.0	50.9 ± 1.2
	GA	48.5 ± 0.9	47.4 ± 1.4	49.4 ± 1.2	49.6 ± 1.0	48.4 ± 1.1	47.7 ± 1.5	48.4 ± 1.3
P _a O ₂ (mmHg)	SS	22.8 ± 1.1	24.0 ± 1.0	23.5 ± 1.4	23.5 ± 1.4	24.3 ± 1.3	23.4 ± 1.8	23.8 ± 1.3
	DS	25.7 ± 1.1	23.8 ± 1.3	24.4 ± 0.9	21.0 ± 1.9	20.7 ± 1.9	21.6 ± 1.6	20.8 ± 2.2
	SA	27.9 ± 1.2Ψ	29.2 ± 1.4Ψ	27.1 ± 1.2Ψ	28.1 ± 1.3Ψ	26.7 ± 1.7Ψ	26.6 ± 1.7Ψ	27.2 ± 2.0Ψ
	DA	27.3 ± 1.2Ψ	30.5 ± 1.3Ψ	29.0 ± 1.5Ψ	29.1 ± 1.3Ψ	29.8 ± 1.3Ψ	29.1 ± 1.2Ψ	27.4 ± 1.6Ψ
	GA	26.8 ± 0.9	27.5 ± 1.8	27.7 ± 1.2	28.3 ± 1.4	27.5 ± 1.1	27.4 ± 1.3	26.9 ± 1.4
Lactate (mmol/L)	SS	0.9 ± 0.1	0.9 ± 0.1	0.8 ± 0.1	0.9 ± 0.1	0.9 ± 0.1	0.8 ± 0.1	0.9 ± 0.1
	DS	0.8 ± 0.1	1.0 ± 0.2	0.9 ± 0.1	0.9 ± 0.1	0.8 ± 0.1	0.8 ± 0.1	0.9 ± 0.1
	SA	1.2 ± 0.2	0.9 ± 0.1	1.0 ± 0.0	0.9 ± 0.1	0.9 ± 0.1	0.9 ± 0.1	0.8 ± 0.1
	DA	1.0 ± 0.1	0.8 ± 0.0	0.8 ± 0.1	0.8 ± 0.0	0.8 ± 0.0	0.7 ± 0.0	0.7 ± 0.0
	GA	1.4 ± 0.2	0.9 ± 0.1	0.9 ± 0.1	0.9 ± 0.1	0.9 ± 0.1	0.8 ± 0.1	0.8 ± 0.1
Glucose (mmol/L)	SS	1.1 ± 0.1	1.1 ± 0.1	1.0 ± 0.1	1.0 ± 0.1	1.1 ± 0.1	1.1 ± 0.1	1.0 ± 0.1
	DS	1.2 ± 0.1	1.0 ± 0.1	1.0 ± 0.1	0.9 ± 0.1	0.8 ± 0.1	0.8 ± 0.1	0.8 ± 0.1
	SA	1.2 ± 0.2	1.0 ± 0.2	0.8 ± 0.2	1.1 ± 0.0	1.1 ± 0.1	1.1 ± 0.1	1.1 ± 0.1
	DA	1.8 ± 0.3	1.1 ± 0.1	1.2 ± 0.2	1.1 ± 0.1	1.2 ± 0.1	1.1 ± 0.1	1.2 ± 0.1
	GA	1.2 ± 0.1	1.0 ± 0.1	1.0 ± 0.1	1.2 ± 0.1	1.1 ± 0.1	0.9 ± 0.1	1.0 ± 0.1

Supplementary Table 1. Fetal pH, blood gases and metabolites during recovery. SS, saline-sham; DS, dexamethasone-sham; SA, saline-asphyxia; DA, dexamethasone-asphyxia; GA, glucose-asphyxia. Data are means ± SEM. P_aCO₂; arterial pressure of carbon dioxide, P_aO₂; arterial pressure of oxygen. Ψp<0.05, effect of asphyxia; Φp<0.05, effect of dexamethasone treatment; #p<0.05, glucose-asphyxia vs. saline-asphyxia.

