When comparing all the pigs treated with NACA vs. saline after hypoxia Fold Change of ASC in cortex was significantly reduced, p (Table 2).

In hippocampus, cortex and Striatum Fold Change of IL-1b was elevated in all the hypoxia groups compared with the control group, p

Conclusion NACA reduces the protein expression of Il-1beta and mRNA-expression of ASC in cortex after hypoxia. This may indicate that NACA has some neuroprotective abilities after perinatal asphyxia.

Upcoming analyses of histopathology and injury markers will elucidate possible neuroprotective effects of NACA treatment following birth asphyxia.

PS-337 WITHDRAWN

PS-338 CONCURRENT ALLOPURINOL AND HYPOTHERMIA TREATMENT IN A TERM NONHUMAN RAT MODEL OF HYPOXIC ISCHAEMIC ENCEPHALOPATHY

[1]J Rodriguez Fanjul, [2]C Durán Fernández-Feijoo, [3]N Villalmazo, [4]M Girabent Farrés, [1]M Camprubí Camprubí. *[1]Neonatology, Hospital Sant Joan de Déu, Barcelona, Spain; [2]Neonatology, Complejo Hospitalario Universitario de Vigo, Vigo, Spain; [3]Laboratory, Hospital Sant Joan de Déu, Barcelona, Spain; [4]Biostatics Epidemiology, Universitat Internacional de Catalunya, Barcelona, Spain*

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Background and aims Hypoxic-ischaemic encephalopathy (HIE) has been associated with long-term disabilities. Hypothermia is effective but does not provide complete neuroprotection, adjunctive therapies are necessary. Allopurinol has been proved as a good neuroprotector, but it has never been tested associated with hypothermia. The aim of the present study was to examine therapeutically effectiveness of dual therapy (hypothermia + allopurinol) versus hypothermia, in a neonatal rat model of HIE.

Methods 120 Wistar pups at postnatal day 10 were used and divided into 5 groups: Sham-Operated, Hypoxic-ischaemic (HI) aggression, HI aggression + Allopurinol, HI aggression + Hypothermia, HI aggression + Hypothermia + Allopurinol.

At 25 day of life, spatial memory was assessed via water maze test. Finally, rats were anaesthetised and sacrified. In order to assess possible alterations in the hippocampal synaptic network, 3 specific synaptic proteins (PSD95, SNAP25, synaptophysin) were tested by Western Blot.

Results There were differences in the learning outcomes among hypoxic, hypoxic + allopurinol, hypothermia, hypothermia + allopurinol and sham operated ($p < 0,05$). The worst group was the hypoxic one.

Synaptophysin and SNAP25 levels were higher in controls and treatment groups compared with hypoxic untreated animals. However, the highest level of PSD95 corresponded to the hypoxic group.

Conclusions Hypothermia and allopurinol seem to improve learning in HIE pups.

Increased levels of presynaptic proteins in the treatment groups suggest that hypothermia and allopurinol improve synaptic plasticity compared with untreated group.

PSD95 was also described in the literature as a suppressor of dendritic arbour development, so this could explain our results in the hypoxic group.

PS-339 THERAPEUTIC HYPOTHERMIA IN THE ASPHYCTIC NEWBORN: IMMUNOHISTOCHEMICAL COMPARISON OF THREE COOLING TARGET TEMPERATURES IN THE PIGLET BRAIN

[1]D Alonso Alconada, [1]K Broad, [2]A Bainbridge, [1]M Chandrasekaran, [1]SD Faulkner, [1]A Kerenyi, [1]KJ Hassell, [3]B Fleiss, [1]K Bennett, [1]D Kelen, [2]E Cady, [3]P Gressens, [4]X Golay, [1]NJ Robertson. *[1]Neonatology, Institute for Women's Health University College London, London, UK; [2]Medical Physics and Bioengineering, University College London Hospitals NHS Trust, London, UK; [3]Perinatal Imaging and Health, Centre for the Developing Brain King's College London, London, UK; [4]Brain Repair and Rehabilitation, Institute of Neurology University College London, London, UK*

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Background and aims Therapeutic hypothermia has now become standard of care for neonatal hypoxic-ischaemic brain injury, as it reduces death and neurological sequelae without neurodevelopmental disabilities. There are however around 40% of infants who, despite treatment, have an adverse neurodevelopmental outcome. We aimed to assess brain regional cell death and microglial activation with cooling to 35°C, 33.5°C, and 30°C after hypoxia-ischemia (HI) in the piglet asphyxia model.

Methods Following HI and resuscitation, 28 newborn piglets were randomised to: (i) normothermia (38.5°C throughout), or whole-body cooling 2–26 h post-insult to (ii) 35°C, (iii) 33.5°C, or (iv) 30°C (all groups $n = 7$). At 48 h after HI, regional neuropathological analysis was performed to assess delayed cell death (quantitative analyses of both TUNEL-positive cells and cleaved caspase 3 immunoreactivity) and microglial activation (Iba-1 staining).

Results Compared with normothermia, cooling to 33.5°C showed a strong reduction in delayed cell death in periventricular white matter, hippocampus, caudate, putamen, thalamus and midtemporal cortex, a beneficial effect also extended to other cortical areas when analysing microglial activation. Cooling to 35°C was also beneficial, but in fewer regions than at 33.5°C. On the contrary, cooling to 30°C neither reduced delayed cell death nor maintained the microglial ramification index, showing a global neuropathological pattern similar to that observed in the normothermic group.

Conclusions In our piglet perinatal asphyxia model, the optimum therapeutic hypothermia temperature is 33.5°C, thus suggesting that the extent of neuroprotection might not proportionately increase with temperature decreases.

PS-340 AGE-RELATED CHANGES AND EFFECTS OF MILD HYPOTHERMIA ON CAROTID ARTERY REACTIVITY IN NEWBORN RATS

[1]G Cavallaro, [2]E Bijker, [2]E Strackx, [3]JSH Vles, [2]D Gavilanes, [2]E Villamor. *[1]Neonatal Intensive Care Unit, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico Università Degli Studi Di Milano, Milan, Italy; [2]Pediatrics, Maastricht University Medical Center, Maastricht, Netherlands; [3]Child Neurology, Maastricht University Medical Center, Maastricht, Netherlands*

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Introduction Therapeutic hypothermia has become a standard neuroprotective treatment in term newborn infants following perinatal asphyxia. Hypothermia-induced changes in the reactivity of the vessels supplying the brain might play a role in its therapeutic or side effects. We investigated the putative age-related changes and the effect of clinically relevant cooling (33°C) on the reactivity of the newborn rat carotid artery.