PLACEBO ANALGESIA IN A CHRONIC NEUROPATHIC PAIN MODEL IN MICE

Sarasa Tohyama, Bachelor of Science
University of Toronto Mississauga
Student/Trainee

INTRODUCTION / AIM
The placebo effect constitutes a powerful mechanism for patient recovery. Human studies have become to identify key brain areas and mechanisms associated with the placebo effect; yet, an animal model of placebo analgesia (the most robust type of placebo effect) remains elusive. In order to further understand the neural substrates of placebo analgesia, we attempted to develop a model of placebo analgesia in mice.

METHODS
Chronic neuropathic pain was induced using the spared nerve injury (SNI) model. Seven days after this surgery, each mouse underwent a 4-day conditioning procedure in which an active analgesic drug, morphine (10mg/kg), was associated with two cues: Plexiglas cubicles (contextual) and handling/injection (tactile). On the following test day, half of the mice received its vehicle (saline) and the other half received naloxone. Mechanical allodynia was measured on all five days using a set of von Frey filaments.

RESULTS
During the conditioning phase, mice experienced significant morphine analgesia. On test day, mice that received saline experienced significantly elevated pain tolerance (i.e., placebo analgesia), which peaked at 5 minutes post-injection and persisted for three hours. Naloxone reversed the placebo analgesia, as the withdrawal thresholds of naloxone-treated mice did not differ from baseline measures of post-SNI.

DISCUSSION / CONCLUSIONS
These results reveal a successful and novel development of a mouse model of placebo analgesia, specifically for chronic neuropathic pain. Further, it supports the involvement of the endogenous opioid system in placebo analgesia found in humans.

OTHER AUTHORS
Loren J. Martin