

Spinal Cord Injury Causes Chronic Liver Pathology and Metabolic Disruption in Rodents

June 11

Tuesday, 12:30 pm

Weekly Colloquium

Billings Building
Rosedale Conference Room



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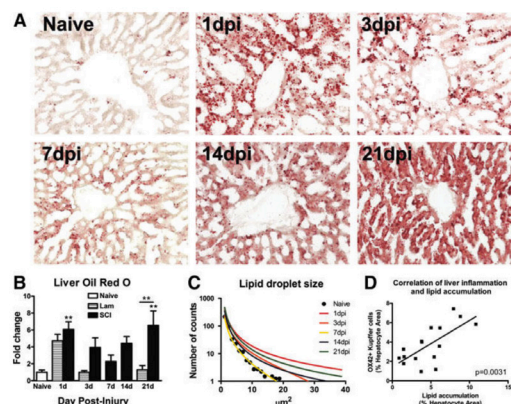
Host: Vibhu Sahni, Ph.D.

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Abstract

Since the spinal cord innervates all body organs, it is likely that injury to the spinal cord will disrupt systemic homeostasis. An organ central to energy balance and overall homeostasis is the liver. Thus, we tested the hypothesis that spinal cord injury (SCI) causes liver pathology and overall metabolic problems using a preclinical rat model of mid-thoracic spinal contusion. Results show that liver becomes inflamed within 24h post-injury, which is sustained for at least 6 months. Liver hepatocytes also accumulated excess fat. The combination of fat accumulation and inflammation is a condition called non-alcoholic steatohepatitis or fatty liver disease. In our SCI rats, this was associated with long-term liver damage, insulin resistance and hyperlipidemia. Notably, these conditions all occur at a higher incidence in the SCI population indicating that our animal model is mimicking the clinical condition. Data indicating liver inflammation alters the overall outcome from SCI will be presented and potential mechanisms for SCI-induced liver pathology will be discussed.



1. Goodus M, Sauerbeck A, Popovich PG, Bruno RS, McTigue DM. Dietary green tea extract prevents hepatic iron overload but does not improve chronic hepatic and spinal cord pathology after spinal cord injury in rats. *J Neurotrauma*, 35: 2872-82; 2018. doi: 10.1089/neu.2018.5771.
2. Sauerbeck AD, Laws JL, Bandaru VVR, Popovich PG, Haughey NJ, McTigue DM Spinal cord injury causes chronic liver pathology in rats. *J Neurotrauma*, 32: 159-169; 2015 PMID: 25036371
3. Popovich PG, McTigue DM, Bedside to Bench: beware the immune system in spinal cord injury. *Nature Med* 15: 736-7; 2009