

Global Experts Meeting on

PLASTIC AND AESTHETIC SURGERY

May 14-15, 2018 | Singapore City, Singapore

Local anesthetics for neuroprotection prior to nerve transection

 Nicole L Miller BS¹, Harvey W. Chim MD² and Christopher J. Salgado MD³
¹Florida International University Herbert Wertheim College of Medicine, USA

²University of Florida School of Medicine, USA

³University of Miami School of Medicine, USA

Following coaptation of peripheral nerves in reconstruction, multiple limitations exist in the regeneration process. Lidocaine may serve as a neuroprotectant prior to nerve transection through inhibition of calcium influx and thus preservation of donor axons. The usefulness of this local anesthetic as a neuroprotective agent was investigated in a rat sciatic nerve model. The sciatic nerves of 41 Sprague-Dawley rats were injected with normal saline (n = 9), 1% Lidocaine (n = 11), 1% Lidocaine w/ 10% calcium gluconate (CG) (n = 11), and 10% calcium gluconate (n = 10). Following injections, the sciatic nerves were transected, labeled with Fluorogold nerve tracer and microsurgically anastomosed. Animals underwent behavioral testing preoperatively and postoperatively at 8 or 12 weeks. Walking track analysis and gridwalk testing demonstrated enhanced recovery of locomotion

in rats that were administered Lidocaine prior to nerve transection compared to other groups. At 8 weeks, Lidocaine and Lidocaine w/ CG-treated rats had significantly improved Sciatic Functional Index (SFI) scores compared to saline-treated rats (p < 0.05). At 12 weeks, Lidocaine and Lidocaine w/ CG-treated rats had significantly improved SFI scores compared to saline and CG-treated rats (p < 0.05). Gridwalk analysis of foot slip errors indicated Lidocaine-treated rats had significantly lower mean foot slips compared to saline-treated rats (p < 0.05), and Lidocaine w/ CG rats had significantly lower mean foot slips compared to saline, CG, and Lidocaine-treated rats (p < 0.05). At 12 weeks, Lidocaine-treated rats had the lowest level of mean foot slips, which was significantly less than that of Lidocaine w/ CG-treated rats (p < 0.05).

Biography

Nicole L. Miller is a medical student at the Florida International University Herbert Wertheim College of Medicine. She dedicated a full year at the Lois Pope Life Center at the University of Miami School of Medicine to study a new method to improve the viability of nerve transfers. The approach is clinically applicable and cost efficient for microsurgical reconstruction with donor nerves for peripheral nerve injuries.

nmill058@fiu.edu

Notes: