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SYSTEMIC EFFECTS OF WHOLE-BODY COOLING TO 35, 33 AND 30°C IN A PIGLET MODEL OF PERINATAL ASPHXYIA

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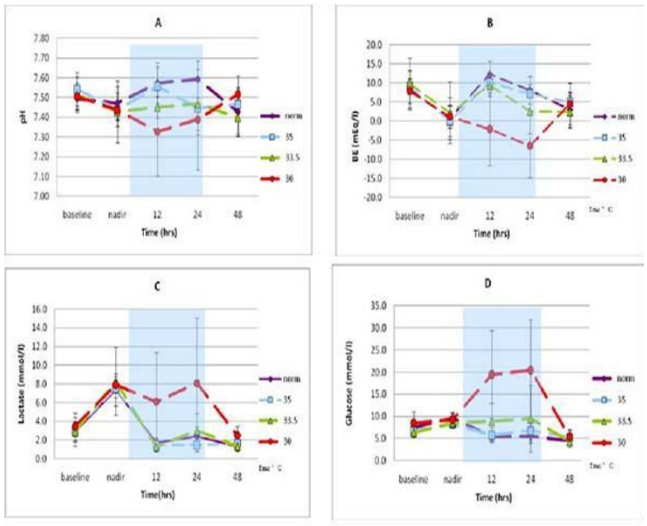
Background: Therapeutic hypothermia reduces morbidity and mortality in infants with neonatal encephalopathy. Clinical trials are investigating lower temperatures as tailoring cooling with precision may provide benefit.

Aims: To assess systemic effects of whole body cooling to 35°C, 33.5°C and 30°C in piglet model of perinatal asphyxia.

Methods: Twenty eight newborn anaesthetised piglets, underwent standardized HI insult then randomised (all groups n=7), with intervention from 2-26h to i) normothermia (N); ii) cooling to rectal temperature 35°C; iii) 33.5°C, or iv) 30°C.

Results: During cooling, HR was lower at 30°C vs N (p=< 0.001); MABP did not differ between groups. Inotrope and volume replacement were higher at 30°C vs other groups (p=< 0.05). Blood pH and glucose were deranged at 12h (p=< 0.05) vs N and 35°C, respectively. Blood lactate was deranged at 24h (p=0.05). BE was deranged at 12 and 24h at 30°C vs all other groups (p=< 0.05)(Fig 1 A-D).

Conclusions: Cooling to 30°C led to prolonged adverse systemic effects. In-advertant overcooling should be avoided in infants undergoing therapeutic hypothermia.



Cooling temperature	38.5°C	35°C	33.5°C	30°C
Total given (over 48 hours)				
Median Boluses ml/kg	15	19	18	70
Mean Dopamine mcg/kg/min (SD)	0 (0)	5.98 (1.93)	8.00 (4.96)	12.01 (7.21)
Median Cumulative Dopamine mg/kg	0	0	11.43	21.53

[Bolus and Dopamine Use]