

on the preliminary studies, minority patients may require a tailored treatment because race and gender were identified as important risk factors for ischemic and hemorrhagic stroke (Lo et al., 2009).

Conclusions: Larger population-based prospective studies ($n \geq 500$) need to be conducted for further clarity of these disparities. Risk factors for childhood stroke are being clarified with mounting evidence for the role of hereditary prothrombotic states, vascular abnormalities such as arterial dissection, and infections such as varicella. Investigation into the ethnic and gender distribution of these risk factors may provide clues into the demographic disparities in stroke seen in both children and adults (Fullerton et al., 2003).

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A MOUSE MODEL OF POST-TRAUMATIC STRESS DISORDER FOR ASSESSMENT OF AVOIDANCE BEHAVIOR

NC. James¹, K. Kohli¹, M. Flores¹, KK. Caldwell² ¹School of Medicine, University of New Mexico, Albuquerque, NM and ²School of Medicine, University of New Mexico, Albuquerque, NM.

Purpose of Study: Avoidance of stimuli associated with a traumatic experience is one of the hallmark symptoms of PTSD. We aimed to determine if mice exposed to a traumatic event (predator odor) in the presence of a non-threatening object would demonstrate avoidance behavior toward the object in a different context. The ability to measure avoidance of a trauma-related stimulus will validate the predator exposure mouse model of PTSD.

Methods Used: 33 female C57BL/6 mice were assigned to one of three groups: no odor control ($n = 12$), predator odor-exposed ($n = 12$) or naïve ($n = 9$). Soiled, rat bedding was used as the source of the predator odor; clean bedding was used for the no odor control condition. Mice were exposed, or not (naïve controls); three times (10 min each) to bedding in the presence of a non-threatening object (125 mL brown glass-stopper bottle). Subsequently, the animal's response to the object was assessed in a standard open field/novel object test, in which the object was placed into the center of an open field.

Summary of Results: All three groups displayed an increased mean number of center entries in the presence of the object compared to the absence of the object. Two-way ANOVA found a significant effect of the object [$F(1,30) = 37.75$, $p < 0.0001$], while exposure condition showed no significance. However, a significant interaction between the object and exposure condition was found [$F(2,30) = 3.74$, $p < 0.05$]. Odor-control mice had the largest increase in number of center entries, followed by odor-exposed mice, with naïve mice having the smallest increase. The trend in odor-exposed mice to display avoidance towards the bottle was not statistically significant. Bonferroni post hoc analysis of all three groups did not reveal any significant ($p < 0.05$) difference in the number of center entries in the absence or the presence of the object.

Conclusions: The paradigm used for the pairing of an object with a trauma either will require modification in order to model avoidance behavior or may not be useful in the development of a mouse model of PTSD.

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HEMODYNAMIC ANALYSIS OF SMALL MIDDLE CEREBRAL AND BASILAR ARTERY ANEURYSMS

J. Lee¹, G. Duckwiler², A. Chien² ¹UCLA, Los Angeles, CA and ²UCLA, Los Angeles, CA.

Purpose of Study: The outcome of prophylactic treatment for small, unruptured brain aneurysms is controversial. The purpose of this study was to investigate hemodynamic properties that may distinguish such aneurysms that are at risk for rupture and therefore, candidates for treatment. This study utilized hemodynamic simulation tools to determine hemodynamic properties in ruptured and unruptured small aneurysms in the middle cerebral artery (MCA) of the anterior circulation and basilar artery (BA) of the posterior circulation.

Methods Used: This study examined three dimensional rotational angiography (3DRA) images of ten different aneurysms (5 MCA/5 BA) via patient-specific computerized flow dynamic (CFD) application. Analyzed

hemodynamic properties included flow pattern, impingement, and complexity. These factors were evaluated by two experts who were blinded to patient histories and outcomes. The results were also compared with previous studies utilizing a different simulation program.

Summary of Results: The ruptured MCA aneurysms tended to show flow complexity. However, ruptured BA aneurysm results did not indicate any clear trend with regards to the flow complexity. We also found that more than 80% of the aneurysms (both ruptured and unruptured) had a concentrated inflow jet and small impact zone, regardless of the aneurysm's location.

Conclusions: The simulation results of this study revealed similar trends in the hemodynamic properties between ruptured and unruptured MCA aneurysms as those of previous studies utilizing different programs. However, the results for the BA cases were not as clear with describing hemodynamic properties. Given the small data sample, both aneurysm cases should be investigated further for better hemodynamic characterization.

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NEURAL EMBRYONIC STEM CELLS CULTURED IN A SIMULATED MICROGRAVITY ENVIRONMENT SHOW ENHANCED PROLIFERATION AND SURVIVAL

KZ. Oregel², A. Espinosa-Jeffrey¹, J. de Vellis¹, L. Yuge¹ ¹Sebel Institute at UCLA, Los Angeles, CA; ²UCLA, Los Angeles, CA and ³Hiroshima University, Hiroshima, Japan.

Purpose of Study: In this study, we examined the effects of the three-dimensional (3D)-clinorotation, a simulated-model of microgravity, on cell survival, proliferation and commitment/differentiation of rat and human neural embryonic stem cells. Traditionally, neural embryonic stem cells (NSC) can be grown and propagated in normal gravity (1G). Although a 1G environment yields good numbers of progenies it occurs after long periods of time and effort in addition to inadequate numbers of committed cells for replacement therapies.

Methods Used: This study builds upon previous findings by Yuge, et al (in press) that demonstrated an increase in cell survival rate by maintaining an undifferentiated state of bone marrow stromal cells in microgravity. In 1G, the ability to direct a pluripotent NSC stem cell to commit and differentiate into a specific phenotype has been well documented by Espinosa-Jeffrey et al in 2002 and 2009 where specific phenotypes are instructed by the culture media. In the present work our immediate goal is to combine both methodologies and characterize the effects of microgravity on the yield of NSC as well as the commitment, the differentiation and proliferation rates of NSC as they become oligodendrocytes (OL). We will characterize the developmental progression of NSC, Oligodendrocyte Progenitors (OLP), and OL by double immunofluorescence using known OL developmental markers Nestin, PDGFR α and Myelin Basic Protein, respectively.

Summary of Results: Our preliminary results have shown that cells are healthy and there seems to be an increase in cell numbers, and survival in both human and rat neural embryonic stem cells grown in microgravity with respect to their 1G counterparts.

Conclusions: The ultimate objective is to sustain a reproducible means of generating large numbers of oligodendrocyte progenitors. The idea is to start with a small sample size, such as a small biopsy of tissue from the Subventricular Zone, propagate them and commit the progenies *in vitro*. Once committed, then utilize the cell population as self-grafts that offers the advantage of not having the risk of graft rejection. Our future work will include grafting of NSC, cultured in microgravity, into a rat spinal cord injured-model.

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SEIZURE OUTCOMES OF LESIONECTOMY WITH AND WITHOUT INTRAOPERATIVE ELECTROCORTICOGRAPHY IN CHILDREN WITH LESIONAL EPILEPSY

AW. Battison¹, JN. Gelinas², MB. Connolly², P. Steinbok¹ ¹University of British Columbia, Vancouver, BC, Canada and ²University of British Columbia, Vancouver, BC, Canada.