**Mast Cell Infiltration in the Sciatic Nerve in a Chronic Constriction Injury Model of Neuropathic Pain**

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Rationale: It is known that the Mast Cell (MC) is involved in the inflammatory response due to nociceptive pain (A. Aich, et al, *Int. J. Mol. Sci.,* 2015). We sought to examine mouse sciatic nerve samples that underwent chronic constriction injury (CCI) for MC count in the perineural area and surrounding connective tissue. MC count in the perineural space and connective tissue may propose MC role in nociception, specifically neuropathic pain.

Methods: Samples of mouse sciatic nerve were obtained and treated with Toluidine Blue staining to count and identify MC. Images were taken using Q Capture Pro at 20X magnification. The metachromatic stained MCs were counted in the perineural space and connective tissue surrounding the nerve. Three images per sample contributed to the mouse average MC count per high power field. Group average MC count consisted of the average of all the samples’ mouse average MC count per high power field.

Results: Connective tissue MC count increased in all CCI groups with and without MSC transplant compared to control. Perineural MC count increased in all treatment groups compared to control and the CCI group without treatment. Further experimentation will include GFP count to determine if the MSCs differentiate to MCs at the site of lesion.

Conclusion: This study provides insight regarding the possibility of MSCs differentiating into MCs to play a significant role in neuropathic pain. A basis of MC activity at the site of lesion with further count of GFP positive MCs in MSC+GFP transplant CCI samples may determine whether MSCs differentiate into MCs at the site of lesion or exhibit an immunomodulatory effect which increases MC proliferation. An understanding of MSC transplant and MC involvement in chronic constriction injury will provide a greater understanding of neuropathic pain.