Alterations of Brain Microvasculature due to Chronic Pain

Raquelle Sloan, Dr. Maral Tajerian, Sophia Betzios , Michael Amrami
Department of Biology, Queens College, City University of New York, Queens, NY, 11367, USA

BACKGROUND

- Chronic pain is estimated to affect 1.5 billion people worldwide.
- CD44 functions as a receptor, and has been implicated in inflammation associatedwith neuronal injuries.
- VCAM-1 helps regulate inflammation-associated vascular adhesion.
- An increase of proinflammatory factors and a reduction of neurotrophic factors have been reported to modulate the hippocampal neurogenesis and neuroplasticity in chronic pain.
- The spared nerve injury (SNI) model induces symptoms of neuropathic pain.

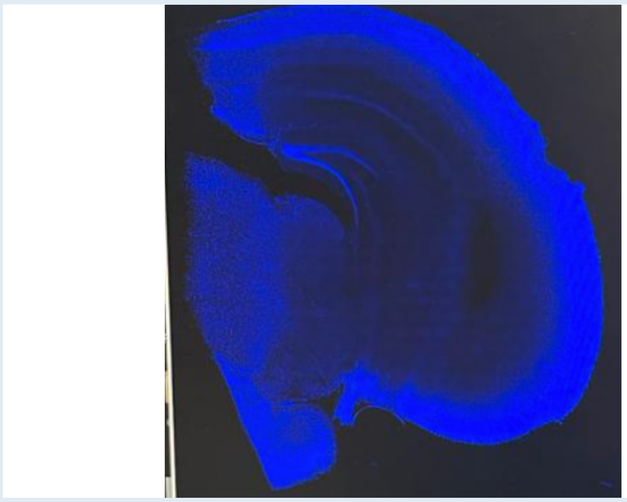
METHODS

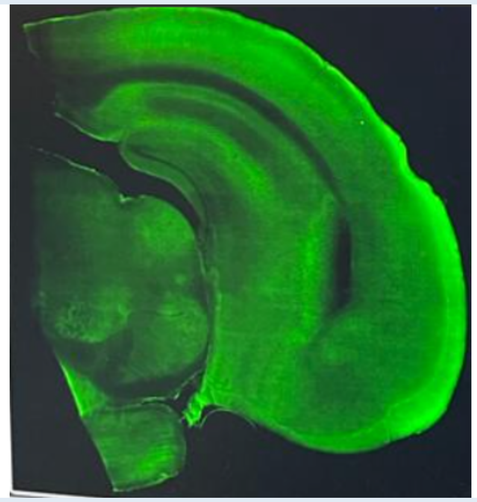
- On day 0, the SNI surgery is performed; half of the mice get the surgery, the other half get the sham surgery.
- On day 1, the mice get injected intraperitoneally with 0.1 mL of buprenorphine.
- On day 1, 7, 28, the mice get behavior testing. They go through the Y maze, open field , zero maze and von Frey analysis.
- Five of the sham mice and five of the injured mice are perfused with PBS solution, while the other ten are perfused with the microphil solution.
- The mice are then sacrificed and the sectioning of their brains takes place later on.
- Using IHC, the brain sections are stained and then using the Keyence are imaged.
- The images will be further processed and then quantified by cell count and intensity using ImageJ.

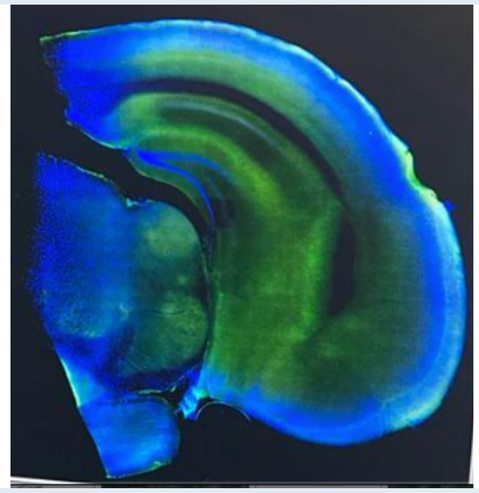
CONCLUSION

This study will allow for a better understanding of how chronic pain affects the microvasculature of the brain.

RESULTS







The above images are brain sections stained blue with DAPI, red with VCAM, green with CD44 and the overlap.

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