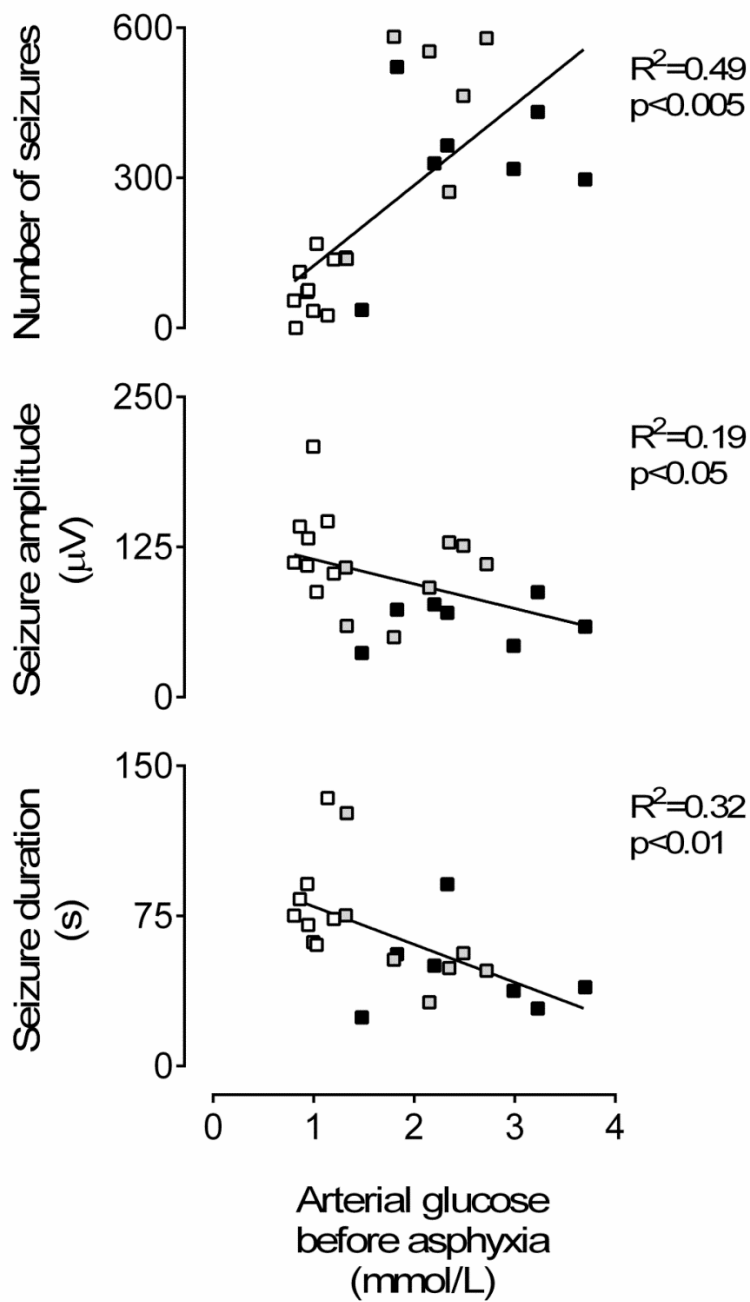
Group	Sex	Body weight (g)	Brain weight (g)
SS	3 F, 5 M	1970.5 ± 180.0	34.3 ± 0.8
DS	4 F, 5 M	1841.2 ± 116.7	28.8 ± 1.2 Φ
SA	4 F, 5 M	2078.1 ± 157.5	27.6 ± 1.0 Ψ
DA	5 F, 2 M	2343.4 ± 179.0	27.6 ± 0.6ΨΦ
GA	3 F, 4 M	2385.3 ± 258.1	28.0 ± 2.0

Supplementary Table 2. Fetal sex and post mortem data. SS, saline-sham; DS, dexamethasone-sham; SA, saline-asphyxia; DA, dexamethasone-asphyxia; GA, glucose-asphyxia; F, female; M, male. Data are means ± SEM. Ψp<0.05, effect of asphyxia; Φp<0.05, effect of dexamethasone treatment.

Supplemental Figures



Supplementary Figure 1. The top graph illustrates that higher glucose levels before asphyxia in the three asphyxia groups were associated with a lower peak in impedance during asphyxia. The bottom graph shows that higher glucose levels before asphyxia were associated with a higher secondary peak in impedance during recovery after asphyxia.



Supplementary Figure 2. Increased arterial blood glucose levels before asphyxia in the three asphyxia groups were associated with increased numbers of as well as decreased amplitude and duration of post-asphyxial seizures.